

**PATTERN AND RISK FACTORS OF NECK PAIN AND ITS
ASSOCIATION ON THE ACTIVITIES OF DAILY LIVING
AMONG STUDENTS IN FACULTY OF BASIC MEDICAL AND
HEALTH SCIENCES**

**IN THOMAS ADEWUMI UNIVERSITY, OKO, KWARA STATE,
NIGERIA**

BY

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CERTIFICATION

This project by **SOETAN AYOBAMI OLUWAFISAYO** is accepted in its present form as satisfying the requirement for the award of Bachelor of physiotherapy (BPT) degree in the Department of physiotherapy of the Faculty of Basic Medical and Health Sciences, Thomas Adewumi University, Oko, Kwara State.

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DEDICATION

I dedicate this project to the Almighty God, the Most Beneficent, the Most Merciful, the Saviour, Sustainer of my life, and my ever present Help in the time of need, who gave me the grace, wisdom, knowledge, and strength for the completion of this work. All glory, honour, and praise be to His name forever in Jesus Christ name. I also dedicate the project to my father and mother Mr. and Mrs. Soetan. I dedicate this project to my siblings for their collective investment in my life and being there for through every step of this journey.

ABSTRACT

Neck pain (NP) is increasingly becoming a health problem with the advent of electronic media and has a considerable socio-economic impact on individuals, their families and communities. Thus, this study examined the pattern and risk factors of neck pain and its impacts on the activities of daily living among students in faculty of basic medical and health sciences In Thomas Adewumi University,oko,kwara State,Nigeria.

A descriptive cross-sectional study design was employed, involving students in Faculty of Basic Medical and Health Sciences in Thomas Adewumi University. A structured questionnaire was utilized for the data collection procedure. The data collected was analysed using the Statistical Package for Social Science (SPSS) version 25.0 with statistical tools such as frequency, percentage, and Chi-square utilized to analyse relevant variables. One hundred and twenty-four (124) respondents were surveyed, with a higher proportion of male (81.7%) compared to female (18.3%) participants.

The study revealed that there is a prevalence of neck pain among the population, with the majority experiencing it at a moderate intensity level with 60 (48.4%) having moderate pain and headaches (13.82%), Work activities (13.64%), and reading (13.53%) were the most significant contributors for neck pain among the population. The result also indicated that neck pain has an effect on academic performance and productivity of medical students with a calculated chi-square value of 2.85 having the table value of 16.92. In conclusion, there is a prevalent occurrence of neck pain among the population, with most individuals experiencing it at a moderate intensity level and

neck pain was found to adversely affect the activities of daily living of medical students, potentially impairing their concentration and learning efficiency.

Keywords: neck pain, medical students, academic performance, risk factors, activities of daily living , Thomas Adewumi University

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CHAPTER ONE

INTRODUCTION

1.1 Background of study

Neck pain is one of the leading musculoskeletal disorders that is found among adults. The effect of the condition can result in affecting individual activities of daily living such as Bathing, dressing, reading e.t.c. Neck pain (NP) is increasingly becoming a health problem with the advent of electronic media and has a considerable socio-economic impact on individuals, their families and communities (Weleslassie *.,et al.*2020). The principal aim of a medical school is to produce capable, professional doctors and promote health care of society. But during the period of medical training, they expose students to stress, study problems, long training hours in hospital wards and clinics during the period of their medical training (Alshagga *.,et al,*2013). Medical students seemed to have a higher risk of developing NP compared to the general population.(Crawford *.,et al,* 2018).

Neck pain can cause decrease in working hour, restrict recreational activity participation, and sleep disturbance (Long,*et al,* 2012). There is no one definitive treatment for neck pain. However, different pharmacological and non-pharmacological treatments have been recommended, including massage, acupuncture, yoga, and aquatic therapy (Skelly,*et al,* 20). Neck pain has a multi-factorial origin, and there are several factors contributing to its onset and perpetuation.

According to Guzman *et al*, 2008 physical, psychosocial and individual-related factors were the most reportable factors of NP among medical students. It can be caused by interference surrounding anatomical neck structures like nerve, airway, vascular, musculoskeletal, prolonged activity, poor posture and history of previous neck injury (Weleslassie *.,et al.* 2020).

1.2 Statement of the Problem

Generally students of the faculty of Basic Medical and Health Sciences and most medical students are at risk of developing Neck pain due to the nature and rigorous structure of the Courses which requires long hours of reading, researching and studying and ergonomic environments are not suitable and the increase use of electronic gadgets in studying and social media.

In comparison with other researches which has been done in Ethiopia discussing about the burden of Neck pain among medical students but this research covers the pattern and risk factors of neck pain and its impacts on the activities of daily living among medical students in Thomas Adewumi University, Nigeria and subsequently this research shall provide preventive measures and treatments towards the pattern and risk factors of Neck pain. This study provided answers to the following research question:

- 1 What is the prevalence of neck pain among medical students?
- 2 What are the most common risk factors for neck pain among medical students (e.g., poor posture, prolonged sitting, and stress)?
- 3 How does neck pain affect medical students activities of daily living?

1.3 Aim of the Study

The main aim of this study is to determine the pattern and risk factors of neck pain and its impacts on the activities of daily living among students in faculty of basic medical and health sciences In thomas adewumi university,oko,kwara state,Nigeria.

1.4 Specific Objectives of the Study

The specific objectives of the study were to:

1. To determine the patterns and risk factors of neck pain among medical students?
2. To determine the most common risk factors for neck pain among medical students (e.g., poor posture, prolonged sitting, and stress)?
3. To determine how neck pain affect medical students activities of daily living?

1.5Significance of the Study

The significance of this study is to determine the pattern and risk factors of neck pain and its impacts on the activities of daily living among medical students in Faculty of Basic Medical and Health Sciences of Thomas Adewumi University. The result of this study will promote several preventive measures and treatments plan for neck pain:

- 1. Improved awareness and understanding of neck pain among medical students:** Neck pain is a significant musculoskeletal disorder with considerable socio-economic impact, and research can increase awareness and understanding

among medical students, who often prioritize grades over physical health (Akodu & Okafor, 2020). This study aims to enlighten medical students on the risks and importance of neck pain prevention.

2. Contributions to the existing literature on neck pain epidemiology: Research contributions to neck pain epidemiology are crucial for informing evidence-based practices and improving prevention, diagnosis, and treatment (Hogg-Johnson et al., 2008). This study aims to update knowledge, identify risk factors, and quantify disease burden.

3. To Reduce risk of neck pain among medical students: Medical students are at risk of developing neck pain due to prolonged study sessions and poor posture (Smith et al., 2019). This study aims to investigate the prevalence, risk factors, and prevention strategies for neck pain among medical students.

4. Contribution to the development of evidence-based guidelines: Evidence-based guidelines for preventing and managing neck pain among medical students are lacking, and high-quality research can inform healthcare providers, educators, and policymakers (Côté et al., 2016). This study aims to provide evidence for guideline development.

1.6 Scope of the study

This research is directed towards the medical students in Faculty of Basic Medical and Health Sciences, covering departments like Physiotherapy, Medical lab science, Anatomy, Physiology, Public Health across all levels.

1.7 Limitation of the study

The limitation of this study is that only covers medical students in Faculty of Basic Medical and Health Sciences of Thomas Adewumi University and does not capture the severity of this musculoskeletal disorder.

1.8 Definition of Terms

Pattern: A repeated or regular design, structure, or sequence of elements that can be observed or created in various contexts.

Activities of Daily Living: The everyday tasks and activities that individuals perform to take care of themselves, such as bathing, dressing, eating, and managing personal hygiene.

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.

Medical Student: Medical student are students who are studying to become a medical professional in the health care system.

1.9 List of Abbreviations and acronyms

NP: Neck Pain

TAU: Thomas Adewumi University

PPTS: Pressure Pain Thresholds

PTSD: Post Traumatic Stress Disorder

MS: Multiple Sclerosis

SLE: Systemic Lupus Erythematosus.

OA: occipital-atlanto

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Neck pain is one of the most common musculoskeletal conditions on a global scale (Safiri ,2017). Neck pain (NP) is most commonly defined as pain between the superior nuchal line, an imaginary transverse line through the tip of the first thoracic spinous process, and laterally by sagittal planes peripheral to the lateral borders of the neck.(Fernández-de-las-Peñas .,et al 2015). Pain in the neck may be local and/or referred into the head, and/or one or both upper limbs. (Guzman .,et al 2010). Neck pain has been defined based on e.g. anatomic landmarks, severity or duration of pain as well as reason for onset (e.g. trauma, work-related or unknown/idiopathic) (Guzman .,et al 2008).

Despite increasing knowledge on neck pain and underlying causes, it is not possible to identify a specific lesion in the majority of cases with current standard imaging and laboratory tests (Bogduk .,et al 2011). Neck pain has been associated with both primary headaches such as tension type headache and migraine as well as secondary headaches with the most common one being cervicogenic headache where cervical structures are a direct cause of the headache. (Bogduk .,et al 2009). Poor posture and biomechanics also play a crucial role in neck pain development. Forward head posture, rounded shoulders, and improper workspace ergonomics can lead to muscle imbalances, strain, and pain.

2.2 The Epidemiology of Neck pain

Neck Pain is defined by the Global Burden of health 2010 Study as "pain in the neck with or without pain referred into one or both upper limbs that lasts for at least one day (Wang.,*et al*, 2015). According to the Global Burden of Disease 2010 Study, neck pain is the fourth leading cause of years lost to disability, ranking behind back pain, depression, and arthralgias.(US Burden of Disease Collaborators). Out of all 291 conditions studied in the Global Burden of Disease 2010 Study, neck pain ranked 4th highest in terms of disability as measured by YLDs, and 21st in terms of overall burden(Damian Hoy .,*et al*,2015). The burden of neck pain was higher in females than among males. In 2017, the number of neck pain cases in females was 166.0 million (118.7 to 224.8), while for males it was 122.7 million (87.1 to 167.5) (Safiri .,*et al* 2017). In 2017, the national age standardized point prevalence of neck pain ranged from 2443.9 to 6151.2 cases per 100,000 populations (Safiri .,*et al* 2017). Approximately half of all individuals will experience a clinically important neck pain episode over the course of their lifetime. (Fejer .,*et al*,2006).

Previous studies have reported a high prevalence of NP in medical students. A study conducted at a Malaysian medical college found that 41.8% of students had NP within the past year and reported an association with clinical years, computer use and a prior history of trauma (Alshagga *et al*, 2013).Another study at Central Saudi Arabia reported a prevalence of 56.5% for NP among medical students (Algarni *et al*), 2017 and a study in Nigeria revealed that the lifetime prevalence of NP among the respondents was 34.9%(Ayanniyi *et al*, 2010). This research will further show

the pattern and risk factors of neck pain and its impacts on the activities of daily living among medical students especially in Thomas Adewumi University among Faculty Basic Medical and Health Sciences.

Epidemiological studies have investigated the prevalence of neck pain among undergraduates, most of them focused on healthcare students and revealed high pervasiveness of neck pain among them (Alshagga *et al.*, 2013; Hayes *et al.*, 2009; Lorusso, Vimercati, & L'Abbate, 2010; Ndetan *et al.*, 2009; Smith and Leggat, 2004). For example, the reported 1-year prevalence of neck pain among nursing and physiotherapy students ranged from 34.6% to 54.8% (Bialocerkowski *et al.*, 2005; Smith and Leggat, 2004), which may be related to their manual handling of patients during their clinical placements, long training hours (Alshagga *et al.*, 2013), or even discipline-related stress as observed in graduated nurses (Gholami *et al.*, 2016). While it is conceivable that students in different undergraduate programs (e.g., mechanical engineering, or fine arts) may have different prevalence of neck pain due to unique program-specific exposures (e.g., overhead work, or prolonged usage of computers), no research has comprehensively determined the prevalence of neck pain and the related risk factors among undergraduates in both healthcare and non-health related disciplines. The lack of relevant information may hinder stakeholders (e.g., health clinics at universities) from effectively allocating resources to prevent/manage this problem.

Although prior studies have attempted to investigate risk factors for neck pain in undergraduate students, they were limited by small sample sizes (Obembe *et al.*, 2013; Yeun and Han, 2017) or lack of representative samples from different

undergraduate programs (Algarni *et al.*, 2017; Smith *et al.*, 2006b). Intuitively, the presence of neck pain in undergraduates may be associated with both generic and program-related factors. These factors may differentially mediate the prevalence of neck pain among students in different undergraduate programs (Moreno-Betancur *et al.*, 2017). Further, these factors can be classified as modifiable and non-modifiable risk factors. For example, some modifiable (e.g., extensive study hours (Hayes *et al.*, 2009), psychological stress (Grimby-Ekman *et al.*, 2009), high work/study demand (Grimby-Ekman *et al.*, 2009), extensive computer usage hours (Alshagga *et al.*, 2013; Smith *et al.*, 2006b, Smith *et al.*, 2006a)) and non-modifiable risk factors for neck pain (e.g., female gender (Grimby-Ekman *et al.*, 2009), senior year of study (Smith *et al.*, 2006a), academic years involving clinical placement (Alshagga *et al.*, 2013), history of physical trauma (Alshagga *et al.*, 2013), and smoking history (Grimby-Ekman *et al.*, 2009)) have been identified in some healthcare or computer science students. Similarly, Yeun and Han (2017) have identified another set of modifiable (e.g., stress, depression, extensive cell phone usage) and non-modifiable risk factors for neck pain (female gender) in a cohort of 212 Korean undergraduates. Interestingly, these risk factors did not completely concur with the identified risk factors for non-specific neck pain in the general population worldwide (i.e., female gender, ex-smokers, older age, high job demands, low social/work support, and a history of low back disorders) (McLean *et al.*, 2010). These diverse findings highlight that previously identified risk factors for neck pain in certain healthcare students cannot be generalized to a broader population of undergraduates. By determining various modifiable and non-

modifiable risk factors for neck pain in a broader spectrum of undergraduates, effective education/prevention strategies for neck pain can be developed/implemented for different undergraduate.

2.3 Anatomy of the Cervical Column

The neck is the area between the skull base and the clavicles. Despite being a relatively small region, it contains a range of important anatomical features (TeachMe Anatomy, 2024). The primary function of the neck is to support the skull while still allowing for movement. It is the most flexible part of the spine. This flexibility allows for large movements to allow sensory perception. However, the neck is also subject to stress and susceptible to injuries. Given its importance, injuries can sometimes have significant consequences for our functionalities and are even fatal (Jung *et al.*, 2023).

2.3 1 Bony Framework (Cervical Spine Vertebrae)

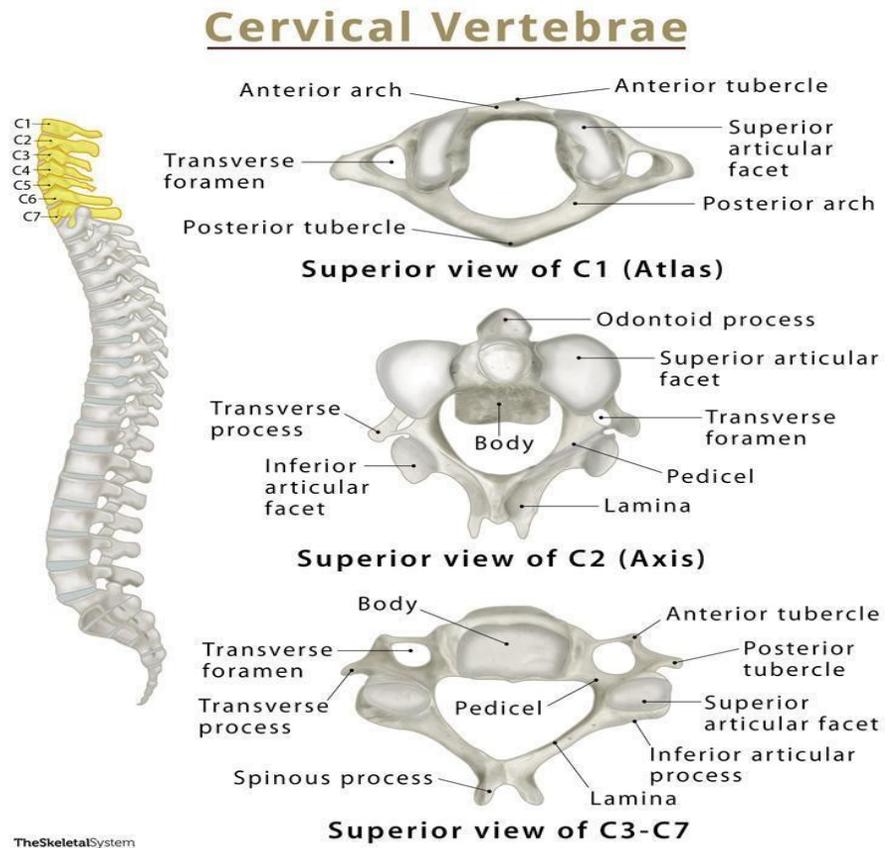
The cervical spine is the bony part of the neck and it is composed of composed of seven vertebrae. Cervical vertebrae C1 (atlas) and C2 (axis) are known as "atypical" vertebrae due to the presence of unique bony structures designed to support and move the skull. While the cervical spine can undergo flexion, extension, rotation, and side-bending, each individual cervical joint has a primary motion. C1, the atlas, has no spinous process and articulates with the occipital condyles of the occiput bone of the skull, forming the occipital-atlanto (OA) joint. The OA joint connects the skull to the neck, providing attachment points for some neck muscles. The primary motions of the OA joint are flexion and extension. C2, the axis, articulates

superiorly with C1 via a unique bony structure called the dens or odontoid process (as seen in Figure 1). The dens projects up from the vertebral body and articulates with the atlas. The dens permits pivoting motion and allow a greater range of motion in rotating the head laterally. .

Vertebrae C3 through C7 are known as "typical" cervical vertebrae. The primary motion of the upper portion of the lower cervical unit (C2-C4) is rotation. The primary motion of the lower portion of the lower cervical unit is side-bending. The description of all spinal and vertebral movements is relative to motions of their anterior and superior surfaces (Jung *et al.*, 2023).

The neck is the area between the skull base and the clavicles. Despite being a relatively small region, it contains a range of important anatomical features (TeachMe Anatomy, 2024). The primary function of the neck is to support the skull while still allowing for movement. It is the most flexible part of the spine. This flexibility allows for large movements to allow sensory perception. However, the neck is also subject to stress and susceptible to injuries. Given its importance, injuries can sometimes have significant consequences for our functionalities and are even fatal (Jung *et al.*, 2023).

Figure 1:An overview of the Structure of the Cervical Spine Bony Framework
Note.The Cervical Vertebrae both atypical and typical.(The Skeletal System.net, 2024)



- Intervertebral discs

Although not technically a bony component, the intervertebral discs lie in between all cervical vertebrae with the exception of C1 and C2. These discs can be quite significant clinically as they make up the inferior half of the anterior border of the intervertebral and vertebral foramina. The outer component of the disc is known as the annulus fibrosus. It is made of fibrocartilage and functions to contain the inner segment of the disc: the nucleus pulposus. (Ken Hub, 2023).

2.3.2 Ligaments of the Cervical Spine

The cervical spine ligaments function in maintaining stability and preventing excessive motion. They are a combination of ligaments that continue from lower regions of the vertebral column (that change names as they reach C2) and ligaments that are unique to the cervical spine.

- Ligaments that continue from below C7 (from anterior to posterior): Anterior longitudinal ligament (ALL), Posterior longitudinal ligament (PLL), Ligamentum flavum, Intertransverse ligament, Interspinous ligament, Nuchal ligament.
- Ligaments unique to the cervical spine: Alar ligament, Apical ligament, Transverse ligament. (Ken Hub, 2023)

2.3.3 Cervical Spine Musculature

The muscles of the neck are muscles that cover the area of the neck. These muscles are mainly responsible for the movement of the head in all directions. They consist of 3 main groups of muscles: anterior, lateral and posterior groups, based on their position in the neck which in turn relates to their function. For example, the muscles in the posterior neck are responsible for extension of the neck. The musculature of the neck is further divided into more specific groups based on a number of determinants; including depth, precise location and function (as seen in Table 1).

Table 1: Summary of the neck muscles groups (Ken Hub 2023)

Anterior muscles of the neck	<p>Superficial muscles: Platysma, sternocleidomastoid</p> <p>Suprahyoid muscles: Digastric, mylohyoid, geniohyoid, stylohyoid</p> <p>Infrahyoid muscles: Sternohyoid, sternothyroid, thyrohyoid, omohyoid</p> <p>Anterior vertebral muscles: Rectus capitis, longuscapitis, longuscolli</p>
Lateral (vertebral) muscles of the neck	Scalene muscles: Anterior scalene, middle scalene, posterior scalene muscles
Posterior muscles of the neck	<p>Superficial layer: Trapezius, splenius capitis, splenius cervicis</p> <p>Deep layer: Cervical transversospinales muscles (semispinaliscapitis, semispinaliscervicis)</p> <p>Deepest layer: Suboccipital muscles (rectus capitis posterior major, rectus capitis posterior minor, obliquuscapitis superior, obliquuscapitis inferior)</p>

2.3.4 Cervical Vasculature

The arterial supply to the neck is majorly from the common carotid and vertebral arteries running bilaterally on each side. Each common carotid artery branches into two divisions: the internal and external carotid arteries. The vertebral arteries pass through the transverse foramen of the cervical spines before merging to form the basilar artery. These arteries also branch off to give one anterior spinal artery and two posterior spinal arteries. The venous drainage of the neck is via the external and internal jugular veins as well as the vertebral veins. The external jugular vein collects blood from the superficial skull and the deeper parts of the face which then drains to the subclavian vein. Blood from the brain, the superficial face, and the superficial neck drains into the internal jugular vein (Jung *et al.*, 2023).

2.3.5 Cervical Nerves

The neck muscles are innervated by various cervical nerves and their branches and cranial nerves. Efferent nerves carry impulses from the spinal cord that cause muscles to contract, controlling cervical movements. Sensation to the anterior areas of the neck originates from cervical nerves C2-C4 and the posterior regions of the neck from cervical roots C4-C5.

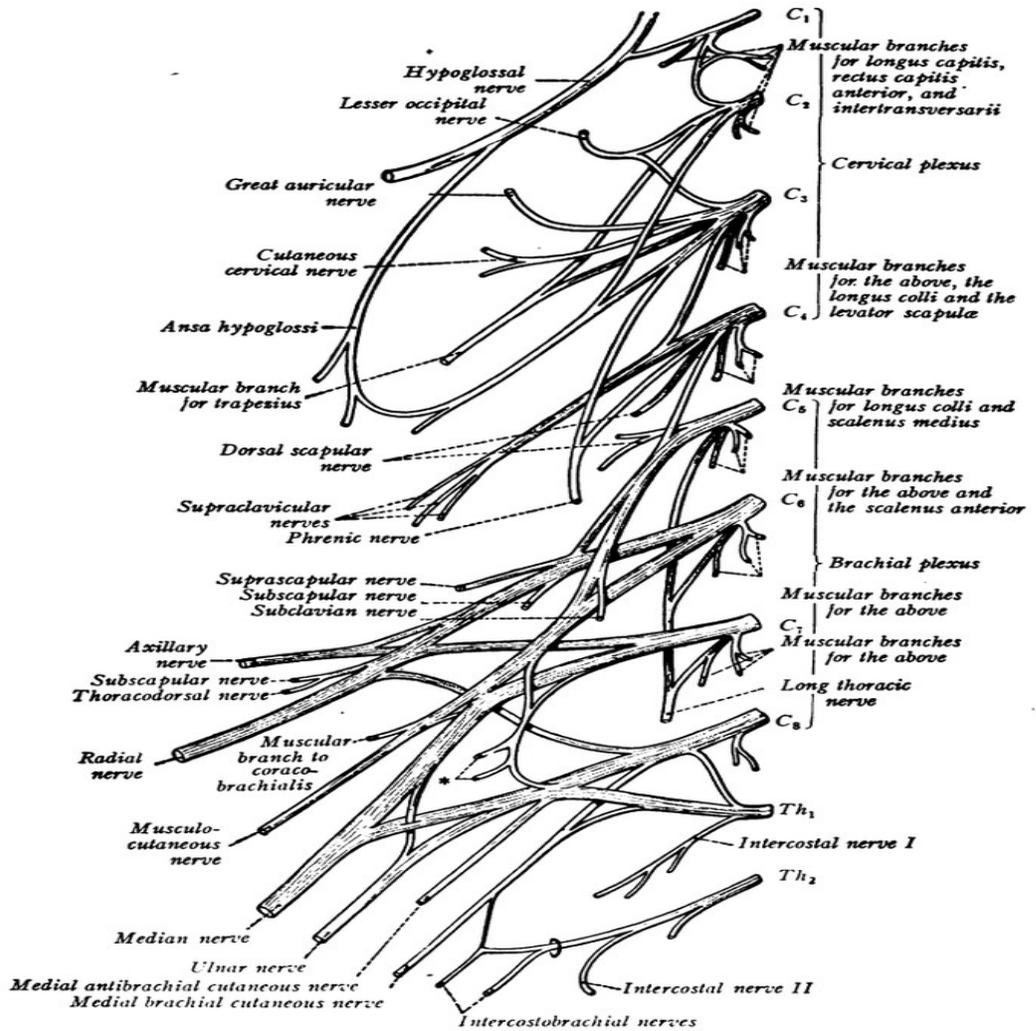
The cervical ganglia are a trio of sympathetic nervous system ganglia that lie alongside the vertebral column. The superior cervical ganglion lies at the C2-C3 intervertebral level, while the middle cervical ganglion lies at the C6-C7 intervertebral level. The inferior cervical ganglion is fused with the first thoracic ganglion to create the stellate ganglion at the C7-T1 intervertebral level.

The brachial plexus forms from the anterior rami of C5-T1 nerves and divides into roots, trunks, divisions, cords, and branches. After the roots exit the interscalene triangle between the anterior and middle scalene muscles, they form trunks at the level of the subclavian artery. The C5 and C6 roots form the upper trunk, while the C8 and T1 roots form the lower trunk. The C7 root forms the middle trunk. As these trunks cross the clavicle and exit the neck region, they separate into anterior and posterior divisions (seen in Figure 2).

The anterior rami of the C1-C4 vertebrae constitute the cervical plexus. This plexus is posterior to the sternocleidomastoid muscle and anterior to the middle scalene muscle, supplying both muscular and sensory innervation. The cervical plexus provides sensory innervation to the neck, clavicle, and skin surrounding the ear. The muscular branches innervate the infrahyoid muscles, excluding the thyrohyoid muscle and the diaphragm through the phrenic nerve. The phrenic nerve arises mainly from the C4 ventral rami, with smaller contributions from the C3 and C5 rami. The phrenic nerve innervates the diaphragm (Jung *et al.*, 2023).

Figure 2: Cervical Spinal Nerves

Note. The anatomical plan of the cervical and brachial plexuses (Sobotta, 1909)



2.4 Classification of Neck Pain

Neck pain can be classified based on the duration of symptoms, the pain pattern and the pain mechanism (Fandim *.,et al.,2020*). Similar to other musculoskeletal conditions, the duration of symptoms is classified as acute, sub-acute and chronic (Blanpied, 2017). The pattern of neck pain is classified into a single episode (i.e., without history of pain and full recovery after the episode), recurrent (i.e., two or more episodes with full recovery between them) and persistent (i.e., without periods of full recovery) (Haldeman *.,et al.,, 2008*).The pain mechanism is classified as specific (i.e., when it has an identifiable patho-anatomical cause of pain), neuropathic (originated by compression or lesion of the peripheral nervous system, such as cervical radicular syndrome) and nonspecific (or idiopathic, i.e., not attributed to a tissue damage or specific pathology) (Childs *.,et al., 2008*;Raja *.,et al., 2017*).

Neck pain may also be classified into as traumatic and non-traumatic (Blanpied*.,et al.,2017*). Whiplash is the commonly used term to describe the traumatic injury mechanism related to the onset of neck pain, hence serving as the basis of the classification of neck pain according to the Quebec Task Force classification of whiplash (Spitzer, 1995). However, in2008 the Task Force on Neck Pain compounded the Quebec Task Force Classification and proposed a new classification of neck pain as shown in Table 2. (Haldeman *.,et al., 2008*).

Table 2: Grades of neck pain defined by the Task Force on Neck Pain.

Further classifications used in the neck pain field include those made by the International Statistical Classification of Diseases and Related Health Problems (ICD)-11, and the associated International Classification of Functioning, Disability and Health (ICF) (Childs *et al.*,2004). ICD and ICF are systems that classify different conditions using specific codes with letters and numbers. The ICD-11 has several codes for different types of manifesting neck pain. The most general is the ME84 code that means ‘cervical spine pain’ or ‘cervicalgia’. ICF classification is based on problems that can be found in four different categories: body functions, activities and participation, environmental factors, and body structures. Some examples are b2803 meaning ‘radiating pain in a dermatome’ and B2810 meaning ‘pain in head and neck’ (Childs *et al.*,2004).

Grade	Explanation
I	Neck pain and associated disorders with no signs or symptoms suggestive of major structural pathology and no or minor interference with activities of daily living
II	No signs or symptoms of major structural pathology, but major interference with activities of daily living
III	No signs or symptoms of major structural pathology, but presence of neurologic signs

2.5 Aetiology of Neck Pain

Neck pain can develop in medical students due to several reasons such as poor postures while reading, poor neck postures while sleeping e.t.c. This condition has a complex etiology, including a number of factors: ergonomic (strenuous physical activity, use of force and vibration, inappropriate posture, repetitive movement), individual (age, sex, body mass index, genome, musculoskeletal pain history) psychosocial (job satisfaction, stress level, anxiety and depression) and the use of electronic devices - TV, computer, tablet, games and cell phones (Kanchanmai *et al.*, 2011; Razvi *et al.*, 2018; Kalirathinam *et al.*, 2017; Lee *et al.*, 2018). Neck pain has a multi-factorial origin, and there are several factors contributing to its onset and perpetuation.

According to Guzman and his colleagues, physical, psychosocial and individual-related factors were the most reportable factors of NP among medical student (Guzman *et al.*, 2008). It can be caused by interference surrounding anatomical neck structures like nerve, airway, vascular, musculoskeletal, prolonged activity, poor posture and history of previous neck injury. University students seem to be a high risk group for neck pain. In addition to the factors predisposing to pain in the general population, students subject themselves to hours of prolonged reading, writing and computer work which make them high-risk group for neck pain. The effect of neck pain has been reported to affect concentration among students and result in diminished academic performance (Rose *et al.*, 2000; Pope *et al.* 2002). Neck pain may be caused by arthritis, disc degeneration, narrowing of the spinal canal, muscle inflammation, strain or trauma. In rare cases, it may be a sign of

cancer or meningitis. For serious neck problems, a primary care physician and often a specialist, such as a neurosurgeon, should be consulted to make an accurate diagnosis and prescribe treatment.

Age, injury, poor posture or diseases such as arthritis can lead to degeneration of the bones or joints of the cervical spine, causing disc herniation or bone spurs to form. Sudden severe injury to the neck may also contribute to disc herniation, whiplash, blood vessel destruction, vertebral injury and in extreme cases may result in permanent paralysis. Herniated discs or bone spurs may cause a narrowing of the spinal canal, or the small openings through which spinal nerve roots exit, putting pressure on spinal cord or the nerves.

Pressure on the spinal cord in the cervical region can be a serious problem, because virtually all of the nerves to the rest of the body have to pass through the neck to reach their final destination (arms, chest, abdomen, legs). This can potentially compromise the function of many important organs. Pressure on a nerve can result in numbness, pain or weakness to the area in the arm the nerve supplies.

2.5.1 Cervical Stenosis

Cervical Stenosis occurs when the spinal canal narrows and compresses the spinal cord and is most frequently caused by degeneration associated with aging. The discs in the spine that separate and cushion vertebrae may dry out. As a result, the space between the vertebrae shrinks and the discs lose their ability to act as shock absorbers. At the same time, the bones and ligaments that make up the spine become less pliable and thicken. These changes result in a narrowing of the spinal

canal. In addition, the degenerative changes associated with cervical stenosis can affect the vertebrae by contributing to the growth of bone spurs that compress the nerve roots. Mild stenosis can be treated conservatively for extended periods of time as long as the symptoms are restricted to neck pain. Severe stenosis may impinge the spinal cord causing injury and requires referral to a neurosurgeon. (Pope *et al* 2002).

2.5.1 Neck Injuries

Neck injury symptoms include neck stiffness, shoulder or arm pain, headache, facial pain and dizziness. Pain from a motor vehicle injury may be caused by tears in muscles or injuries to the joints between vertebrae. Other causes of pain are ligament rupture or damage to a disc. Conservative treatment of these injuries includes pain medication, reduction of physical activity and physical therapy. (Pope *et al* 2002)

2.6 Pathophysiology of neck pain

The pathophysiology of neck pain involves a complex interplay between various factors, leading to inflammation, pain signaling, and potentially chronic pain. Neck pain can be caused by many different things. These include:

2.6.1 Weak and overused neck muscles: For instance, sitting at a desk for a long time particularly in awkward positions with slightly tensed muscles can cause pain and stiffness in the neck or shoulder areas, and sometimes headaches too. Activities that involve tilting your head back against your neck can also cause muscles problems in the neck area. These include things like painting a ceiling, or certain types of sports such as riding a racing bike or swimming breaststroke with your head in a fixed position. (Eubanks *et al* 2010)

2.6.2 Wear and tear on the cervical spine: Over the course of a lifetime, various normal signs of wear and tear arise in the spine. The spinal disks become flatter, and small bone growths (spurs) may form along the edges of the vertebral bodies (the front part of the bones in the spine). These changes can make it harder to move your neck, but they rarely cause neck pain on their own. (Eubanks JD. *Et al* 2010)

2.6.3 Whiplash: This is an injury that can occur if someone drives into the back of your car in a road accident. The impact of the collision causes the head to rapidly jerk forwards and then back again. This usually causes small injuries in the muscle and connective tissue, painfully tense muscles, and difficulty moving your head for several days. The symptoms typically go away completely after a short time. (Eubanks *et al* 2010)

2.5.4 Narrowing of the vertebral canal, or a slipped disk: If the vertebral canal is too narrow, or if spinal disk tissue bulges or leaks out and puts

pressure on a nerve root, it can cause neck pain that radiates (shoots) into your shoulder or arm. A slipped disk doesn't always cause symptoms. (Eubanks *.,et al* 2010).

Neck pain also sometimes comes from inflammatory conditions of the spine, jaw joint problems or severe headaches.

2.7 Risk factors of neck pain

Neck pain is a multifactorial disease. Several population-based studies have explored the role of various modifiable and non-modifiable risk factors for neck pain, such as advanced age, being female, low social support, and a history of neck or lower back pain (Genebra *.,et al* 2017). Since there is a tendency for neck pain to become a chronic problem, it is important to identify risk factors in order to enable prevention and early diagnosis (Kim *.,et al* 2017).As neck pain is a multifactorial disease, there are a number of risk factors which can contribute to its development. There is, however, more evidence for some risk factors, such as lack of physical activity, duration of daily computer use, perceived stress and being female(Jahr *.,et al* 2020).Identifying protective or risk factors, triggers and outcomes can help guide the prevention, diagnosis, treatment, and management of neck pain. The following section describes the research evidence of a number of psychological and biological factors associated with neck pain.

2.7.1 Psychological factors

The literature demonstrates a clear link between psychological variables and neck/back pain (Linton *et al* 2000). A study based on the China Mental Health Survey showed that the prevalence of chronic back or neck pain among people with any type of mental disorders was more than twice that of those without a mental disorder, with a particularly high prevalence among those with mood disorders (Xu *.,et al* 2020). Prospective investigations have demonstrated that psychological variables are related to the onset and severity of pain (i.e. acute, sub-acute, and chronic). Stress, distress, anxiety, mood and emotions, cognitive functioning, and pain-related behaviors have all been found to be important factors in the development of neck pain. Although there is not much evidence for personality factors like abuse, they can also be potential risk factors (Linton *.,et al* 2000).

Overall, factors such as stress, pain catastrophizing, depressive symptoms, low sleep quality, and alcohol consumption might play some role in changing the central pain processing within the spine, brainstem, or cortical levels, which can manifest as remote hyperalgesia (Xu *.,et al* 2020). However, further investigations are needed into the role that these cognitive, affective, and lifestyle factors have in central pain processing in non-traumatic neck pain (Xu *.,et al* 2020). The four psychological domains (i.e. cognitions, emotions, social and behavioral domains) involved in neck pain were carefully described and explored in depth. Firstly, there is a cognitive component that comprises attitudes, beliefs, and cognitions in relation to pain, disability, and perceived health. A second theme is the emotional dimension, in which distress, anxiety, and depression are the most important variables. Thirdly, there is a social dimension, where family and work issues seem

to be related to neck and back pain, although the data are less convincing. Finally, a behavioral domain has also emerged, in which coping, pain behaviors, and activity patterns are important elements (Linton *.,et al* 2000).

Stress

Stress is related to pain and disability (Linton *.,et al* 2000). Perceived stress is a risk factor for neck pain (Mork *.,et al* 2020). At least two investigations, with fair methodological quality, have found that adolescents with neck pain had significantly more symptoms of stress than adolescents without neck pain, and that permanent and/or regular feelings of stress was significantly associated with an increased odds of reporting neck pain (Andias *.,et al* 2020). Stress may contribute to altered central pain processing at the spinal, brainstem, or cortical levels, which may present as remote hyperalgesia - a condition in which individuals experience an enhanced sensitivity to pain (Xu *.,et al* 2020). Moreover, stress acts as a mediator between pain and disability (Lee *.,et al* 2015).

Anxiety

Anxiety is related to different kinds of chronic pain (e.g., neck pain), as well as disability (Linton *.,et al* 2020). Neck pain has been found to be co-morbid with anxiety (Gureje *.,et al* 2020). Trait and state anxiety were investigated using two different measurement instruments and the researchers found that adolescents with neck pain had higher levels of trait and state anxiety than adolescents without neck pain (Andias *.,et al* 2020).

Furthermore, anxiety disorders were found to be the second most common comorbid disease associated with neck pain, and specific phobias were the most prevalent problem among those with anxiety disorders (Xu *et al* 2020).

An association between lower pressure pain thresholds (PPTs) and increased levels of anxiety has also been reported. PPTs have been found to be associated with pain intensity, frequency, duration, and disability due to neck pain (Sá *et al* 2017). People with neck pain have reported higher levels of anxiety (Sá *et al* 2017), and anxiety has also been found to exacerbate pain and disability (Lee *et al* 2015). However, there are also some discrepancies in the findings; with one study on the components of psychological distress (e.g., stress, anxiety, and depression) reporting that anxiety was not a mediator for pain and disability (Hall *et al* 2011). Survey-specific estimates have also revealed some inconsistencies in the comorbidity between spinal pain, both back and neck pain, and anxiety disorders. For instance, only 10 out of 17 surveys showed significantly increased odds ratios for chronic neck pain among those with generalized anxiety disorder and agoraphobia/panic disorder. Therefore, there are some variations in the size of this association between studies and between countries, although chronic spinal pain seems to increase the likelihood of co-morbid anxiety disorders.

The research has also shown that some specific types of anxiety disorders are more strongly associated with spinal pain than others. Generalized anxiety disorder and post-traumatic stress disorder (PTSD) are more likely to be co-morbid with spinal pain than social phobia or panic disorder/agoraphobia (Gureje *et al* 2008). However, research has found neck pain to be more common in patients with mood

disorders than among those with specific anxiety disorders (*Demyttenaere ,et al 2007*).

Depression

The relationship between depression and neck pain appears to be bidirectional (*Juan et al 2020*). Mood disorders, especially depression, have been found to be related to chronic neck pain and disabilities (*Linton ,et al 2000*).. Neck pain is also commonly reported in individuals with underlying depression (*Jahre ,et al 2020*). Furthermore, a meta-analysis reported that symptoms of depression were associated with high morbidity in neck pain patients (*Liu ,et al 2018*). Moreover, a review article suggested that the strongest psychosocial risk factors among respondents with chronic back or neck pain were depressed mood (*Kim ,et al 2018*) and major depression (*Demyttenaere ,et al 2007*). A survey study in China showed that mood disorders have a higher co-morbidity with neck pain than other mental disorders, and that major depression had the highest co-morbidity among all mood disorders (*Xu ,et al 2020*). Furthermore, seven studies with fair methodological quality, investigated depression using a total of six different measurement instruments and all studies found that adolescents with neck pain had more depressive symptoms than asymptomatic adolescents (*Andias ,et al 2020*). In fact, depressive symptoms may affect central pain processing at the spinal, brainstem or cortical levels, which can be manifested as remote hyperalgesia (*Xie ,et al 2020*). Depression and pain might also be risk factors for each other (*Liu ,et al 2018*). Several studies have pointed out that psychological stress and the potential obstacles caused by pain may produce immunological changes that eventually results in depression and anxiety

(Liu *.,et al* 2018). Studies have also found that depression acts as a mediator between pain and disability (Lee *.,et al* 2015).

Cognitive variables

Cognitive factors (i.e. attitudes, cognitive style, and fear-avoidance beliefs) have been linked to increased pain, such as neck pain and disability (Linton *et al* 2000). Pain cognitions, like catastrophizing and self-perceived poor health, are related to pain and disability (Linton *.,et al* 2000), as are fear-avoidance beliefs and passive coping (Linton *et al* 2000). Pain catastrophizing, which is a cognitive factor, may also contribute to altered central pain processing at several levels (i.e., the spinal, brainstem or cortical levels), which may be exhibited as remote hyperalgesia (Xu *.,et al* 2020). Research has found that adolescents with neck pain had higher levels of catastrophizing, compared to adolescents without neck pain (Andias *.,et al* 2020). In general, people with neck pain report higher levels of catastrophizing than those without neck pain (Sá *.,et al* 2017).

Another significant cognitive factor is self-efficacy, which has been shown to be related to neck pain (Ahmed *.,et al* 2011). Low pain self-efficacy has been found to be associated with greater functional disability in patients with neck pain (Ahmed *.,et al* 2011), although an article by Andias *.,et al.* showed that the difference in self-efficacy levels among adolescents with and without neck pain remains controversial (Andias *.,et al* 2020).

Low resilience is another psychological factor which has been found to be associated with greater functional disability in patients with neck and back pain (Ahmed., *et al* 2011).

Sleep problems

The relationship between sleep quality and neck pain is bidirectional, as both can lead to the other (Peterson., *et al* 2021). Five investigations, including one longitudinal and four cross-sectional studies, most of which were fair methodological quality, assessed sleep using a total of six different measurement instruments and found some evidence that insufficient quantity and quality of sleep were significantly associated with increased odds of having neck pain (Andias., *et al* 2020). Therefore, sleep management might be a promising intervention for decreasing pain sensitivity and increasing pain modulator capacity (Xie., *et al* 2020).

There is research to suggest that females with low sleep quality are at a higher risk of neck pain onset, but the findings in male have been inconsistent. Furthermore, one high-quality study found no significant relationship between sleep and shoulder pain, indicating that there is either weak evidence or no higher risk (Andreucci *et al* 2017). Furthermore, poor sleep quality can lead to an increase in the symptoms of depression for people with high intensity neck pain (Juan., *et al* 2020).

Social support

Loneliness is an important factor in early adulthood and its relationship with neck pain should be further investigated (Jahre., *et al* 2020). Neck pain has been found to

have a positive relationship with poor general social support (Ahmed *et al* 2011) and poor social support at work (Ariëns. , *et al* 2001). A negative relationship between neck complaints and actively seeking social support has also been reported (Buitenhuis. , *et al* 2003).

Personality

No evidence exists to support the theory of a “pain prone” personality. Furthermore, findings on the relationship between personality traits or disorders and neck pain have been contradictory (Linton *et al* 2000).

Autoimmune diseases

Autoimmune diseases are a chronic and clinically heterogeneous group of diseases that occur in immunocompromised individuals. Autoimmune diseases affect various organs and tissues throughout the body. In some autoimmune diseases, the muscles, joints, and nerves can be the target of the immune system, so they are also likely to affect the cervical spine. The most important autoimmune diseases are rheumatoid arthritis, polymyalgia rheumatic, multiple sclerosis (MS), ankylosing spondylitis, systemic lupus erythematosus (SLE), myositis, and psoriatic spondylitis.

Rheumatoid arthritis is a chronic inflammatory disease that primarily affects the bones, peripheral joints, and ligaments, although it can also affect almost every system. Peripheral joint swelling is a common early symptom, and chronic inflammation of the cervical spine is the second most common feature of rheumatoid arthritis, affecting more than half of all patients with rheumatoid arthritis. Neck pain is one of the earliest symptoms to indicate cervical spine

involvement in a patient's rheumatoid arthritis. Nevertheless, occipital headaches and other neurological symptoms may also present in patients with cervical spine involvement (Mańczak *et al* 2017).

Polymyalgia rheumatica is a relatively common chronic inflammatory disorder that is often associated with giant cell arteritis and is characterized by widespread aches and stiffness of the neck, shoulder, and hip area. The average age of patients with polymyalgia rheumatic is 70 and it is rarely found in anyone less than 50 years of age. Therefore, it would appear that age-related immune activation, in response to environmental triggers, may contribute to the development of polymyalgia rheumatica (González-Gay *.,et al* 2017).

Multiple sclerosis is considered a multifocal inflammatory autoimmune disease that affects the central nervous system (CNS) and often results in the patient experiencing chronic pain. There are a number of different factors, such as age, sex, disease duration, depression, and fatigue, which cause the prevalence of neck pain to differ widely in patients with multiple sclerosis. Neck pain in multiple sclerosis patients can be due to immobility or Lhermitte's sign, which is defined as a transient short-lasting sensation related to neck movement (O'Connor *.,et al* 2008).

Ankylosing spondylitis is a progressive and debilitating form of arthritis that mainly results in inflammation of the joints of the spine. Neck pain is also common in these patients, due to the inflammation of the cervical spine. Recent genetic studies have identified several genes and multiple pathways involved in ankylosing

spondylitis. In particular, the activation of specific immune pathways plays a critical role in ankylosing spondylitis pathogenesis (Ranganathan *.,et al* 2017).

SLE is a severe systemic autoimmune disease that can affect almost any part of the body. Therefore, chronic pain and fatigue are very common in patients with SLE. Inflamed muscles can cause neck and back pain in SLE patients (Bliddal *.,et al* 2007).

Myositis is a rare chronic systemic autoimmune disease that is characterized by profound muscle inflammation and progressive muscle weakness. Myositis typically bilaterally affects the skeletal muscles, including the neck, shoulders, hips, and back muscles. Myositis can affect people of any age and, similar to most autoimmune diseases, there is a greater prevalence of myositis in females than among males (McGrath *.,et al* 2018).

Psoriatic arthritis refers to a group of chronic inflammatory joint diseases that develop in some people with psoriasis. Psoriatic spondylitis is a subtype of psoriatic arthritis that affects the spine and causes pain and stiffness in the back and neck (Cantini *.,et al* 2010).

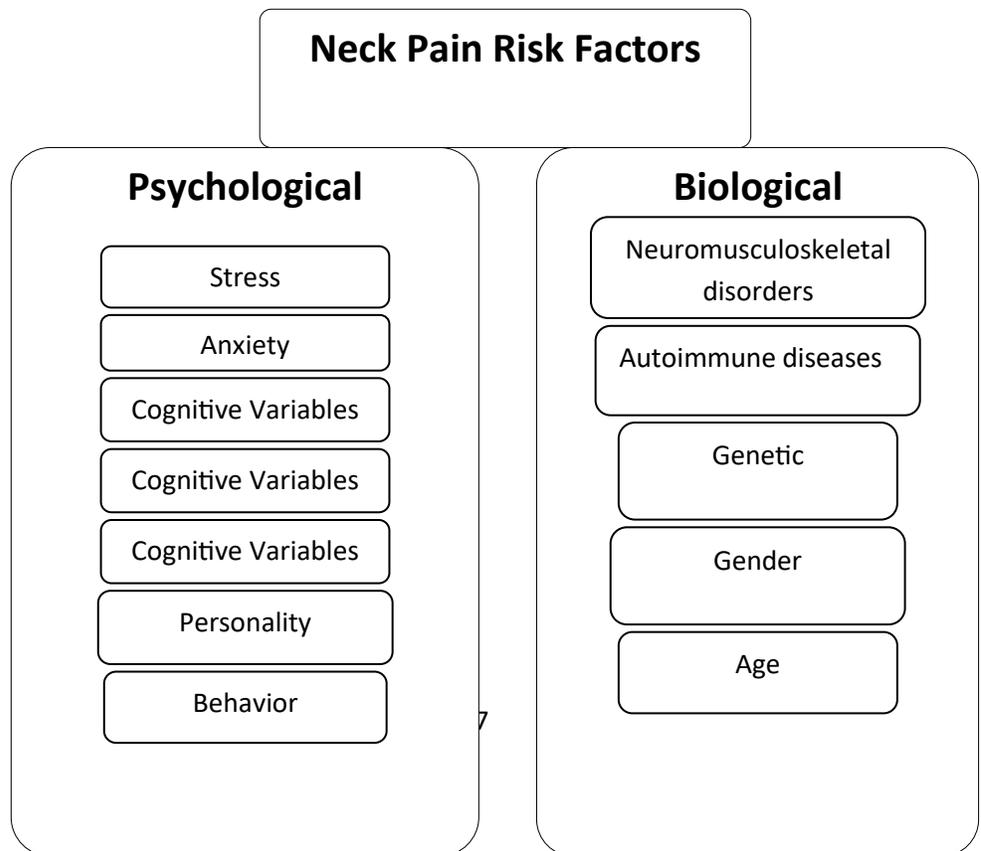
The results of several systematic reviews have demonstrated that gender is a well-studied but ambiguous risk factor for neck pain. Previous studies have considered being female to be a significant risk factor for developing neck pain (McLean *.,et al* 2010).. Nevertheless, in contrast to previous neck pain articles, recent epidemiological studies have found no meaningful sex differences in the prevalence, incidence, and years lived with disability across the age groups in

patients with neck pain (Kim *.,et al* 2018). However, the point prevalence of neck pain was higher in females across all age groups (Safiri *.,et al* 2020).. These contradictions are also evident from the articles that report being female to be a weak predictor of developing neck pain, since the age of onset is also important and this may differ between males and females. For this reason, sex-specific meta-analyses are needed to clarify the ambiguous association between sex and neck pain.

Age

Aging is the most important risk factor for most chronic pain, so identifying protective and risk factors is critical for raising awareness about effective preventative measures and educational interventions for high-risk groups (McLean *.,et al* 2010). The normal anatomy of the cervical spine changes at advanced ages, which can cause neck pain and long-term disability. Neck pain is common among adults, although it can occur at any age. According to the Global Burden of Diseases 2017 study, the point prevalence of neck pain peaked during the middle ages and declined thereafter, with the highest burdens being in the 45–49 and 50–54 age groups for men and women, respectively (Safiri *.,et al* 2020)

Table 3: Neck Pain Risk Factors



2.8 Treatment of Neck Pain

Physiotherapy management

The majority of neck pain guidelines on diagnosis and treatment of patients with neck pain recommend a combination of manual therapy, exercise and education as the preferred evidence-based physiotherapy treatments (Corp ., *et al.*, 2020)

2.7.1.1 Education

Education is defined as a process of enabling individuals to make informed decisions about their personal health-related behaviour. According to a Cochrane review, patient education (or the provision of information) is regarded as an essential part of communication between the physiotherapist and the patient. The patient educational interventions that are evaluated and recommended by the

guidelines are: reassuring patients that the pain is not a serious condition; providing information on pain and prognosis, including information that imaging is not recommended; advising to stay active; and educating about self-care, exercises and (stress) coping skills (Verhagen, 2021).

2.7.1.2 Exercise

Physical exercises vary widely from general land-based or aquatic exercise to neck-specific endurance, strength, and stretching or McKenzie exercises. The most recent Cochrane review on exercises for mechanical neck disorders found that a wide variety of exercises had been evaluated, varying from breathing exercises to strength and endurance exercises.

The review concluded that when exercise was compared with no treatment or placebo, or evaluated as an additional treatment: strength, endurance and stabilising exercises were beneficial in chronic neck pain (moderate-quality evidence); only strength and endurance exercises were beneficial in chronic cervicogenic headaches (moderate-quality evidence); and there was a small benefit of stretching, strengthening and stabilisation exercises in acute cervical radiculopathy (low-quality evidence). (Gross *et al.*, 2016)

2.7.1.3 Mobilization and manipulation

Physiotherapists often offer ‘manual therapy’, aiming to improve spinal joint motion and restore range of motion. Manual therapy consists of various techniques, including mobilizations and manipulations. A Cochrane review and another

systematic review both found that cervical mobilisations and manipulations were equally beneficial (moderate-quality evidence) in patients with non-specific neck pain (Gross *et al.*, 2016).

2.7.1.4 Massage

Massage therapy is one of the oldest treatment strategies for musculoskeletal pain. It involves mobilisation and manipulation of the soft tissues of the body through touch. There is a wide spectrum of techniques that fall under the umbrella term of massage therapy. The different techniques vary in the manner in which touch is applied, as well as the amount of pressure that is applied (Patel *et al.*, 2012).

2.9 Non-Physiotherapy Management

Non-physiotherapy management of neck pain encompasses a range of interventions, including pharmacological treatments, interventional procedures, complementary therapies, and ergonomic modifications. These approaches are often used in conjunction with physiotherapy or as standalone treatments depending on the severity and underlying cause of neck pain.

Pharmacological management typically includes nonsteroidal anti-inflammatory drugs (NSAIDs) like ibuprofen and naproxen, which are commonly prescribed to reduce pain and inflammation. In cases of severe pain or muscle spasms, muscle relaxants and prescription analgesics may be utilized, though their use is often limited to short-term due to potential side effects and dependency risks (Childs *et*

al., 2008). Corticosteroid injections are another option, particularly for patients with significant inflammation, although their long-term efficacy remains debated (Chou *et al.*, 2009).

Interventional procedures, such as cervical epidural steroid injections or radiofrequency ablation, are considered for chronic or neuropathic neck pain that does not respond to conservative treatments. These procedures target specific pain pathways, providing temporary relief and allowing for improved function (Manchikanti *et al.*, 2015).

2.9 Prevention and Intervention for Neck Pain

Prevention of neck pain is essential in reducing the burden of this condition, particularly in occupational groups such as photographers, who are at increased risk due to the nature of their work. Key preventive strategies include;

2.9.1 Ergonomic Education

Educating individuals on proper ergonomic practices, such as adjusting the height and angle of the camera, using neck support straps, and taking regular breaks, can significantly reduce the risk of neck pain (Rashid *et al.*, 2017).

2.9.2 Exercise Programs

The implementation of regular stretching and strengthening exercises targeting the neck, shoulders, and upper back muscles can improve flexibility and reduce the risk of muscle strain (Korthals-de Bos *et al.*, 2003).

2.10 Economic and Healthcare Burden of Neck Pain

Neck pain is a significant economic burden globally, particularly in occupational settings where work demands place workers at increased risk of musculoskeletal disorders. Among photographers, the economic toll of neck pain is amplified due to the physical demands of the profession, such as prolonged static postures, repetitive movements, and awkward neck positioning, which are essential to achieving high-quality visual outputs. These factors not only diminish individual productivity but also have broader implications for healthcare systems and economies (Hoy *et al.*, 2014; Senthilkumar *et al.*, 2024).

The direct costs of neck pain include medical consultations, diagnostic imaging, medications, physiotherapy, and other rehabilitative interventions. Studies have highlighted that musculoskeletal disorders, including neck pain, account for a significant proportion of healthcare expenditures in occupational health globally (Hoy *et al.*, 2014). In African countries, including Nigeria, the financial burden is heightened by limited access to affordable healthcare services, leading many individuals to self-manage or seek inadequate treatments, which can exacerbate the condition (Naidoo *et al.*, 2024).

In Nigeria, although specific studies on photographers are limited, research on other occupational groups highlights the pervasive nature of this issue. The APICS

Certified Supply Chain Professional in 2022 reported 44% prevalence rate of neck pain among Nigerian oil workers being second in rank after low back pain, with significant financial implications stemming from both medical expenses and reduced work capacity. Another study by Chidozie *et al.* (2022) even reported a higher prevalence rate of 55.4% among Nigeria plumbers.

Beyond individual economic losses, neck pain contributes to substantial national productivity losses. Chronic pain conditions have been associated with reduced workforce participation, increased dependence on social support systems, and higher disability claims (Bernardes *et al.*, 2024). Addressing this economic burden in occupational groups like photographers requires targeted interventions, including ergonomic education, workplace policy implementation, and access to effective healthcare services.

In conclusion, the economic burden of neck pain in occupational settings, particularly among photographers, is significant and multifaceted. In Nigeria and similar settings, this burden is exacerbated by limited healthcare access and financial constraints. Investing in occupational health initiatives and preventive measures is essential to mitigating the financial impact of neck pain, ensuring improved productivity, and safeguarding the livelihoods of vulnerable professionals.

2.11 Analysis of Core Literature Review

Table 4: Summary of Analysis of Core Literature Review on pattern and risk factors of neck pain and its impacts on the activities of daily living among students in faculty of basic medical and health sciences In thomas adewumi university,oko,kwara state,nigeria

Author	Study Objective	Key finding	Research Gap
Weleslassie <i>et al.</i> BMC Musculoskeletal Disorders (2020)	Burden of neck pain among medical students in Ethiopia	Neck pain, Medical students, Associated factors, Standard Nordic questionnaires	Final year students were excluded
Kazeminasab <i>et al.</i> BMC Musculoskeletal Disorders (2022)	Neck pain: global epidemiology, trends and risk factors	Neck pain, Epidemiology, Risk factor, Narrative review	Research was not location specific

<p>Caridi et al., 2011</p>	<p>To provide a comprehensive review of the causes, clinical presentation, and treatment options for cervical radiculopathy</p>	<p>The study concluded that cervical radiculopathy is a common and often debilitating condition, with conservative treatment strategies such as physical therapy being effective in many cases, though surgery may be required in severe instances.</p>	<p>People who were not from Hospital for Special Surgery, New York, USA.</p>
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<p>Corp <i>et al.</i>, 2020</p>	<p>To identify recommended treatment options for neck pain and use across Europe.</p>	<p>The review identified a range of mainly non-pharmacological recommended treatment options for non-specific low back pain and neck pain that have broad consensus for use across Europe.</p>	<p>Population outside Europe was excluded</p>
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Chidozie <i>et al.</i> ,2022	To determine the prevalence, patterns, and risk factors of work-related musculoskeletal disorders (WRMSDs) among Nigerian plumber	12-month and 7-day prevalence of WMSDS were 84.6% and 50.8%. Low-back (63.8%), neck (55.4%) and knee (50%) were the most affected body sites.	People who are not plumbers were excluded
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<p>El-Sayed&Abdelsalam, 2022</p>	<p>To compare between the efficacy of cervical stabilization exercises and scapular stabilization exercises on neck pain severity, neck functional disability and neck mobility in treatment of patients with chronic mechanical neck pain.</p>	<p>Both groups had significant improvement in all the measured variables. Scapular stabilization exercises was significantly more effective than cervical stabilization exercises in increasing neck transverse mobility</p>	<p>People who are not from Cairo University Egypt were excluded</p>
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Fandim et al., 2020	Available evidence on prevalence, costs, diagnosis, prognosis, risk factors, prevention and management of neck pain	There is a need for research to enhance our understanding of the underlying mechanisms of nonspecific neck pain, assess the efficacy of preventive and therapeutic interventions	Research was not location specific
TAF Preventive Medicine Bulletin, 2010	Neck Pain Occurrence and Characteristics in Nigerian University Undergraduates	Neck pain, Neck Injury, Adolescent Health, Nigeria.	Not all Nigerian University Undergraduates were involved

<p>Manchikantiet al., 2015</p>	<p>To provide a comprehensive review of cervical interventional pain management techniques,</p>	<p>Cervical interventional pain management techniques demonstrate varying levels of efficacy and safety, with the choice of intervention requiring individualized consideration based on patient pathology and clinical presentation.</p>	<p>Research was not location specific</p>
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Verhagen, 2021	To explore and summarize the current evidence on physiotherapy management strategies for neck pain	Evidence supports the use of a multimodal physiotherapy approach, including exercise therapy, manual therapy, and patient education, tailored to the individual's condition and preferences for effective neck pain management.	Research was not location specific
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CHAPTER THREE

MATERIALS AND METHODS

3.1 Participants

Participants of this study were students of Faculty of Basic Medical and Health sciences in Thomas Adewumi University.

Participants Selection

The study involved medical students from Faculty of Basic Medical and Health Sciences in Thomas Adewumi University.

1.1.1 Inclusion Criteria

The following participants were included in the study:

1. Participants who are students from Faculty of Basic Medical and Health sciences in Thomas Adewumi University.
2. Participants who are students in Faculty of Basic Medical and Health sciences in Thomas Adewumi University.

1.1.2 Exclusion Criteria

The following participants were excluded from the study:

1. Participants who are Medical students enrolled in other Universities.
2. Participants who are students from Faculty of Basic Medical and Health sciences in Thomas Adewumi University who are not in Faculty of Basic Medical and Health sciences.

3.2 Materials/Instrument

3.2.1 Instruments

The instrument that was used for this study was a validated online administered questionnaire called Neck Disability Index.

3.2.2 Description of instrument

An online administered questionnaire refers to a questionnaire that has been designed specifically to be completed by a respondent without intervention of the researcher. The questionnaire was adapted from a validated questionnaire on Burden of neck pain among medical students in Ethiopia. (Weleslassie *et al*,2020).

This questionnaire has 10 sections:

1. Pain Intensity: This measures the intensity of the pain.
2. Personal Care: This measures how the neck pain has affected medical student personal care such as bathing, washing, and dressing.

3. Lifting: This measures if the neck pain has affected the student in lifting objects.
4. Reading: This measures whether the neck pain is elicited when reading.
5. Headaches: This measures whether the neck pain causes the students experience headache.
6. Concentration: This measures whether the neck pain affects the students' concentration level.
7. Work: This measures whether the neck pain affects how much work the student can execute.
8. Driving: This measures whether the neck pain affects the student driving skills, assessing whether they can still cars or not.
9. Recreation: This measures whether the neck pain affects the student recreational time and how much activities they can engage.
10. Sleeping: This measures whether the neck pain affects the student quality and quantity of sleep.

3.3 Methods

3.3.1 Ethical Consideration

The study's ethical permission was sought and obtained from the university of Ilorin teaching hospital ethical committee. Participants were provided with clear and comprehensive information through informed consent, outlining the study's procedures and benefits. Confidentiality will be strictly maintained by safeguarding personal information and anonymity will be prioritized to enhance participants' sense of security.

3.3.2 Research design

A cross sectional study was employed to determine the prevalence of Neck Pain among the medical students of Faculty of Basic Medical and Health Sciences in Thomas Adewumi University making use of physically administered questionnaire.

3.4 Sampling Size Determination

The research participants will be Medical Students of Faculty of Basic Medical and Health Sciences in Thomas Adewumi University. Taro Yamane's formula was used to get a good representation of the total sample size. Sample size formula was Taro Yamane's form:

$$n = \frac{N}{1 + N(e^2)}$$

n= sample size

N= Population size

e= Margin of error

$$n = \frac{130}{1 + 130(0.02^2)}$$

$$n = \frac{130}{1 + 130(0.004)}$$

$$n = \frac{130}{1 + 0.052}$$

$$n = \frac{130}{1.052}$$

$$n = 123.57$$

We therefore have a sample size of **124**.

CHAPTER FOUR

RESULTS

4.1 SOCIO-DEMOGRAPHIC VARIABLES

The socio-demographic characteristics of the study participants, as outlined in the dataset, reveal distinct patterns across various variables. Analyzing the age distribution, the majority of participants were within the 21–25 years age group, accounting for 69 individuals which represent 55.9% of the total sample of 124 participants. Participants within the 15–20 years age range followed with 32 individuals, representing 26.2%, while those aged 26–30 years accounted for 18 individuals, constituting 14.6% of the total. The age group with the least representation was the 31–40 years, comprising 4 individuals, translating to 3.3% of the sample.

In terms of gender distribution, the analysis shows that 80 individuals identified as female, which accounts for 64.3%, whereas 44 individuals, representing 35.7%, were male. Marital status data reveals that 115 participants were single, making up 92.8% of the total group. Those who were married accounted for 8 participants, representing 6.4%, while only 1 individual, representing 0.8%, reported being separated. The ethnic composition of the study participants was predominantly Yoruba, with 110 participants making up 88.4% of the entire population. The Igbo ethnic group followed with 6 participants, representing 5.0%, while 1 participant, constituting 0.8%, was Hausa. A total of 7 participants, representing 5.8%, identified as belonging to other ethnic groups.

Religious affiliation data shows that 89 participants, representing 72.1%, identified with Christianity. Islam was reported by 33 participants, constituting 25.7%, while 3

participants, representing 2.2%, identified with Traditional religion. With respect to academic level, the largest number of participants were in the 400 level, totaling 52 individuals and accounting for 42.3% of the population. This was followed by 300 level participants with 30 individuals, representing 24.0%, and 500 level participants totaling 19, representing 15.3%. Participants in the 200 level numbered 17, constituting 13.8%, while the 100 level had the least with 6 individuals, representing 4.6% of the sample.

Regarding departmental distribution, the Physiotherapy department had the highest number of participants with 43 individuals, representing 34.5% of the total sample. Public Health Science followed with 31 participants, accounting for 24.8%, while Medical Laboratory Science had 24 participants, representing 19.3%. The Physiology department had 16 participants, comprising 12.6%, and Anatomy had 11 participants, representing 8.8% of the total.

Table 5: Frequency Counts and Percentage Analysis of Demographic Data of Respondents (n=124)

S/N	VARIABLES	FREQUENCY	PERCENTAGE (%)
1.	Age range		
	15-20 years old	32	26.2
	21-25 years old	69	55.9
	26-30 years old	18	14.6
	31-40 years old	4	3.3
	Total	124	100.0
2.	Gender		
	Male	44	35.7
	Female	80	64.3
	Total	124	100.0
3.	Marital Status		
	Married	8	6.4
	Single	115	92.8
	Separated	1	0.8
	Total	124	100.0
4.	Ethnicity		
	Yoruba	110	88.4
	Igbo	6	5.0
	Hausa	1	0.8
	Others	7	5.8
	Total	124	100.0
5.	Religion		
	Christianity	89	72.1
	Islam	33	25.7
	Traditional	3	2.2
	Total	124	100.0
6.	Level Currently		
	100	6	4.6
	200	17	13.8
	300	30	24.0
	400	52	42.3
	500	19	15.3
	Total	124	100.0
7.	Department		
	Physiotherapy	43	34.5
	Medical Laboratory Science	24	19.3

Anatomy	11	8.8
Physiology	16	12.6
Public Health Science	31	24.8
Total	124	100.0

4.2 NECK PAIN AMONG THE STUDY POPULATION

As illustrated in Table 2, the distribution of neck pain across the study population exhibited marked differences in severity levels among various daily activities. Notably, the prevalence of moderate disability was most significant in relation to neck pain itself, with 60 participants (48.4%) indicating this level, followed by 22 (17.7%) with mild symptoms, 20 (16.1%) with severe symptoms, 18 (14.5%) with minimal discomfort, and only 4 (3.2%) reporting extreme cases, yielding a mean score of 1.76. Personal care was predominantly reported as mildly disabling, with 58 respondents (46.8%) indicating mild interference, 30 (24.2%) moderate, 16 (12.9%) minimal, 15 (12.1%) severe, and 5 (4.0%) extreme interference, reflecting a mean of 1.71. For lifting activities, 66 participants (53.2%) reported moderate disability, followed by 26 (21.0%) with severe symptoms, 14 (11.3%) with mild, 10 (8.1%) with minimal, and 8 (6.5%) experiencing extreme disability, which produced a slightly higher mean score of 1.85.

Reading emerged as a more burdensome activity, with 68 individuals (54.8%) reporting severe disability, 20 (16.1%) moderate, 16 (12.9%) extreme, 12 (9.7%) mild, and 8 (6.5%) minimal difficulty, culminating in a mean score of 2.29. Similarly, headaches were a major disabling factor, with 70 participants (56.5%) reporting severe intensity, 22 (17.7%) moderate, 16 (12.9%) extreme, 10 (8.1%) mild, and 6 (4.8%) minimal, leading to a slightly higher mean of 2.34. In terms of cognitive function, concentration challenges were primarily rated as mild by 60 individuals (48.4%), with 28 (22.6%) rating it moderate, 18 (14.5%) severe, 14 (11.3%) minimal, and 4 (3.2%) extreme, reflecting a lower overall mean of 1.63. Work-related activities were notably impacted, with 68 respondents (54.8%) experiencing severe interference, 20 (16.1%)

moderate, 15 (12.1%) extreme, 12 (9.7%) mild, and 9 (7.3%) minimal, culminating in a high mean of 2.31.

Driving showed the least interference among the listed activities, with the majority, 74 participants (59.7%), indicating minimal disability, 26 (21.0%) mild, 14 (11.3%) moderate, 8 (6.5%) severe, and only 2 (1.6%) extreme, reflecting the lowest mean score of 1.30. Sleeping also had a prominent moderate impact, with 62 individuals (50.0%) reporting this level, 28 (22.6%) severe, 14 (11.3%) mild, 12 (9.7%) minimal, and 8 (6.5%) extreme disability, resulting in a mean of 1.84. Recreation-related activities saw a significant number of mild cases, with 60 participants (48.4%), followed by 24 (19.4%) moderate, 22 (17.7%) severe, 10 (8.1%) minimal, and 8 (6.5%) extreme reports, yielding a mean score of 1.66. In the overall totals, moderate disability was most frequently reported with 34 respondents (27.9%), closely followed by severe cases with 37 individuals (30.1%), mild with 29 (23.2%), minimal with 18 (14.3%), and only 6 (4.5%) extreme, confirming the predominance of moderate to severe disability patterns across the studied population. Overall, It was revealed that headaches, reading, work-related tasks, sleeping and lifting were the most common risk factors for neck pain among the study population.

4.2.1 OVERALL PREVALENCE OF NECK PAIN AMONG THE STUDY POPULATION

In figure 1, It was shown that the overall prevalence of neck pain among the study population was considerably high, with all 124 participants (100.0%) reporting varying levels of discomfort. Of these, 18 individuals (14.5%) experienced minimal pain, 22 (17.7%) reported mild pain, 60 (48.4%) had moderate pain, 20 (16.1%) experienced severe pain, while 4 (3.2%) reported extreme pain. This indicates that there is a prevalence of neck pain among the population, with the majority experiencing it at a moderate intensity level.

4.2.2 MOST COMMON RISK FACTORS FOR NECK PAIN AMONG THE STUDY POPULATION

As shown in figure 2, risk factors for neck pain among the study population to neck pain, revealed that Headaches (13.82%), Work activities (13.64%), and Reading (13.53%) were the most significant contributors, indicating that these factors may place greater strain on the neck region. Lifting (10.93%) and Sleeping (10.87%) also showed notable influence, suggesting that both physical exertion and resting postures play important roles in neck discomfort. Personal Care (10.10%), Recreation (9.81%), and Concentration (9.63%) contributed moderately to the risk, while Driving (7.68%) showed the least influence among the factors assessed. Overall, these findings indicate that headaches, work-related tasks, and reading were the most common risk factors for neck pain among the study population.

Table 6: Prevalence of and Risk Factors for Neck Pain among Medical Students

S/N	Items	Minimal	Mild	Moderate	Severe	Extreme	Mean
1.	Neck Pain	18	22	60	20	4	1.76
	Pain Intensity	(14.5%)	(17.7%)	(48.4%)	(16.1%)	(3.2%)	
2.	Risk Factors	16	58	30	15	5	1.71
	Personal Care	(12.9%)	(46.8%)	(24.2%)	(12.1%)	(4.0%)	
3.	Lifting	10	14	66	26	8	1.85
		(8.1%)	(11.3%)	(53.2%)	(21.0%)	(6.5%)	
4.	Reading	8	12	20	68	16	2.29
		(6.5%)	(9.7%)	(16.1%)	(54.8%)	(12.9%)	
5.	Headaches	6	10	22	70	16	2.34
		(4.8%)	(8.1%)	(17.7%)	(56.5%)	(12.9%)	
6.	Concentration	14	60	28	18	4	1.63
		(11.3%)	(48.4%)	22.6%)	(14.5%)	(3.2%)	
7.	Work	9	12	20	68	15	2.31
		(7.3%)	(9.7%)	(16.1%)	(54.8%)	(12.1%)	
8.	Driving	74	26	14	8	2	1.30
		(59.7%)	(21.0%)	(11.3%)	(6.5%)	(1.6%)	
9.	Sleeping	12	14	62	28	8	1.84
		(9.7%)	(11.3%)	(50.0%)	(22.6%)	(6.5%)	
10.	Recreation	10(8.1%)	60	24	22	8	1.66
			(48.4%)	(19.4%)	(17.7%)	(6.5%)	
	Total	18	29	34	37	6	18.72
		(14.3%)	(23.2%)	(27.9%)	(30.1%	(4.5%))

Figure 3: Pattern of Neck Pain among the Study Population

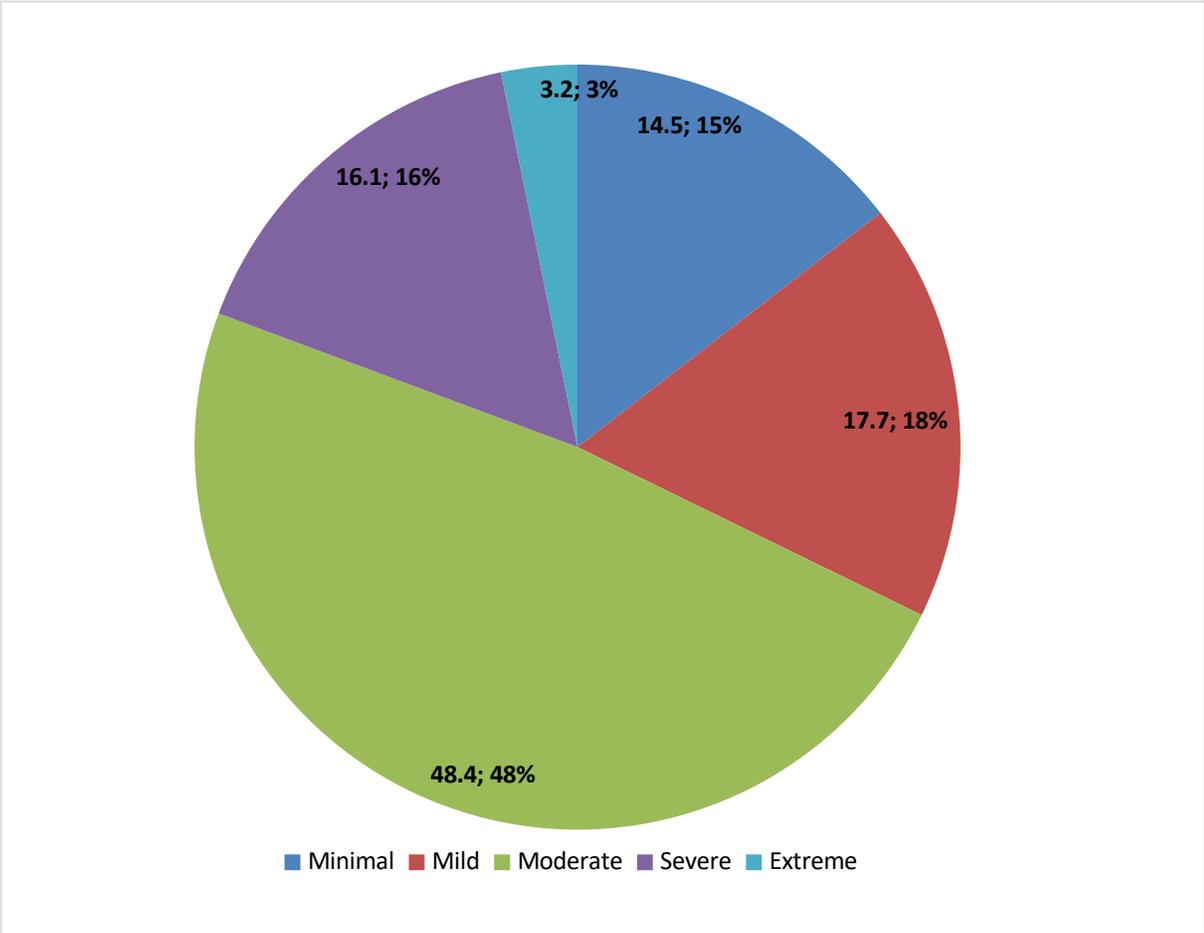
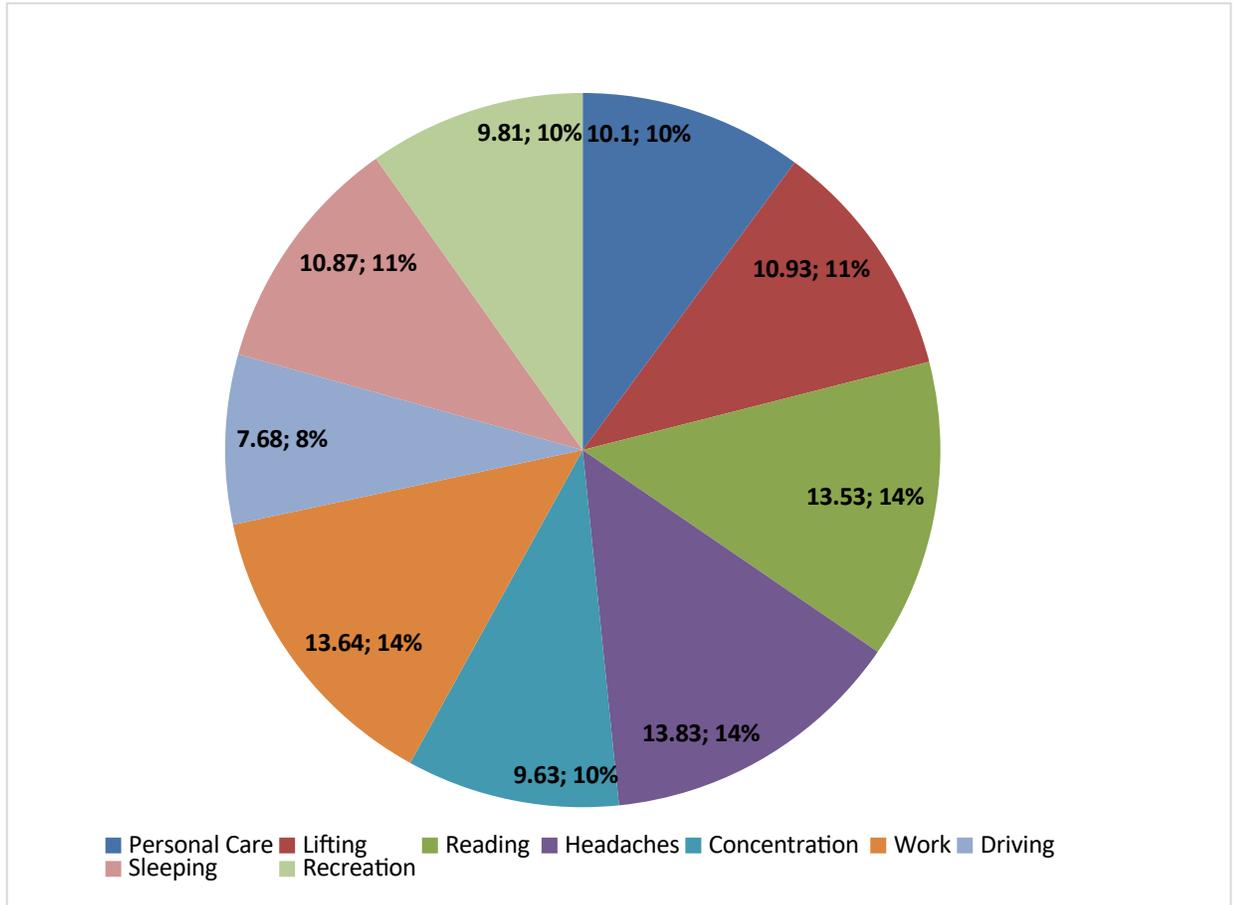


Figure 4: Common Risk Factors for Neck Pain among the Study Population



4.3: EFFECT OF NECK PAIN ON ACADEMIC PERFORMANCE AND PRODUCTIVITY OF MEDICAL STUDENTS

Table 3 indicated a calculated chi-square value of 2.85 and the table value of 16.92 with the degree of freedom 9 at 0.05 alpha level. Since the calculated chi-square value is lesser than the table chi-square (χ^2) value, there is a significant correlation. This implies that neck pain has an effect on academic performance and productivity of medical students.

Table 7: Chi-square (χ^2) Results of Neck Pain and Academic Performance and Productivity of Medical Students

Item	N	df	Calculated χ^2 value	Critical/ Table value	P-value χ^2	Remark
Effect of Neck Pain on Academic Performance and Productivity of Medical Students	124	9	2.85	16.92	0.001	Correlation Existed

@0.05 alpha level

$X^2 = 2.85$

df = 3

P = 0.001

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

This research explored the pattern and risk factors of neck pain and its impacts on the activities of daily living among students in faculty of basic medical and health sciences In thomas adewumi university,oko,kwara state, Nigeria. The study revealed a notable pattern of neck pain among the study population, with the majority experiencing it at a moderate intensity level, as 60 participants (48.4%) reported moderate pain, followed by 22 (17.7%) with mild pain, and 18 (14.5%) experiencing minimal pain. Severe and extreme pain were less frequent, reported by 20 (16.1%) and 4 (3.2%) participants respectively, indicating that neck pain is a significant issue affecting many individuals in this population. The most common risk factors for neck pain identified were headaches, work-related tasks, and reading, with mean scores of 2.34, 2.31, and 2.29 respectively, suggesting that these activities impose considerable strain on the cervical region. This aligns with the findings of Eubanks *et al.* (2010), who emphasized that repetitive activities such as prolonged reading and work-related postures contribute significantly to neck pain due to sustained muscle tension and poor ergonomic positioning. Additionally, headaches often co-occur with neck pain, further exacerbating discomfort and functional limitations.

The impact of neck pain on academic performance and productivity among medical students is considerable. Persistent neck pain and associated headaches can impair concentration and cognitive function, leading to reduced efficiency in study and clinical activities. Xu *et al.* (2020) support this by demonstrating that musculoskeletal

discomfort in the neck region negatively affects students' ability to focus and engage in learning tasks. Moreover, Alshagga *et al.* (2013) *et al.* reported that the physical and psychological burden of neck pain can lead to increased absenteeism and decreased academic achievement among medical students. Collectively, these findings report the need for targeted interventions to look into these risk factors and mitigate the adverse effects of neck pain on students' health and educational outcomes.

5.2 CONCLUSION

In conclusion, the study reveals a prevalent occurrence of neck pain among the population, with most individuals experiencing it at a moderate intensity level. Headaches, work-related tasks, and reading were identified as the primary risk factors contributing to neck pain, highlighting the significant impact of these activities on cervical discomfort. Furthermore, neck pain was found to adversely affect the academic performance and productivity of medical students, potentially impairing their concentration and learning efficiency. These findings depict the need for targeted preventive strategies and ergonomic interventions to reduce neck pain and support the well-being and educational success of the student population.

5.3 RECOMMENDATION

Based on the findings from the study, the following recommendations were made:

1. Ergonomic training programs should be implemented to educate medical students on proper posture during reading, work tasks, and other daily activities to reduce neck pain.

2. Regular breaks and stretching exercises should be encouraged during prolonged study or work sessions to alleviate muscle strain and prevent headaches.
3. Workplace and study environment modifications, such as adjustable chairs and desks, should be introduced to support better neck and spinal alignment.
4. Awareness campaigns on the impact of neck pain on academic performance and the importance of early reporting and management should be promoted.
5. Access to physiotherapy and medical support services should be facilitated for students experiencing moderate to severe neck pain to enhance recovery and productivity.

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APPENDIX I

INFORMED CONSENT FORM

Dear respondent,

My name is SOETAN AYOBAMI OLUWAFISAYO, a final year student of Physiotherapy department, Faculty of Basic Medical and Health Sciences ,Thomas Adewumi University. I am conducting a research titled “Prevalence Of Neck Pain Among Students In Faculty Of Basic Medical And Health Sciences In Thomas Adewumi University,Oko,Kwara State,Nigeria”. I will provide a Questionnaire that would require you to fill in some of your personal bio data, and other Research-appropriate data. It is hoped that the data gotten from this study would guide the determining the Pattern And Risk Factors Of Neck Pain And Its Impacts On The Activities Of Daily Living Among Students In Faculty Of Basic Medical And Health Sciences.

I _____ hereby testify that I have been fully informed about the research and what it entails. I therefore consent to be part of this research as a participant and promise to cooperate and be committed up to the end of the research.

Researcher's Signature

Respondent's Signatur

APPENDIX II

QUESTIONNAIRE

Neck Disability Index (NDI)

Patient Name: _____ Date: _____

Instructions:

This questionnaire is designed to help us understand how your neck pain affects your ability to manage everyday life. For each section, please select only one option that best describes your condition today.

Each section is scored from 0 to 5, with 0 = no disability and 5 = complete disability.

Pain Intensity

- (0) I have no pain at the moment
- (1) The pain is very mild at the moment
- (2) The pain is moderate at the moment
- (3) The pain is fairly severe at the moment
- (4) The pain is very severe at the moment
- (5) The pain is the worst imaginable

Personal Care (Washing, Dressing, etc.)

- (0) I can look after myself normally without causing extra pain
- (1) I can look after myself normally but it causes extra pain
- (2) It is painful to look after myself and I am slow and careful
- (3) I need some help but manage most of my personal care
- (4) I need help every day in most aspects of self-care
- (5) I do not get dressed, wash with difficulty, and stay in bed

Lifting

- (0) I can lift heavy weights without extra pain
- (1) I can lift heavy weights but it gives extra pain
- (2) Pain prevents me from lifting heavy weights off the floor, but I can manage if they are on a table
- (3) Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned
- (4) I can lift very light weights
- (5) I cannot lift or carry anything at all

Reading

- (0) I can read as much as I want with no pain in my neck
- (1) I can read as much as I want with slight pain in my neck
- (2) I can read as much as I want with moderate pain in my neck
- (3) I can't read as much as I want because of moderate pain in my neck
- (4) I can hardly read at all because of severe pain in my neck
- (5) I cannot read at all

Headaches

- (0) I have no headaches at all
- (1) I have slight headaches that come infrequently
- (2) I have moderate headaches that come infrequently
- (3) I have moderate headaches that come frequently
- (4) I have severe headaches that come frequently
- (5) I have headaches almost all the time

Concentration

- (0) I can concentrate fully without difficulty
- (1) I can concentrate fully with slight difficulty
- (2) I have a fair degree of difficulty concentrating
- (3) I have a lot of difficulty concentrating
- (4) I have a great deal of difficulty concentrating
- (5) I cannot concentrate at all

Work

- (0) I can do as much work as I want
- (1) I can only do my usual work but no more
- (2) I can do most of my usual work, but no more
- (3) I cannot do my usual work
- (4) I can hardly do any work at all
- (5) I can't do any work at all

Driving

- (0) I can drive my car without any neck pain
- (1) I can drive my car as long as I want with slight pain in my neck
- (2) I can drive my car as long as I want with moderate pain in my neck
- (3) I can't drive my car as long as I want because of moderate pain
- (4) I can hardly drive at all because of severe pain in my neck
- (5) I can't drive my car at all

Sleeping

- (0) I have no trouble sleeping
- (1) My sleep is slightly disturbed (less than 1 hour sleepless)
- (2) My sleep is mildly disturbed (1–2 hours sleepless)
- (3) My sleep is moderately disturbed (2–3 hours sleepless)
- (4) My sleep is greatly disturbed (3–5 hours sleepless)
- (5) My sleep is completely disturbed (5–7 hours sleepless)

Recreation

- (0) I am able to engage in all recreational activities with no neck pain
- (1) I am able to engage in all recreational activities with some neck pain
- (2) I am able to engage in most, but not all, recreational activities because of neck pain
- (3) I am able to engage in a few recreational activities because of neck pain
- (4) I can hardly do any recreational activities because of neck pain
- (5) I cannot do any recreational activities at all

Scoring Instructions:

Add the score from each section.

Maximum Score = 50

Neck Disability (%) = $(\text{Total Score} \div 50) \times 100$

Interpretation:

0–4 = No disability

5–14 = Mild disability

15–24 = Moderate disability

25–34 = Severe disability

35–50 = Complete disability

APPENDIX III

ETHICAL APPROVAL

UNIVERSITY OF ILORIN TEACHING HOSPITAL

Chairman:

Chief Medical Director:

PROF. YUSSUF ABDULLAH D.
(MB; BS., FMC Psych., Cert. Health Plan. & Mgt.,
Cert. Health Inform. Mgt., MCH, FBA, FAPA, FCAI)

As Chairman, Medical Advisory Committee:

PROF. BILAMINU S.A.
MB; BS., (Ilorin), FMCPath;
Cert. in Clin. Embryology (Chennai).

Director of Administration:

MR. A.F. AGBANA
B.Sc., M.Sc., FCAL, NACHE, MIHM, AHAN.



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Our Ref: UITH/CAT/189/VOL.21/833

Date: 26/11/2024

Soatan Ayobami Fisayo
Dept. of Physiotherapy,
Faculty of Health Sciences,
Thomas Adewumi University
Oko
Kwara State.

APPROVAL TO COLLECT DATA FROM THE HOSPITAL

Please refer to your application on the above subject matter.

I am directed to convey Management's approval of your request to collect data from the Hospital. You are please requested to use the data strictly for the purpose stated in your application.

Dr. Akinwale S.G. is to give close supervision to this study.

Thank you

Mr. R. T. Lawal
Secretary, HREC



APPENDIX IV

RAW DATA

A1

Age Range	Frequency	Percent	Valid Percent	Cumulative Percent
15–20 years old	32	26.2	26.2	26.2
21–25 years old	69	55.9	55.9	82.1
26–30 years old	18	14.6	14.6	96.7
31–40 years old	4	3.3	3.3	100.0
Total	124	100.0	100.0	

A2

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	44	35.7	35.7	35.7
Female	80	64.3	64.3	100.0
Total	124	100.0	100.0	

A3

Marital Status	Frequency	Percent	Valid Percent	Cumulative Percent
Married	8	6.4	6.4	6.4
Single	115	92.8	92.8	99.2
Separated	1	0.8	0.8	100.0
Total	124	100.0	100.0	

A4

Ethnicity	Frequency	Percent	Valid Percent	Cumulative Percent
Yoruba	110	88.4	88.4	88.4
Igbo	6	5.0	5.0	93.4
Hausa	1	0.8	0.8	94.2
Others	7	5.8	5.8	100.0
Total	124	100.0	100.0	

A5

Religion	Frequency	Percent	Valid Percent	Cumulative Percent
Christianity	89	72.1	72.1	72.1
Islam	33	25.7	25.7	97.8
Traditional	3	2.2	2.2	100.0
Total	124	100.0	100.0	

A6

Level	Frequency	Percent	Valid Percent	Cumulative Percent
100	6	4.6	4.6	4.6
200	17	13.8	13.8	18.4
300	30	24.0	24.0	42.4
400	52	42.3	42.3	84.7
500	19	15.3	15.3	100.0
Total	124	100.0	100.0	

A7

Department	Frequency	Percent	Valid Percent	Cumulative Percent
Physiotherapy	43	34.5	34.5	34.5
Medical Laboratory Science	24	19.3	19.3	53.8
Anatomy	11	8.8	8.8	62.6
Physiology	16	12.6	12.6	75.2
Public Health Science	30	24.8	24.8	100.0
Total	124	100.0	100.0	

B1

Item	Response	Frequency	Percent	Valid Percent	Cumulative Percent	Mean
Neck Pain	Minimal	18	14.5	14.5	14.5	1.7627
	Mild	22	17.7	17.7	32.2	
	Moderate	60	48.4	48.4	80.6	
	Severe	20	16.1	16.1	96.7	
	Extreme	4	3.2	3.2	100.0	
Personal Care	Minimal	16	12.9	12.9	12.9	1.7118
	Mild	58	46.8	46.8	59.7	
	Moderate	30	24.2	24.2	83.9	
	Severe	15	12.1	12.1	96.0	
	Extreme	5	4.0	4.0	100.0	
Lifting	Minimal	10	8.1	8.1	8.1	1.8520
	Mild	14	11.3	11.3	19.4	
	Moderate	66	53.2	53.2	72.6	
	Severe	26	21.0	21.0	93.6	
	Extreme	8	6.5	6.5	100.0	
Reading	Minimal	8	6.5	6.5	6.5	2.2845
	Mild	12	9.7	9.7	16.2	
	Moderate	20	16.1	16.1	32.3	
	Severe	68	54.8	54.8	87.1	
	Extreme	16	12.9	12.9	100.0	

Headaches	Minimal	6	4.8	4.8	4.8	2.3373
	Mild	10	8.1	8.1	12.9	
	Moderate	22	17.7	17.7	30.6	
	Severe	70	56.5	56.5	87.1	
	Extreme	16	12.9	12.9	100.0	
Concentration	Minimal	14	11.3	11.3	11.3	1.6322
	Mild	60	48.4	48.4	59.7	
	Moderate	28	22.6	22.6	82.3	
	Severe	18	14.5	14.5	96.8	
	Extreme	4	3.2	3.2	100.0	
Work	Minimal	9	7.3	7.3	7.3	2.3135
	Mild	12	9.7	9.7	17.0	
	Moderate	20	16.1	16.1	33.1	
	Severe	68	54.8	54.8	87.9	
	Extreme	15	12.1	12.1	100.0	
Driving	Minimal	74	59.7	59.7	59.7	1.3039
	Mild	26	21.0	21.0	80.7	
	Moderate	14	11.3	11.3	92.0	
	Severe	8	6.5	6.5	98.5	
	Extreme	2	1.6	1.6	100.0	
Sleeping	Minimal	12	9.7	9.7	9.7	1.8431
	Mild	14	11.3	11.3	21.0	
	Moderate	62	50.0	50.0	71.0	
	Severe	28	22.6	22.6	93.6	

	Extreme	8	6.5	6.5	100.0	
Recreation	Minimal	10	8.1	8.1	8.1	1.6644
	Mild	60	48.4	48.4	56.5	
	Moderate	24	19.4	19.4	75.9	
	Severe	22	17.7	17.7	93.6	
	Extreme	8	6.5	6.5	100.0	

Chi-Square Analysis

Chi-Square Test

Test Statistics

	SUM
Chi-Square	2.8541 ^a
df	3
Asymp. Sig.	.001