The epidemiology of neck pain within the indigenous African population in Harare, Zimbabwe.

BY

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DEDICATION

“He who began a good work is faithful to complete it” phillipians 1:6.

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ABSTRACT

Background

Musculoskeletal disorders are the leading cause of disability and can impair the quality of life. Of these musculoskeletal disorders, neck pain is one of the most common. Some of the risk factors for neck pain among the African population include low level of education, high-stress levels, low income and motor vehicle accidents. In the international arena, a broad range of risk factors contribute to chronic neck pain. These include female gender, increasing age, poor posture and work habits, twisting and bending of the neck and trunk, low–co-worker support, low socio-economic status and psychosocial factors such as stress and depression. Neck pain presents differently in different populations.

The epidemiology of neck pain has not been investigated in Zimbabwe. In this country factors such as economic instability, disruption of social trust, uncertainty about income, high crime rate, unstable healthcare and low morale in the working population have led to the development of psychological disorders such as stress, anxiety, and depression. Furthermore, there has also recently been an increase of vehicle use in Zimbabwe, with concomitant motor vehicle accidents. All of these factors may predispose this population to musculoskeletal pain such as neck pain. However, this requires investigation.

This study aimed to estimate the prevalence, risk factors and impact of neck pain in the indigenous African population in Harare, Zimbabwe.

Methodology

This was a quantitative cross-sectional study based on a previously validated questionnaire sourced from Smith (2016) and conducted in Harare, Zimbabwe. Participants (n = 461) answered a self-administered questionnaire after providing informed consent. The data collected from the questionnaires were captured into an excel spreadsheet and subsequently statistically analysed using SPSS.

Standard deviation and mean reports are represented by (mean ± SD) within the text. Where standard deviation is represented by (SD). Tables, graphs and charts were used to present the data.

The Inferential analysis was conducted using cross tabulations (interpreted using the Pearson chi- Squared test). The bivariate analysis was done using a Chi-Squared test (Interpreted using the Pearson`s chi-squared test). Odds ratios (OR) were calculated using binary logistic

regression, This calculation was used to find dependant variables on an existent independent variable (Willemse 2009: 121). The 95% confidence intervals (CI) were calculated for Odds Ratios and for prevalence (Johnson and Bhattacharyya 2000: 331). A significance of a *p*-value less than 0.05 was used throughout.

Results

A total of 461 questionnaires were completed by participants in Harare, Zimbabwe. The point prevalence and 12-month prevalence was 16.4% (95% CI: 0.13 – 0.20) and 26.9% (95% CI: 0.22 – 0.31) respectively. The lifetime prevalence of neck pain was 49% (95% CI: 0.44 – 0.53).

Within this population, age was significantly associated with neck pain ($p < 0.001$) with a larger prevalence within the age group 20 – 35 years. The odds of self-reported neck pain are 2.5 times greater for those with the exposure of self-reported stress compared to the participants without the exposure of self-reported stress (Odds Ratio = 2.5; 95%CI: 1.121 – 5.734; $p = 0.025$). Lack of finances (22.6%, n =104), work (18%, n =83) and poor living conditions (5.6%, n =26) were the main stressors identified among the participants. Other associations found for neck pain in this population were motor vehicle accidents ($p < 0.001$) and poor eyesight ($p < 0.001$). There was an association of neck pain with headaches ($p = 0.023$), shoulder pain ($p < 0.001$) and low back pain ($p < 0.001$).

Conclusion

Neck pain was prevalent within the indigenous population of Harare, Zimbabwe. Factors that were associated with neck pain in the sample population included stress, age, headaches, shoulder pain, low back pain, motor vehicle accidents, and poor eyesight.

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CHAPTER 1: INTRODUCTION

1.1 Background of the study

Neck pain is one of the most widespread and costly musculoskeletal disorders in the developed and developing world (Webb et al. 2003; Ndlovu 2006: 92; Cohen 2015). The point prevalence of neck pain commonly exceeds 30% (Guez et al. 2002b; Cohen 2015). The tendency towards chronicity (30%) with lifetime prevalence (70%) is particularly high within populations. The recovery rate of neck pain ranges between 33 – 65%, however resolution of symptoms is not common leading to many people experiencing episodic cases throughout their lifetime (Hoy et al. 2011). Within developed countries the prevalence of neck pain was highest amongst the high income earning females in urban areas (Hoy *et al.* 2011), while studies within developing countries show that the prevalence of neck pain is highest within the low income, uneducated and highly stressed individuals (Ndlovu 2006: 91). Neck pain is multidimensional with risks that include psychosocial, socioeconomic, occupation related and individual factors. The latter includes variables such as gender (mainly female), age (seniors), marital status, education (low levels), smoking, lack of exercise and poor sleep (Hush, Maher and Refshauge 2006; Cagnie *et al.* 2007; Hoy *et al.* 2011). Occupational factors include duration of work, high physical demands, poor ergonomic behaviors and repetitive work (Hush, Maher and Refshauge 2006; Larsson *et al.* 2007). White collar work-related risk factors include computer and mouse usage, forward flexing of neck, twisting of the trunk and mental exhaustion (Ariens *et al.* 2001; Hush, Maher and Refshauge 2006; Cagnie *et al.* 2007; Larsson *et al.* 2007). Psychosocial influences include stress, social support, job satisfaction and high job demands (Cagnie *et al.* 2007) .

1.2 Research problem

In Zimbabwe, social trust has been broken, due to a lack of economic stability (switching to foreign currencies, selling on the black market, hoarding of money and/or consumables) which places a strain on individuals. The uncertainty about income, food sources, high crime, unstable health care and schooling systems, low morale in the working population; all provide a unique set of circumstances that place additional stress resulting in psychological disorders which physiologically provoke pain (Antonio 2015; Maushe and Mugumbate 2015; Hakimi and Munro 2016; Oyedele and Chikwature 2016).The population has seen an increase in motor vehicle use which may predispose the population to an increased number of car accidents and whiplash injuries which are risk factors for neck pain within the indigenous African population in Kwa-Zulu-Natal (Yadla, Ratliff and Harrop 2008; Muleya 2017). However, it has yet to be established whether the population does indeed have a greater predisposition to

neck pain as to date no epidemiological study on neck pain in Zimbabwe has been conducted. The outcome of this research would allow for comparison between similar studies which were conducted in other parts of Africa as well as the rest of the world. The findings will determine whether the current management plans for neck pain are appropriate in Zimbabwe.

1.3 Aim

This study aims to determine the prevalence, risk factors and impact of neck pain in the indigenous African population in Harare, Zimbabwe.

1.4 Objectives

To estimate the prevalence of neck pain in the indigenous African population of Harare.

To estimate the impact of neck pain in the indigenous African population of Harare.

To identify factors associated with prevalent neck pain in the indigenous African population of Harare.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of the literature on neck pain. Focus is directed at the anatomy of the cervical spine, causes, epidemiology and risk factors of neck pain. The following search engines were used to source the data: Google scholar, Summon, Pubmed, ScienceDirect. The key words utilised to source the relevant information were: cervical anatomy, neck pain, neck pain prevalence, neck pain incidence and neck pain risk factors. The number of articles identified and utilised in the literature review were fifty-six.

2.2 Anatomy of the spine

The spine serves to provide an axis for movement, supports the weight of the body and protects the spinal cord and other nervous structures (Moore, Dalley and Agur 2010: 440). The cervical spine consists of seven vertebrae, that extend from the base of the skull to the thorax (Drake, Vogl and Mitchell 2005: 26; Moore, Dalley and Agur 2010: 440).

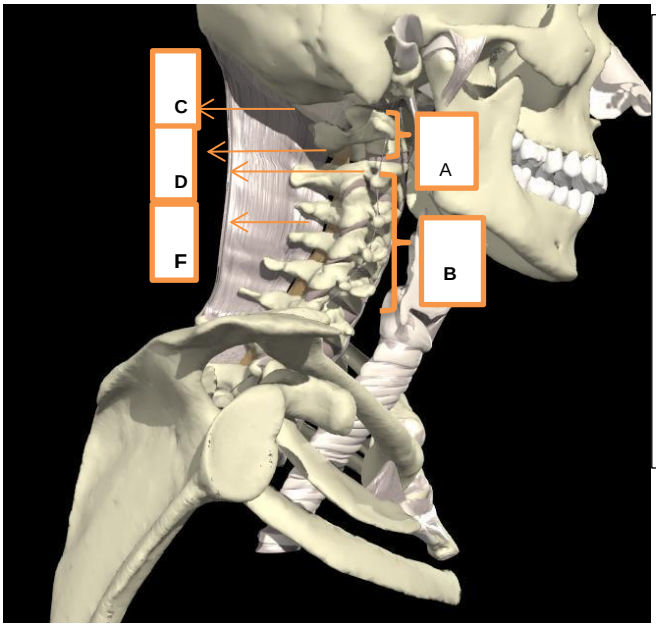
The cervical spine curves on an average of 34 degrees posteriorly and this is known as a lordosis (Lippa, Lippa and Cacciola 2017). The cervical lordosis functions to absorb shock and is maintained by the intervertebral discs and the deep cervical muscles (Sasai *et al.* 2000; Moore, Dalley and Agur 2013: 471).

2.2.1 Osseous structures of the spine

The anatomy of the spine is divided into the cervical, thoracic, lumbar, sacral and coccygeal segments, comprising of thirty three vertebrae; seven cervical, twelve thoracic, five lumbar, five fused sacral and four fused coccygeal vertebrae (Moore, Dalley and Agur 2010: 440).

2.2.2 Cervical vertebrae

The cervical spine consists of cervico-cranial and typical regions as shown in Figure 2.1.



A: Cervico-cranial region

B: Typical cervical region

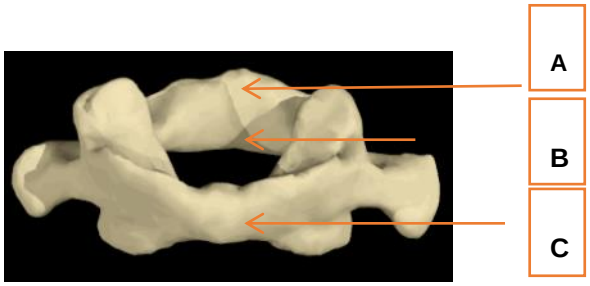
C: Spinous process

D: Facet joint

E: Intervertebral disc

Figure 2.1 Anatomical structure of the lateral view of the cervical spine.
Adapted from Meyer (2014: 7).

The first cervical vertebra (C1) is known as the atlas. As shown in Figure 2.2 ,it is made up of two lateral masses connected by an anterior and posterior arch (O'Rahilly *et al.* 2008).The lateral masses articulate with the base of the skull (occiput) above and the second vertebrae below (O'Rahilly *et al.* 2008).



A: Posterior facet

B: Lateral mass

C: Anterior tubercle

Figure 2.2 Anatomical structure of the atlas (C1).
Adapted from Ndlovu (2006:9)

The second cervical vertebra is known as the axis. As seen in Figure 2.3, the key feature of the axis is the odontoid process, which articulates with the anterior arch of the atlas (C1) by extending upward from the body towards the occiput where it is secured by the apical, alar and transverse ligaments (O'Rahilly *et al.* 2008).

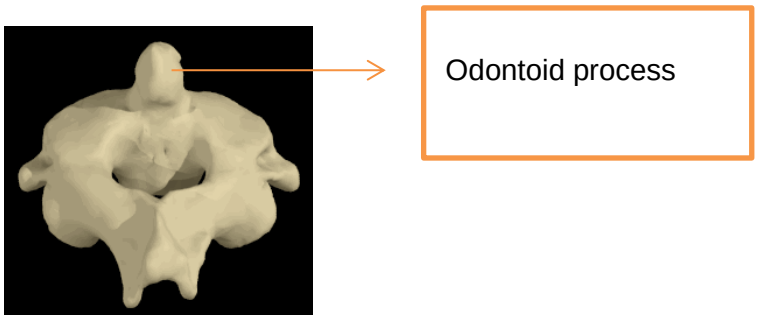


Figure 2.3 Anatomical structure of the axis (C2).
Adapted from Ndlovu (2006:9)

The vertebrae of the cervical spine contain seven processes, including: a spinous, two transverse and four articular processes (Standring 2015: 721). The spinous and transverse process, as seen in Figure 2.4 and 2.5, are directed postero-inferiorly and postero-laterally and are important for the attachment of the deep cervical muscles (Murphy 2000: 16-17; Moore, Dalley and Agur 2010: 446; Standring 2015: 721). Articular processes project upward from the lower vertebrae and downwards from the upper vertebrae forming a facet joint between the two vertebrae (Moore, Dalley and Agur 2013: 446).

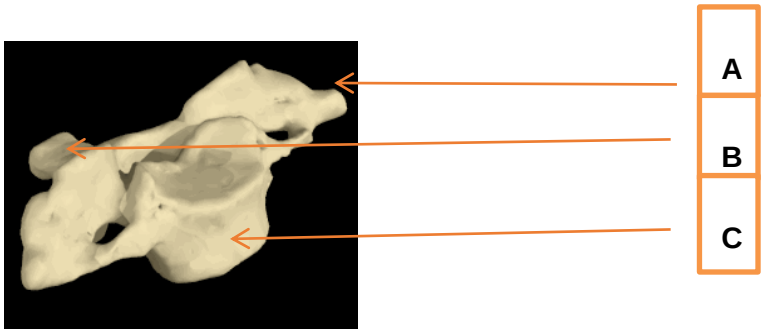


Figure 2.4 Anatomical structure of the typical vertebral body (C3-C6) from an anterior view.

Adapted from Ndlovu (2006:10)

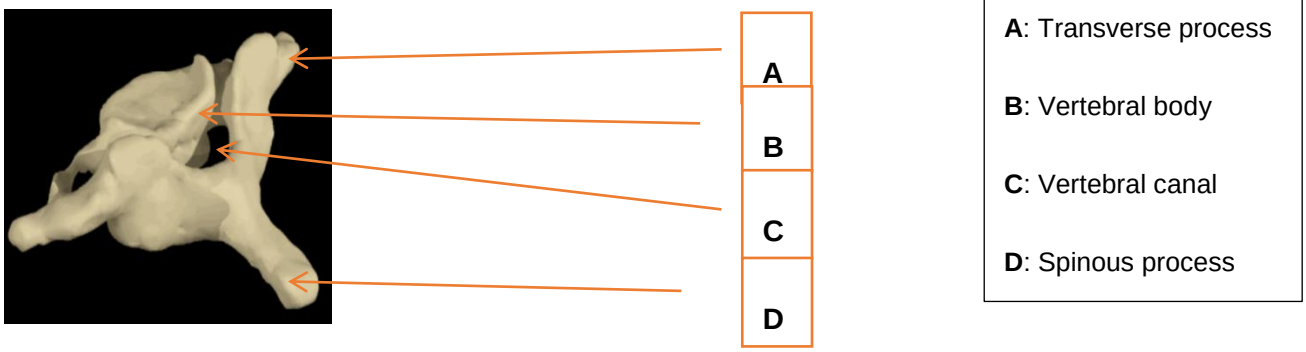


Figure 2.5 Anatomical structure of the typical vertebrae (C3-C6) from the posterior view.
Adapted from Ndlovu (2006:10)

The vertebral canal is a space within the vertebral column that houses the spinal cord, meninges, nerve roots, arteries, veins and nerves (Moore, Dalley and Agur 2013: 496) . These structures exit the vertebral canal through the opening (intervertebral foramina) between the lateral aspects of two adjacent vertebral bodies (Moore, Dalley and Agur 2013: 496; Cramer and Darby 2014; Standring 2015: 720). Encroachment of the vertebral canal and intervertebral foramina by space occupying lesions such as bulging discs, degenerative disorders or tumors cause impingement symptoms including pain, numbness and tingling in the related nerve distribution (Cuchanski et al. 2011).

2.2.3 Articulations and ligaments

2.2.3.1 Cervical vertebral joints

Cartilaginous joints in the cervical region include intervertebral discs, arches, atlanto-axial and costovertebral joints (Moore, Dalley and Agur 2010: 443). These are useful for weight bearing, strength and static positions, flexibility, load transmission and shock absorption during axial and torsional movements of the intervertebral disc (Moore, Dalley and Agur 2010: 471). The sum of movements includes flexion, extension, lateral flexion and axial rotation.

The first pair of cervical joints (Atlanto-occipital) are found between the occiput and the atlas. These joints are classified as synovial condyloid with fibrous capsules (Moore, Dalley and Agur 2010: 447).The articulation is made up of the occipital condyles and the lateral masses of the atlas, allowing an approximate of five degrees lateral flexion and twenty five degrees flexion-extension (Bergmann and Peterson 2011: 152-153). The blood supply is maintained by the branches of the cervical, vertebral and occipital arteries while the anterior ramus of the cervical spinal nerves is responsible for innervation (Standring 2015: 723).

The atlanto-axial joint articulates between the atlas (C1) and the axis (C2). Classified as a synovial plane joint, the superior aspect of the axis (C2) articulates with the inferior aspect of the lateral masses of the atlas (C1) (Standring 2015: 736-737). In the same region a pivot joint is formed as the transverse ligament holds the anterior surface of the odontoid process (Fig 2.3) against the posterior aspect of the anterior arch of the atlas (Standring 2015: 736-737). The atlanto-axial and atlanto-occipital articulations share the same blood and nerve supply (Standring 2015: 738).

The uncinate process (Joints of Von Lushka) found between C3 and C7 vertebral bodies are located laterally and posteriorly to the margins of the intervertebral discs. Bony spurs (Osteoarthrosis) are commonly found in the uncinate process and can cause neck pain (Moore, Dalley and Agur 2013: 463).

Facet joints are plane synovial articulations that allow a wide range of movement due to their loose capsule and hyaline cartilage. The facet articulations are supplied by the posterior spinal branches and are innervated by the posterior rami of the spinal nerves (Standring 2015: 735)

Intervertebral discs (IVD) are fibrocartilaginous symphysis joints and account for an average of 22.5% of the length of the spinal column (Isaacs and Bookhout 2002: 22; Moore, Dalley and Agur 2010: 440). The IVDs rely on diffusion from the vertebral body above and below for nutrition, however, the periphery is supplied by branches of the spinal artery that supply the spinal column (Standring 2015: 734). The internal and external vertebral venous plexus are responsible for venous drainage (Moore, Dalley and Agur 2010: 504). Innervation is limited to the outer one third and is supplied by the sinuvertebral and corresponding spinal nerves (Standring 2015: 734).

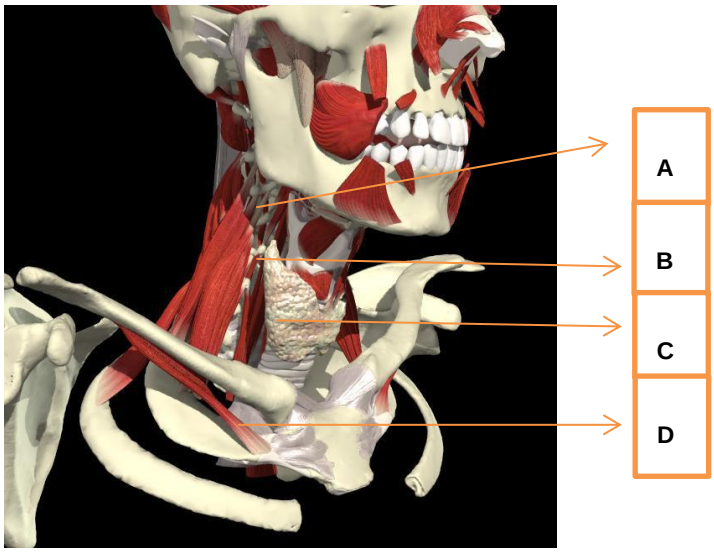
2.2.3.2 Cervical vertebral ligaments

The anterior and posterior longitudinal ligaments are the main ligaments that connect the anterior and posterior aspects of the vertebral bodies and intervertebral discs. As mentioned above, the transverse ligament secures the odontoid process against the anterior arch of the atlas (C1) and the alar ligaments secures the atlas (C1) to the skull (Standring 2015: 737).

Spinal ligaments include accessory, ligamentum flavum, interspinous, nuchal, intertransverse and longitudinal ligaments (Murphy 2000: 10; Moore, Dalley and Agur 2006: 466; Standring 2015: 736-740). Laminae separation is prevented by the ligamentum flavum (Moore, Dalley and Agur 2006: 466). The interspinous, supraspinous and nuchal ligament connect the spinous process between each spinous process and between the foramen magnum and the external occipital protuberance (Moore, Dalley and Agur 2006; Standring 2015: 732). The transverse processes are connected by the intertransverse ligament (Standring 2015: 732).

2.3 Musculature

Deep muscles are responsible for movement (mainly extension) and postural proprioception. These muscles, as shown in Figure 2.6, originate from the anterior aspect of the spine and attach to the atlas (anterior arch) and midline of the vertebral bodies working intricately with the sternocleidomastoid and anterior neck muscles, to resist sudden backward movement (Moore, Dalley and Agur 2006: 489). The muscles located lateral to the spinal column attach to the base of the skull, spinous and transverse processes from the cervical to the lumbar vertebrae. They are responsible for postural and motor control (Moore, Dalley and Agur 2006: 486; O'Sullivan 2006). The sub-occipital muscles balance the skull on the superior aspect of the cervical spine (Moore, Dalley and Agur 2006: 494-496).



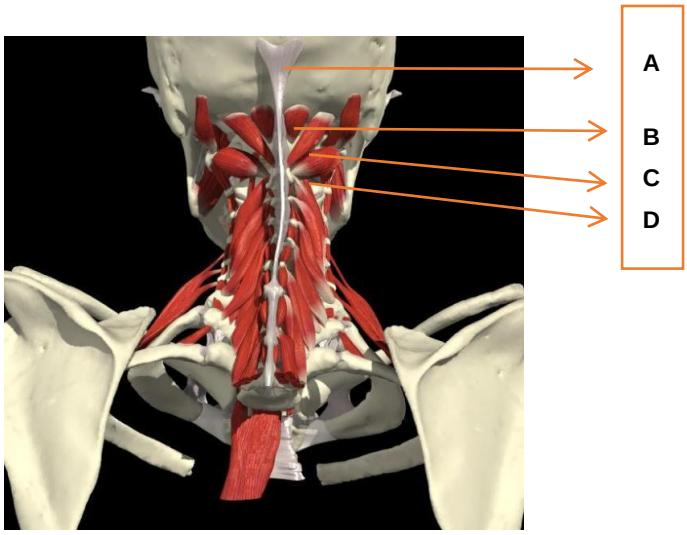
A: Scalene Medius

B: Scalene Anterior

C: Scalene posterior

D: Subclavius

Figure 2.6 Anatomical image of the anterior cervical muscles.
Adapted from Meyer (2014:14)



A: External protuberance

B: Rectus capitis posterior minor

C: Rectus capitis posterior major

Figure 2.7 Anatomical image of the posterior cervical muscles.
Adapted from Meyer (2014: 17)

2.3.1 Cervical spine vasculature and innervation

2.3.1.1 Arterial supply

A combination of the following arteries and their branches supply the intrinsic / deep layer of cervical muscles; deep and superficial cervical arteries, vertebral arteries, occipital arteries,

intercostal and subcostal arteries (Standring 2015: 757-758). The descending branches of the vertebral and occipital arteries are responsible for the vascular supply of the sub occipital muscles (Murphy 2000: 22).

2.3.1.2 Nerves of the cervical spine

The spinal cord is a cylindrical shaped cord, which is located in the spinal canal as a continuation of the dorsal aspect of the brainstem. It is the communication pathway and reflex centre, between the brain and the rest of the body. In the cervical spine, the spinal cord is larger than the rest of the spine, particularly so in C4 to T1 segments, where the brachial plexus is situated. The brachial plexus functions to innervate the muscles of the neck and upper extremity (Moore, Dalley and Agur 2010; Standring 2015: 464). Innervation occurs via the ventral rami, dorsal rami (middle and posterior branches) from the level of a segment above and below, as shown in Table 2.1. The vertebral column is innervated very well, therefore any pathology of the vertebral complex can contribute significantly to neck pain (Leach 2004: 146).

Table 2.1 Innervation of cervical musculature.

Nerve root	Supplies	Links
CI:	Small sub occipital muscles.	anterior ramus ↓ hypoglossal nerve ↓ *descendens hypoglossi*
The posterior rami of C2, C3 and C4	muscular and sensory branches to the back	
Anterior rami of C2, C3 and C4	muscular branches: *skin in the parotid region (GA), skin of the neck and the upper portion of the thorax (the remainder)*	*including:descendens cervicalis, the greater* *auricular (GA), lesser occipital, anterior cutaneous, and the supraclavicular nerves*
cervical nerves (C5-C8)	Production of pain (nerve endings stimulated by inflammatory and pathological processes).	Brachial plexus (similarly to the thoracic spinal nerves).

Adapted from Moore, Dalley and Agur (2010:473-474).

2.4 Neck pain

Neck pain is diagnosed when the source of the pain/ stiffness is found in the cervical region between the occiput and the seventh cervical vertebrae. The symptom distribution includes the head, jaw, upper limb including the nerve myotomal and dermatomal patterns (Ferrari and Russell 2003).

2.4.1 Diagnosis

Diagnosis of neck pain is determined by the patients' complaint and the doctor`s physical examination as either acute, subacute or chronic (Larsson *et al.* 2007). An acute diagnosis is made from the onset of pain until three-month duration. It is typically caused by muscle, tendon or ligament strain due to high impact trauma. A subacute diagnosis is made within seven to twelve weeks of experiencing pain. It has a lengthy and ongoing commencement and can disappear and reappear with no intermittent symptoms (Chanda *et al.* 2011). Supporting

prevalence was observed by Siivola *et al.* (2004) who found that intermittent or weekly neck and shoulder pain was reported by 59% of the young adults in the USA. A chronic diagnosis is made when the pain presents for more than 3 months (Chanda *et al.* 2011). In North Carolina and Northern Sweden, a 2.2% and 19% neck pain chronicity was reported suggesting differences in chronicity in countries may be due to different contributing risk factors (Guez *et al.* 2002b; Goode, Freburger and Carey 2010). Andersen *et al.* (2003) found that 30% of neck pain patients progressed towards chronic neck pain.

2.4.2 Causes

Neck pain causes are found to be multifactorial, however, each have specific symptoms that allow a more specific diagnosis (Childs *et al.* 2004). Over stimulation of free nerve endings (also known as C-fibers) from chemical, mechanical or thermal factors lead to pain (Côté, Cassidy and Carroll 2003). Causes of neck pain, can therefore be classified as mechanical, non-mechanical, inflammatory, myofascial or radicular (Le Roux 2016).

2.4.2.1 Mechanical pain

Mechanical pain is of spinal origin, primarily due to dysfunction of the articular facet with no definitive pathology (Boon and Davidson 2006; Endean, Palmer and Coggon 2011). Mechanical pain is aggravated by physical and psychological stress and is typically relieved by rest (Endean, Palmer and Coggon 2011). Associated symptoms include; a history of repetitive neck movement, irregular range of motion, trauma and dysfunctional postures (Boon and Davidson 2006).

2.4.2.2 Non-mechanical pain

Non-mechanical pain is of pathological, traumatic or degenerative origin (Sherman *et al.* 2009). The origin of non - mechanical neck pain is not often easy to pinpoint because of the non-specific referral pain patterns to the occiput, temple, face, scapula, shoulder, arm or chest (Boon and Davidson 2006).

2.4.2.3 Inflammatory pain

Inflammation is a normal healing process, however, chronic inflammation within the joint leads to tissue damage. The released chemicals lead to increased blood flow resulting in swelling which can cause nerve stimulation and pain (Zelman 2016). Inflammatory pain is commonly found within the elderly with cervical spondylitis and rheumatoid arthritis. Symptoms include

gradual onset of pain in multiple segments of the spine and extremities, accompanied by morning stiffness (Boon and Davidson 2006).

2.4.2.4 Radicular pain

Radicular pain is a result of nerve root compression either by an osteophyte (excess bone formation) or herniation of an intervertebral disc (mostly C6 disc leading to C7 radiculopathy) (Boon and Davidson 2006). The C6 and C7 segment is a transitional area between the mobility of the cervical spine and the rigidity of the thoracic spine, which renders the disc at C6/7 susceptible to degeneration and herniation (Levine 2016). Disc degeneration, herniation and trauma may lead to symptoms that include sharp shooting pain down the shoulder, arm and hand with associated numbness and tingling (Moore and Dalley 2006: 476).

2.4.2.5 Myofascial pain

Myofascial pain is caused by muscle and fascial dysfunction from trauma and muscular overuse (Phillips and Froese 2016). Myofascial pain is poorly localized, ranging from mild discomfort and can be associated with paraesthia (Saxena *et al.* 2015). The patient may complain of a grating or clicking sensation with associated minor stiffness and hypo mobility. Treatment depends on the severity of the signs and symptoms and can be treated conservatively or surgically (Saxena *et al.* 2015). A more complicated version of myofascial neck pain has a longer duration of symptoms and results from a combination of different contributing factors, leading to a more complex assessment and treatment protocol.

2.4.3 Treatment options

Chiropractic manipulation and mobilization are successful treatment options for acute neck pain (Haneline 2006; Hurwitz *et al.* 2008). According to Bronfort *et al.* (2012) chiropractic manipulation was more effective than analgesics in the treatment of neck pain. Additional modalities such as transcutaneous electric powered nerve stimulation (TENS) or low-level laser therapy (LLLT) are helpful for short term symptom reduction. Rehabilitation in the form of cervical exercises, several times per week, is effective as a non- invasive treatment (Jensen and Harms-Ringdahl 2007; Hurwitz *et al.* 2008).

2.5 Epidemiology

2.5.1 Prevalence

Neck pain is one of the most common musculoskeletal disorders in developed countries, with the point prevalence ranging between 34.4% and 67.6% (Guez *et al.* 2002b; Webb *et al.* 2003;

Ijzelenberg and Burdorf 2004). The lifetime prevalence of 70% is particularly high with most first-time events occurring in childhood and adolescence (Cagnie et al. 2007; Hoy et al. 2011).

In the international arena, the Saskatchewan population reported a neck pain prevalence of 54% in comparison to the 43% prevalence in the Swedish population (Côté, Cassidy and Carroll 2000; Guez *et al.* 2002a). The prevalence in Australia and the United Kingdom were significantly higher in comparison to the Saskatchewan and Swedish population with 86.8% and 89% respectively (Webb *et al.* 2003; Hoy *et al.* 2011). As shown in Table 2.2, the prevalence of neck pain, differs within different populations. Large variations may reflect true differences between some populations but factors such as definitions, reporting, study design and sampling may have affected the prevalence.

Table 2.2 The prevalence of neck pain in different populations

Authors	Lifetime prevalence	Country/population	Developed/developing Country
(Koh et al. 2012)	79.1%	Korea (High school students)	Developed
(Eggers 2016)	83.1%	South Africa (Durban - primary school teachers)	Developing
(Larsson, Sogaard and Rosendal 2007)	45.5%	Belgium (Office workers)	Developed
(Muchna 2011)	36.83%	South Africa (Indian population)	Developing
(Peek 2005: ii)	79% (Female)	South Africa (Banking corporations)	Developing
	71% (Male)		
(Haldeman *et al.* 2008)	12.1% - 71.5%	Global	Developed
(Haldeman *et al.* 2008)	27.1%-47.8%	Global (Workers)	Developed
(Guez *et al.* 2002b)	43%	Northern Sweden	Developed
(Hoy *et al.* 2011)	0.4%- 86.8%	Australia	Developed
(Webb *et al.* 2003)	89%	UK (general population)	Developed
(Petit *et al.* 2018)	14.6 % (Female)	France	Developed
	10.4% (Male)		
(Slabbert 2010: 61)	45%	South Africa (White population)	Developing
(Son *et al.* 2013)	20.8%	Korea (Elderly in community residents)	Developed
(Jiménez-Sánchez *et al.* 2012)	19.6%	Spain (General population)	Developed

In South Africa, Drew (1995) reported that 57.4% of the patients at private chiropractic clinics and the 54.4% patients at the chiropractic teaching clinic in Durban, South Africa complained of neck pain. The neck pain studies conducted by Slabbert (2010: 61) and (Ndlovu 2006: 88) showed a similar prevalence of 45% in the White and 50% in the Indigenous African populations in South Africa.

Slabbert (2010: 4) suggested that the difference may be due to differences in population, suggesting the importance of research in different populations. The prevalence of musculoskeletal disorders between industrialized and developing countries may not be equal. The findings of Hoy *et al.* (2011) suggest that factors found in developing countries, such as low socioeconomic populations, physically demanding work and psychosocial disorders, lead to a high prevalence of pain.

2.5.2 Severity

Mild neck pain is defined as pain that does not affect daily activities whereas severe neck pain negatively affects daily activities. The adolescent population has reported a greater severity of neck pain than the older population (Fejer and Leboeuf-Yde 2012; Koh *et al.* 2012) . In Denmark, a study conducted on senior citizens, found that 7% and 13% of men and women, respectively suffered with moderate to severe neck pain (Fejer and Leboeuf-Yde 2012).

2.5.3 Burden

Musculoskeletal disorders are among the most common disorders that contribute to days off from work, disabilities and general practitioner visits (Dagenais, Caro and Haldeman 2008). Wide spread pain accounts for one-fifth of musculoskeletal pain in adults (Woolf, Erwin and March 2012). According to Naidoo *et al.* (2009), 67% of women involved in small-scale agriculture in South Africa suffer from chronic general musculoskeletal pain. Musculoskeletal disorders cause an increased socio-economic burden as well as a burden on affected individuals worldwide (Woolf, Erwin and March 2012).

Neck pain is the fourth leading musculoskeletal disorder that leads to disability (Cohen 2015). This often results in absenteeism from work, decreased work hours and reduced productivity (Slabbert 2010: 45). Côté *et al.* (2009) reported neck pain and associated disability within the workplace as a significant burden for the employer and employee. Approximately 5.4 million work days are lost to musculoskeletal disorders, such as neck pain (Buckle and Devereux 2003).

The associated disability affects the individual's daily life, family, society and health care systems (Guzman *et al.* 2008; Manchikanti *et al.* 2009; Haldeman, Carroll and Cassidy 2010). According to Gureje *et al.* (2007), individuals in Nigeria with chronic spinal pain had a tendency towards substance abuse and depressed moods supporting the premise that the disability affects the individual.

In third world countries the impact of neck pain can be overwhelming; the economic instability, unreliable health care systems, job availability and type of occupation, can escalate individual and psycho-social risk factors that lead to neck pain. With the unstable health care system in Zimbabwe (and many other sub-Saharan African countries), the delays in diagnosis, a lack of immediate access to appropriate healthcare and delayed / inappropriate care for co-morbidities compounds this burden (Antonio 2015; Maushe and Mugumbate 2015; Hakimi and Munro 2016; Oyedele and Chikwature 2016).

2.6 Risk factors

Neck pain is multifaceted with risk factors that fall within psychosocial, socioeconomic, work and personal related domains. These risk factors include gender, age, ethnicity, marital status, obesity, smoking, psycho-social, occupational, educational and socioeconomic factors, all of which are discussed further below.

2.6.1 Demographic factors

2.6.1.1 Gender

Pain conditions affect males and females differently according to the risk factors that render them susceptible to the condition. With specific reference to neck pain, females have been reported to present with a higher prevalence than their male counterparts (Cagnie *et al.* 2007; Cohen 2015; Eggers 2016). This was supported by Eggers (2016) who found that female (81.8%) teachers in Durban, South Africa, had a higher risk of neck pain than their male (75%) co-workers. Similarly, 18% of the female Belgium workers, had a higher prevalence of neck pain in comparison to the 11% of male co-workers (Cagnie *et al.* 2007). Slabbert (2010: 59) found supporting results within the white population in South Africa, where the neck pain prevalence amongst women (66.13%) was higher than that of men (33.87%). It is clear that females are at greater risk for neck pain in different populations. Korhonen *et al.* (2003) suggested that this may be due to the female`s weaker shoulder muscle strength and smaller structure. In addition to this, Son *et al.* (2013) suggested that women were more susceptible to neck pain due to gender linked factors such as hormone and physiological processes.

2.6.1.2 Age

Neck pain is more prevalent in the elderly in comparison to younger individuals (Cagnie et al. 2007; Uthaikhup et al. 2015; Eggers 2016). In Belgium, Cagnie et al. (2007) found that 47.1% of office workers aged 50–59 years suffered from neck pain compared to 27.1% in the 18-29 year age category. Similarly in South Africa, Eggers (2016) showed that the neck pain prevalence among people aged 55-65 years was 83.3% compared to 68.8% among those aged 25-34 years. It has been proposed that the increased pain sensitivity and response in the elderly (65-75 years of age) with chronic neck pain is closely related to the ageing process (Uthaikhup et al. 2015). The causes are multifactorial with biological factors such as ageing process, osteoarthritis and underlying psychosocial factors (Fejer, Kyvik and Hartvigsen 2006).

2.6.1.3 Ethnicity

Ethnicity has been found to be a risk factor for neck pain. In South Africa, the neck pain prevalence among Black (50%), White (45%) and Indian (36.83 %) ethnic populations was found to vary; this may be due to different social, economic or cultural factors which contribute to neck pain onset and persistence (Ndlovu 2006: 91; Slabbert 2010: 32; Muchna 2011). Green *et al.* (2003) found that Caucasian participants experienced less intensified pain for an extended period in comparison to African American participants who had an increased intensity of pain. This supports the previous findings on pain presenting differently in different races.

2.6.1.4 Marital status

Marital status has also been shown to be a risk factor for neck pain. In South Africa, Slabbert (2010: 47) found that there was more neck pain within the married group (46.53%) in comparison to the single (28.47%) and divorced (13.12%) groups. Similarly, Muchna (2011) found that the married group in the Indian population in South Africa had a higher prevalence of neck pain (57.9%) in comparison to the single (36.2%) and divorced groups (3.2%). According to Strine and Hootman (2007), marital status associated with ill health such as cardiovascular or respiratory disease and psychological factors such as depression, insomnia and anxiety were strongly linked to neck pain development. In agreement, Genebra *et al.* (2017) found that the Brazilian patients with neck pain were either separated or widowed with low income and two or more other diseases. Though marital status may be an inconclusive risk factor, associated risk factors such as disease resulting in an increase in pain sensitivity,

low income, stress, depression and anxiety can compound the onset and persistence of neck pain (Genebra *et al.* 2017).

Weight There is a positive relationship between obesity and neck pain. Although obesity has a greater affinity towards damage of weight bearing joints, the effect on neck pain is observable. This may be due to the increase of biomechanical stress on the spinal curvatures by the extra weight, increased psychological issues (depression, low social participation) and increased inflammation from excessive triglycerides (Son *et al.* 2013; Cohen 2015).

2.6.1.5 Smoking

Smokers in Brazil (25.7%) had a higher prevalence of neck pain compared to former smokers (21.1%) and non-smokers (18.4%) (Genebra *et al.* 2017). According to Palmer *et al.* (2003), the association between smoking and neck pain may be due to the negative pharmacological effect on the sensory processors of information and nutritional uptake by the peripheral tissues, altering the health of the musculature.

2.6.1.6 Activity

A sedentary lifestyle is a well-established risk factor for neck pain, Genebra et al. (2017) reported that sedentary participants (19.2%) had a higher prevalence of neck pain than their active counterparts (22.4%). Furthermore, sitting for long periods of approximately 10 hours per day combined with poor physical activity among school children were predictors of neck pain development in adult years (Koh *et al.* 2012). In contrast, Exercise has been found to have a significantly positive effect on neck pain prevention and those who exercised three times a week were 1.5 times less likely to develop neck pain (Cagnie *et al.* 2007; Hush *et al.* 2009; Koh *et al.* 2012). Physical activity was found to reduce neck pain symptoms by 49% in office workers (Sjogren *et al.* 2005). Cohen (2015) suggested that physical therapies associated with home exercise plans are effective in treating acute and chronic neck pain. Home exercises as a form of rehabilitation increases the range of motion in the neck and decreases the use of pain medication such as analgesics (Jensen and Harms-Ringdahl 2007; Bryans *et al.* 2014).

2.6.2 Psychological factors

According to Linton (2000), psychological factors such as stress, anxiety, depression, distress and a negative mood have strong independent associations with neck pain. Other factors include worrying, fear avoidance, anger and frustration (Carroll *et al.* 2008). Similarly, in Korean male students, poor self-assessed health and psychological strain were both

predictors of neck pain incidence and recurrent episodes of depression were also strongly associated with recurrent episodes of neck pain (Koh *et al.* 2012). Negative psychological emotions such as depression and anxiety have an effect on increasing muscle (somatic) tone in the upper extremity which is closely related to the development of neck pain (Blozik *et al.* 2009; Koh *et al.* 2012). The increased muscle tone leads to ischemia, increased metabolic waste, lack of oxygen in the local area, swelling and then eventually pain and discomfort (Chaitow and DeLany 2000). A vicious psychological cycle is sustained by the chronic pain and discomfort since chronic pain is commonly associated with depression and anxiety due to the patients' perception of their symptoms and the management of the condition (Elbinoune *et al.* 2016). Women with chronic pain in Spain, reported poorer self-assessed health, a higher psychological distress and had confounding comorbid diseases compared to those with no pain (Jiménez-Sánchez *et al.* 2012).

In developing countries, psychological stress is high due to socio-economic factors. Elbinoune *et al.* (2016) found that factors such as low levels of education and functional incapacity with chronic neck pain were closely related to psychological disorders. These factors have been observed within developed countries and have been recognized as important for diagnostic and treatment purposes (Linton 2000). In a study conducted in rural Ethiopia, El-Sayed *et al.* (2010) found that symptoms of anxiety (41.9%), depression (36.1%) and post-traumatic stress (10.3%) increased the prevalence of neck pain. This is further supported by Elbinoune *et al.* (2016) who reported a high prevalence of anxiety (68.4%) and depression (55.7%) in 80 neck pain patients in a rheumatology clinic in Morocco.

2.6.3 Occupational factors

Work related neck pain risk factors vary according to specific occupation (Jensen 2003; Lars Peter Andreas *et al.* 2004; Juul-Kristensen and Jensen 2005; Van den Heuvel *et al.* 2006; Cagnie *et al.* 2007; Jensen and Harms-Ringdahl 2007). According to Sterud, Johannessen and Tynes (2014) and Hooftman *et al.* (2009), 23% of the general working population in Norway had moderate to severe neck pain, the most significant risk factors included high job requirements, insufficient leadership support and constantly holding the neck in flexion. In the Indian population in South Africa, lifting heavy items increased the risk of neck pain by 1.9 times and sitting without arm or back support increased the risk by 1.7 times (Muchna 2011).

Persistent neck flexion, rotation and extension have been shown to produce positive results in the development of neck pain (Ariens *et al.* 2000; Chiu *et al.* 2002; Yip, Chiu and Poon 2007). Persistent neck flexion with a minimum of 20 degrees of persistent forward head posture is reported to increase the work load of the neck extensors and sternocleidomastoid

muscles by 35% (Genebra *et al.* 2017). This leads to increased pressure on the intervertebral discs, capsule and ligaments. The neck pain is therefore a result of the inflammatory reaction to the postural load (Cagnie *et al.* 2007; Genebra *et al.* 2017).

Repetitive movements, such as the movements of the fingers and hands while working on the computer, are strongly associated with neck pain. The trapezius muscle acts as a stability unit by keeping the shoulders at right angles during static movements. Repetitive movements place increased load on the trapezius muscle leading to myofaciitis and ultimately neck pain (Cagnie *et al.* 2007; Sterud, Johannessen and Tynes 2014). In the office, women who used computers were at a higher risk than men as they use the mouse with more aggressive tapping and an increased range of motion, which puts more pressure on the upper limb musculature (Sillanpää *et al.* 2003).

Workers who sit at their desks for approximately 95% of their allocated work time were twice as likely to report neck pain compared to those who do not sit at desks (Ariens *et al.* 2001). Szeto, Straker and O'Sullivan (2005) suggested that it was poor posture rather than desk ergonomics that played a role in neck pain development in these individuals. It has been suggested that regular rest breaks, adjustable chairs and computer screens would decrease the development of neck pain (Cagnie *et al.* 2007). Regular breaks reduce the static loading of the muscles and the intensity of the psychological stressors (Hush *et al.* 2009).

The independent psychosocial factors in the work place such as mental fatigue at the end of the day and employee shortage which directly increased work load, lead to an escalation in stress, muscle tension and anxiety (Cagnie *et al.* 2007). These factors could then lead to future development of neck pain (Andersen *et al.* 2003).

2.6.4 Socioeconomic factors

Socioeconomic factors closely linked to the development and persistence of neck pain include low socio-economic status, low income, decreased access to housing, necessities for basic living and no formal education (Linton 2000; Ariens *et al.* 2001; Côté, Cassidy and Carroll 2003; Ndlovu 2006: 91; Hush *et al.* 2009). Individuals with lower education tend to have more neck pain than individuals with a higher education (Genebra *et al.* 2017). Similarly in the indigenous African population there is a higher prevalence of neck pain in people with no formal education (76.9%) compared to those with tertiary education (52.7%), This may be due to a lack of understanding of pain and health care systems that can support musculoskeletal health, lack of access to the musculoskeletal specialists, the inability to afford health care, lack of knowledge of potential risk factors and use of self-medication techniques (Worku 2000;

Genebra *et al.* 2017). Moreover, Ndlovu (2006: 50) found that those with little or no formal education tend to work in more physically demanding jobs and in their leisure time indulge in physically demanding tasks such as subsidiary farming and housework. These physically strenuous occupations have been linked to increased tension in the neck and shoulder muscles (Côté, Cassidy and Carroll 2003; Ndlovu 2006: 50). In addition, a study in Brazil by (Genebra *et al.* 2017), showed that within the lower income bracket the neck pain prevalence was higher (23.6%) than that in the higher income bracket (9.9%) suggesting that the stress from reaching targets of expenses may increase psychosocial stressors such as anxiety and depression.

2.7 Conclusion

The literature has shown that the prevalence of neck pain varies across the globe. Many factors such as, individual, psycho-social, socio-economic and occupational factors contribute towards neck pain prevalence.

CHAPTER 3: MATERIALS AND METHODS

3.1 Introduction

This chapter describes the study design, pilot study, final research study procedures, ethical considerations, the measurement tool and statistical analysis.

3.2 Study design

This study was a quantitative cross-sectional non-probability study using a questionnaire based on a similar study done by Smith (2016) in Kwazulu-Natal, South Africa. Permission to use the questionnaire was obtained from Smith (Appendix A). Cross sectional studies are used to gather information in a specific group at a specific point in time to assess the prevalence and related variables (Friis 2017: 109). The study was conducted in Harare, Zimbabwe among the indigenous African population.

3.3 Sampling

3.3.1 Study population

The populace included those living in Harare, Zimbabwe. According to the Zimstat (2012: 3) national report , the population in Harare is approximately 1.5 million with the African population comprising 99.7% of the total population. The African population includes both Shona and Ndebele.

3.3.2 Sample size and recruitment

The sample size was calculated by a statistician, Mr D Singh. Using the total population of 1.5 million people in Harare, a confidence level of 95%, a confidence interval (CI) of 5% and a minimum sample size of 384 were calculated.

The formula used to calculate the minimum sample size is stated below:

$$n = \frac{z^2 * \hat{p}(1-\hat{p})}{\varepsilon^2}$$

Where n is the sample size, $\boldsymbol{\varepsilon}$ represents the margin of error, z represents the z score and $\hat{p}$ represents the population proportion.

$$384.16 = \frac{1.96^2 * 0.5(1 - 0.5)}{0.05^2}$$

As we expected a response rate of approximately 80%, a total of 461 questionnaires were distributed. All of these questionnaires (that is; 461) were completed, however 514 people were approached with 53 people refusing to answer the questionnaire. According to this the response rate was calculated at 89.7%.

People were approached at the selected shopping centers and were asked to participate in the study once inclusion and exclusion criteria were fulfilled. Each participant was given a letter of information and was required to sign an informed consent form. No one was coerced into participating in the study. The preferred choice of study for causes and risk factors on a national database would be a census, however due to constraints and the nature of this study a cross-sectional study using a convenience sample was conducted. The results of this study conducted in the Indigenous African population are specific to this sample population due to the non-probability convenience sampling technique (HealthKnowlege 2017).

3.3.3 Sample method

The shopping centres in the city of Harare were grouped into low, medium and high-income categories, according to the household income rank of the population living in the areas surrounding the shopping centre. The names of the shopping centres were placed into a hat and chosen randomly. Once chosen, a letter of information was given to the relevant authority and permission to conduct the questionnaire on the property was sought from the shopping centre manager. The shopping centres included Avondale shopping centre, Village Boardwalk, Joina city, Eastgate Mall and Westgate shopping centre.

Final permission was received from Avondale shopping centre (Middle income bracket) (Appendix B), Village Boardwalk (Higher income bracket) (Appendix C) and Eastgate Mall (Lower income bracket) (Appendix D). Permission was not received from Joina city and Westgate shopping centre and were therefore excluded from the study.

3.3.4 Inclusion criteria

- Zimbabwean Citizen living in Harare.
- Indigenous African by descent.
- Individuals above the age of 18.

3.3.5 Exclusion criteria

- Consent form not correctly filled in.
- Participated in the pilot study of the research.
- Anyone related to the researcher at the study site.

3.4 Methods

3.4.1 Ethical considerations

Full ethical clearance (090/17) (Appendix E) was received from Durban University of Technology. Ethical approval (MRCZ/B/1388) from the Medical Research Council of Zimbabwe (Appendix F) was obtained on the 28/11/17. Each person approached was reassured that participation was voluntary and confidential. The collected questionnaires were placed in sealed ballot boxes with no identifying information in order to maintain confidentiality. The questionnaire was coded using the study ID. The signed consent forms were placed in a separate sealed ballot box.

3.5 Data collection measurement tool

A self- administered questionnaire was used to conduct this study (Appendix G). A previously validated questionnaire sourced from Smith (2016), was used. The questionnaire was subjected to a strict interrogation by a group of 5 experts, including the researcher, the supervisor, and three other academics in the field of public health. The questionnaire was then tested for accuracy in a pilot study that consisted of six respondents from the study population. This was conducted to improve validity and reliability of the questionnaire. All the participants of the pilot study did not have any difficulty in understanding any of the questions and they did not request any changes, hence this questionnaire was used as the final data collection tool.

Adaptations for the sample population included education levels and currency used in Zimbabwe. The questionnaire was translated into Shona (Appendix H), which is the local language of the indigenous African population in Harare, by the researcher, who is bilingual in English and Shona. The Shona version was then back-translated into English by Mr Obvious Simango, who is also bilingual in both languages. This verified that the translation was correct and that there were no differences between the English and Shona versions of the questionnaire.

The original questionnaire was critiqued extensively through a focus group discussion by Smith (2016) and a pilot study was conducted in Harare to achieve validity and reliability of the questionnaire.

The questionnaire was divided into three parts as shown below:

Section A: Demographics - including personal information and socio-economic factors such as age, gender, marital status, education, occupation, health care availability and financial status.

Section B: Risk factors that have been linked to neck pain as per the literature. These included smoking history, alcohol consumption, occupational factors, stress, ergonomics, motor vehicle accidents.

Section C: Clinical questions. These included the characteristics of neck pain such as onset, severity, frequency, progression and associated disabilities.

Only those participants with neck pain answered the clinical section. The questionnaire consisted of twelve pages and took approximately 15-20 minutes to complete.

3.5.1 Pilot study

Pilot studies guarantee participants' understanding of the questionnaire without vagueness (Kumar 2014: 13). The pilot study was conducted in Harare. Five Zimbabwean participants, who met the inclusion criteria for the main study, were chosen. They were subsequently excluded from the main study. Furthermore, their responses were not included in the final analysis of results.

Each received the applicable documentation which included:

- Letter of Information (English Appendix I and Shona Appendix J)

- Letter of consent (English Appendix K and Shona Appendix L)
- Confidentiality statement (English Appendix M and Shona Appendix N)
- An original copy of the questionnaire

The pilot group was allowed time to read and sign the documents, as well as carefully read the questionnaire in English and Shona. The pilot group participants subsequently answered the questionnaire in their language of choice. They were asked to ascertain whether the questions and language were appropriate, logical, comprehensible, and clear and whether the instructions were explicit. The pilot study allowed the researcher to familiarise herself with the process for the data collection. There were no corrections made by the participants of the pilot study.

3.5.2 Final research study

The data were collected between 10am to 5pm from 28/11/17 to 16/01/18. The shopping centre names were placed in a hat and chosen at random. The researcher walked around the shopping mall approaching those who fit the inclusion criteria. If they met all the inclusion criteria, they were asked to consider participating in the study and were not forced to participate in any way. Those who agreed to participate received a letter of information to read and subsequently provided signed informed consent. Thereafter, they were given the self-administered questionnaire to answer. The researcher was present to answer any questions that the participants may have had.

3.6 Measurement frequency

This was a cross sectional study. A single measurement frequency was required to obtain the relevant outcomes. The study focused on the information on the population and not the progression of any condition over time (Setia 2016).

3.7 Data analysis

Information was statistically analysed using the SPSS Statistics 24.0 (Release August 2015). Descriptive analysis, such as frequencies, means and standard deviations were used to summarise the data (Lind, Marchal and Wathen 2005: 132) Standard deviation and mean reports are represented by (mean ± SD) within the text. Where standard deviation is represented by (SD). Tables, graphs and charts were used to present the data.

The Inferential analysis was conducted using cross tabulations (interpreted using the Pearson chi- Squared test). The bivariate analysis was done using a Chi-Squared test (Interpreted using the Pearson`s chi-squared test). Odds ratios were calculated using binary logistic regression, This calculation was used to find dependant variables on an existent independent variable (Willemse 2009: 121). The 95% confidence intervals (CI) were calculated for Odds Ratios and for prevalence (Johnson and Bhattacharyya 2000: 331). A significance of a *p*-value less than 0.05 was used throughout. Confidence levels of a probability of 95% were calculated to estimate true value of the parameter

CHAPTER 4: RESULTS

4.1 Demographics

4.1.1 Age and gender

As shown in Table 4.1, the study population comprised of more males (63.1%; *n* = 291) than females (36.9%; *n* =170; *p* < 0.001). The mean age of participants was 33.7 ± 11.9 (mean ± SD) years (range: 18 - 86).

Table 4.1 Demographic characteristics of the participants

Gender	Number of participants (n)	Percentage of participants (%)
Male	291	63.10%
Female	170	36.90%
Total	461	100%

4.1.2 Marital status and number of children

Figure 4.1 represents the marital status of the participants. There were significantly more single (46.9%; *n* =216) and married (44.9%; *n* =207) participants than those who were widowed (3.5%; *n* =16), divorced (2.6%; *n* =12), separated (1.7%; *n* =8) or living together (0.4%; *n* =12; *p* < 0.001).

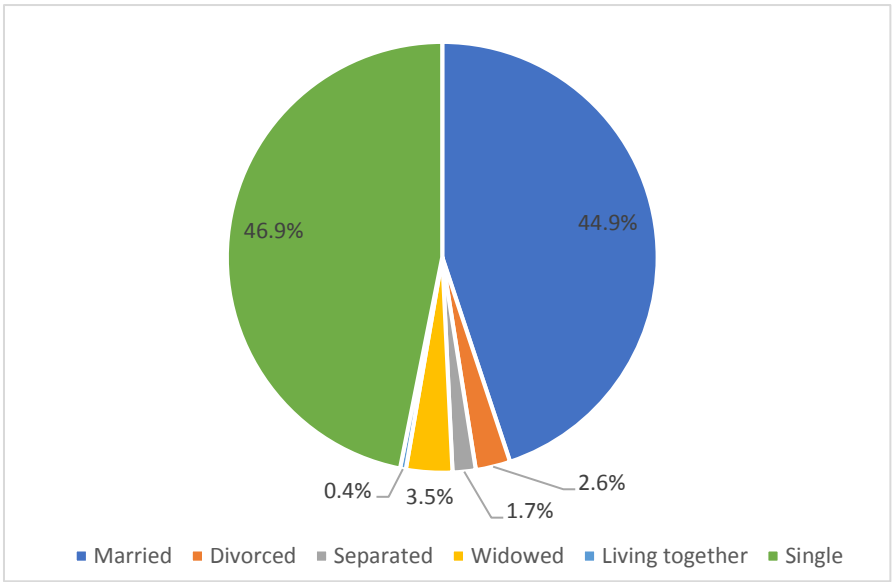


Figure 4.1 Participant marital status

Almost half of the participants (41.9%; n = 185; $p < 0.001$) reported not having children. The mean number of children per participants was 1.60 ± 1.83 (mean ± SD), (range: 0-10).

4.1.3 Level of education

The results shown in Figure 4.2 represent the educational levels of the participants. Majority of the participants had some form of education including tertiary education (46.2%; *n* =213), O`level (29.1%; *n* =134), A` level (14.1%; *n* =65), primary level (2.0%; *n* =9) or other (8.2%; *n* =38). Only 0.4% (*n* =2; $p < 0.001$) were uneducated. There was a significant difference between the education levels of males and females ($p = 0.001$). There was no relationship between the level of education and neck pain ($p = 0.386$).

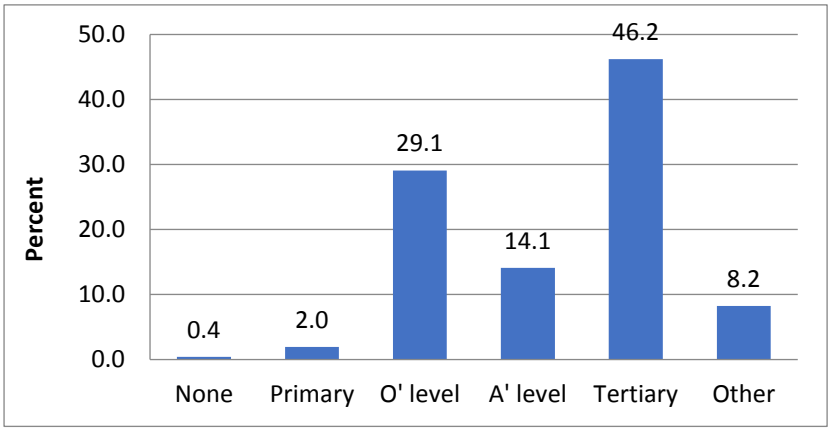


Figure 4.2 Education levels of the participant

4.1.4 Occupation status and access to health care

Table 4.2 show that most of the participants had some form of employment. The main category was full time employment (38.6%; *n* =178) but many were also self-employed (18.4%; *n* =85; $p < 0.001$).

Table 4.2 Occupation of participants

Occupational type of participants	Number of participants (n)	Percentage of participants (%)
Unemployed	52	11.3
Retired	15	3.3
Housewife	13	2.8
Employed (full time)	178	38.6
Employed (part time)	47	10.2
Student	71	15.4
Self-employed	85	18.4
Total	461	100.0

Educators (*n* = 103; 24.3%) and entrepreneurs (*n* = 47;11.1%) were amongst the most common occupations of the participants. Table 4.3 shows the different occupations within the sample population.

Table 4.3 Current occupation of participants

Type of occupation	Number of participants (n)	Percentage of participants (%)
Businessman	47	11.10%
Artisan	29	6.80%
Laborer	31	7.30%
Housewife	24	5.70%
Salesman	43	10.10%
Cashier	14	3.30%
Farmer	22	5.20%
Student	60	14.20%
Educator	51	12.00%
Other	103	24.30%

The longest duration of current occupation within the employed population was 0-5 years (41.5%; n =182; $p < 0.001$) as indicated Table 4.4.

Table 4.4 Duration of current occupation

Duration of occupation (yrs.)	Percentage of participants (%)	Number of Participants (n)
0-5	41.5	182
6-10	19.1	84
11-15	9.8	43
16-20	5.9	26
21-25	6.2	27
26-30	2.7	12
Over 30	2.7	12

Half of the participants (50.1%; *n* =187) were low income earners and earned up to 400 USD a month. Figure 4.3 illustrates that only a small proportion of the participants were in the higher income categories. Half the participants (51.1 %; *n* =227) reported sufficient access to health care services.

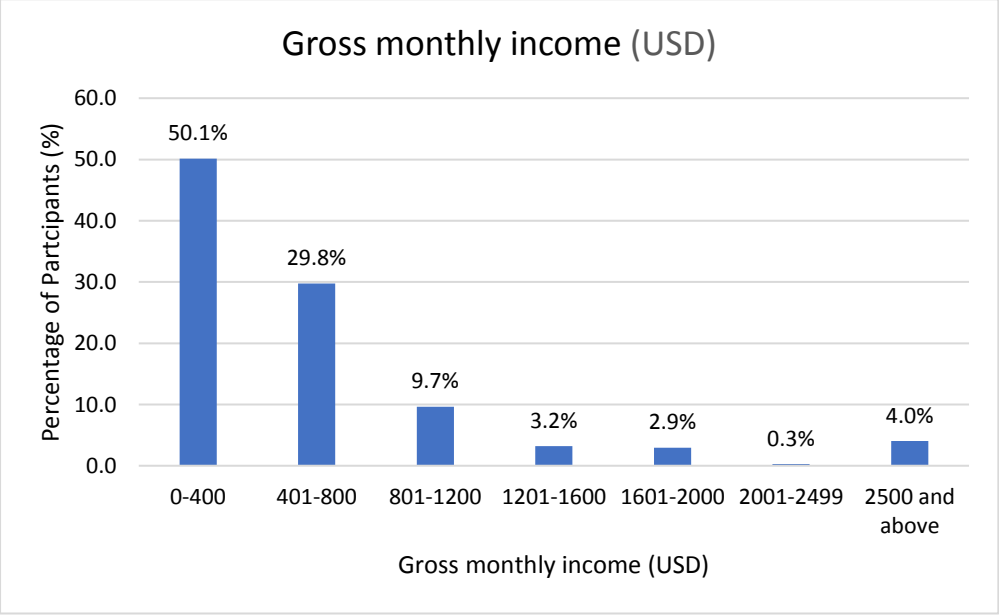


Figure 4.3 Gross monthly income of participants

4.2 Prevalence of neck pain

Lifetime prevalence is defined as the amount of people who have experienced neck pain at some point in their lifetime (Friis 2017: 65). The lifetime prevalence of neck pain in this study was 49% (*n* = 218; 95% CI: 0.44 – 0.53). The neck pain prevalence in the last year was 26.9% (*n* = 119; 95% CI: 0.22 – 0.31). There was a 16.4% (*n* =73; 95% CI: 0.13 – 0.20) point prevalence of neck pain. This accounts for the number of people with neck pain at the particular time the study was conducted (Friis 2017: 64).

4.3 Factors associated with neck pain

4.3.1 Demographic factors

Figure 4.4 show the relationship between age and neck pain in the study population. Neck pain was significantly associated with age (*p* = 0.011). As shown in Figure 4.5, there was a trend of an inverse relationship of neck pain with age shown by the descending linear trendline for neck pain. The highest prevalence was found in the 30-year-old group (6%) and the least at 51 years of age (0%) and sparsely dispersed in the older years (range 0-1.7%). Demographic factors, such as gender (*p* = 0.659), marital status (*p* = 0.994), number of children (*p* = 0.152) and level of education (*p* = 0.386) were not associated with neck pain. Neither were income (*p* = 0.258) nor availability of health care, associated with neck pain (*p* = 0.788).

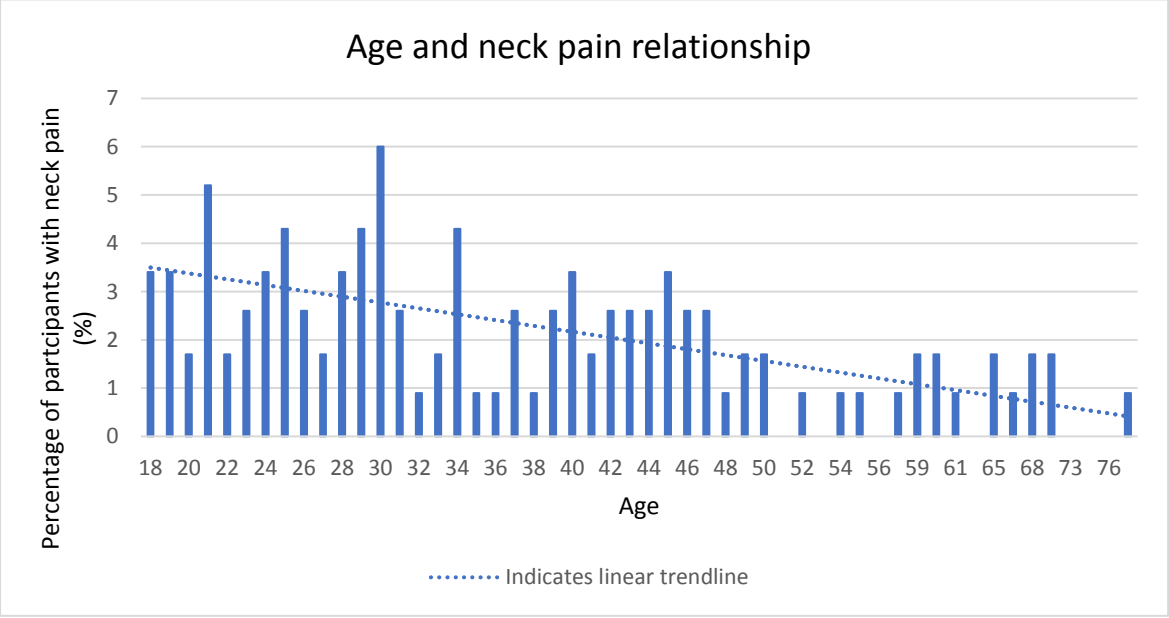


Figure 4.4 Age and neck pain relationship

4.3.2 Smoking and alcohol

Very few (5.2%; *n* =24; $p < 0.001$) participants smoked cigarettes. With those who smoked, the mean number of cigarettes smoked daily was 7.54 ± 5.68 (mean ± SD), (range: 1 – 20). A relationship between smoking and neck pain was not found within in this sample population ($p = 0.49$).

Almost a quarter (23.9%; *n* =108; $p < 0.001$) of the participants reported the consumption of alcohol. More men (18.1%) than women (5.8%) consumed alcohol. The mean consumption was 8.790 ± 12.23 (mean ± SD), (range: 1 – 75) units per week. Consumption of alcohol and neck pain were not associated ($p = 0.559$).

4.3.3 Chronic disease

Chronic disease is defined as a disease that lasts longer than three months and manageable with medication (Ratini 2016).The most common chronic diseases within the study population included high blood pressure (43%; *n* =48), depression (12.7%; *n* =14) and arthritis (9.1%; *n* =10). All the chronic diseases that afflicted the participants are shown in Figure 4.5. The occurrence of these diseases was similar between male and female participants ($p = 0.414$). No relationship between neck pain and these chronic diseases was found ($p = 0.215$).

A small percentage of those diagnosed with a chronic disease were taking some form of medication (37.6%; *n* =56 $p < 0.001$). Almost twice the number of females (52.2%) than males (25.6%) reported taking medication for the diseases that they were diagnosed with ($p < 0.001$). The medication taken for chronic disease was either prescribed (80.6%; *n* =50), over the counter medication (6.5%; *n* =4) or herbal (12.9%; *n* =8). There was a significant difference between the type of medication taken between the male and female participants ($p < 0.001$). None of the medications were associated with neck pain ($p < 0.416$).

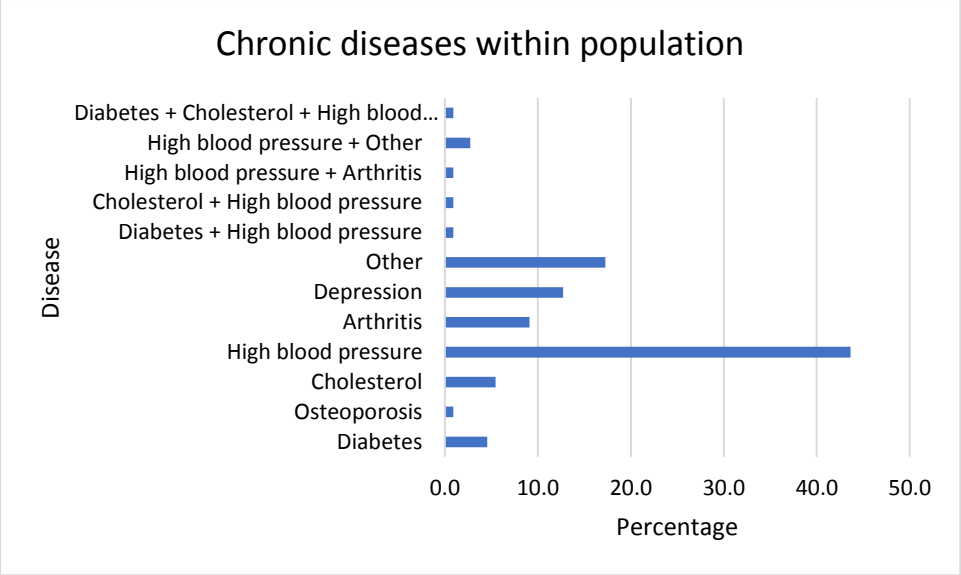


Figure 4.5 Chronic disease of participants

4.3.4 Eyesight

Some of the participants (18.9%; *n* =87; $p < 0.001$) wore glasses for either myopia (reading) (8.5%, *n* =39), hyperopia (distance vision) (7.4%, *n* =34) or both conditions. Fewer men than (8.5%) than women (10.4%) had poor eyesight within this study population ($p = 0.001$). A relationship between poor eyesight and neck pain within this population was found ($p < 0.001$).

4.3.5 Occupational risk factors

Occupation status ($p = 0.134$) and type of occupation were not associated with neck pain ($p = 0.436$). Half the participants (49.5%; *n* =181) worked 5 days a week with a mean of 5.47 ± 0.86 (mean ± SD) days worked (range: 3 – 7). The mean hours worked a day was 8.26 ± 1.96 (mean ± SD), (range: 1 – 12 hours). Most occupations included one or more of the following activities: lifting objects, sitting for long periods, standing for long periods, working on computers, driving long periods and answering telephones. None of these occupational activities were associated with neck pain ($p = 0.142$).

In context of ergonomics, sitting without back support was prevalent amongst 51.5% ($n = 220$; $p = 0.529$) of the participants. However, the relationship between sitting without back support and neck pain was not found ($p = 0.584$). More people also sat without arm support (63.2%; $n = 27$; $p < 0.001$) and similarly did not have a relationship with neck pain ($p = 0.132$). Almost half of the participants worked on a computer positioned in line with their eyes and directly in front of them (42.9%; $n = 162$; $p < 0.001$). There was no association between positioning of the computer monitor and neck pain ($p = 0.201$).

A small percentage of the participants reported bending over excessively (32.4%; *n* = 140; *p* < 0.001) estimated at 2 hours per day (26.1%, *n* = 35). A relationship between bending and neck pain was not found (*p* = 0.075). A relationship between bending and neck pain was not found (*p* = 0.075).

Less than half of the participants reported carrying heavy items (37.0%; *n* = 165). More men (42.1%) than women (28.3%) reported carrying heavy items (*p* < 0.001). This activity was not associated with neck pain (*p* = 0.225). There was, however, an association between neck pain and carrying heavy objects on one side of the body (59.3%; *n* = 240) in comparison to those who carried heavy items on both sides or with both arms (*p* < 0.001).

About a quarter of the participants believed their neck pain was due to daily activities that they performed (26.3%; n = 103; *p* < 0.001). More males (27.4%) than females (24.5%) believed their daily activities contributed to their neck pain (*p* < 0.001). Our study, however did not request the specific activities the participants believed to contribute to their neck pain.

4.3.6 Stress

More than half of the participants reported being stressed (58.9%; *n* =265; *p* < 0.001). Stress levels were similar between both genders (*p* = 0.399). Figure 4.6 show the factors that caused stress among the participants were lack of finances (22.6%, *n* =104), work (18%, *n* =83) and poor living conditions (5.6%, *n* =26) were the main stressors among the participants. Stress was associated with neck pain within our sample population (*p* < 0.001).

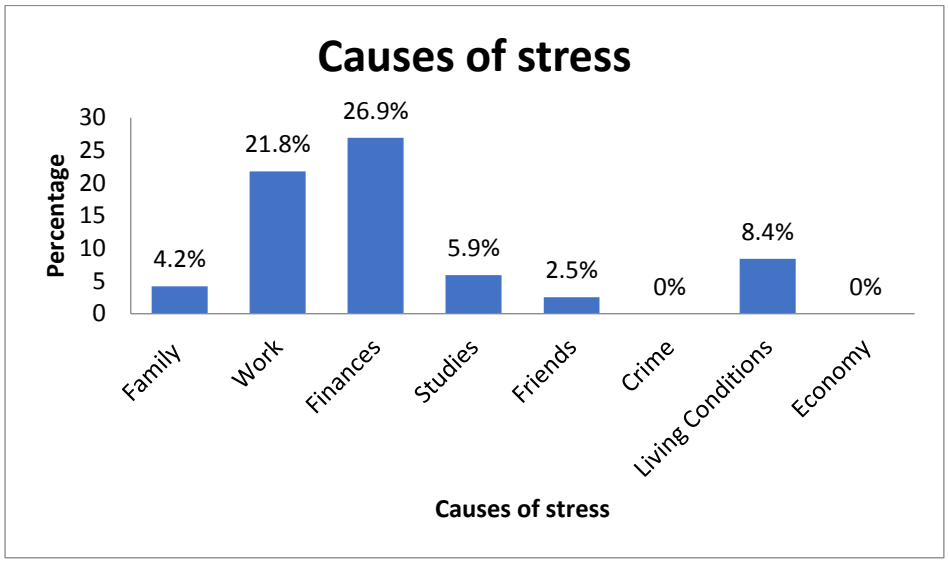


Figure 4.6 Causes of stress

The participants were asked to rate their stress levels from one to ten with one being the least and ten being the most. As shown in Figure 4.7, a stress level of 5 was most frequently reported (21.9%; n =68; $p < 0.001$). A relationship between rating of self-reported stress and neck pain was found (p = 0. 034). The odds of self-reported neck pain are 2.5 times greater for those with the exposure of self-reported stress compared to the participants without the exposure of self-reported stress (Odds Ratio = 2.5; 95% Confidence Interval: 1.121 – 5.734; p = 0.025).

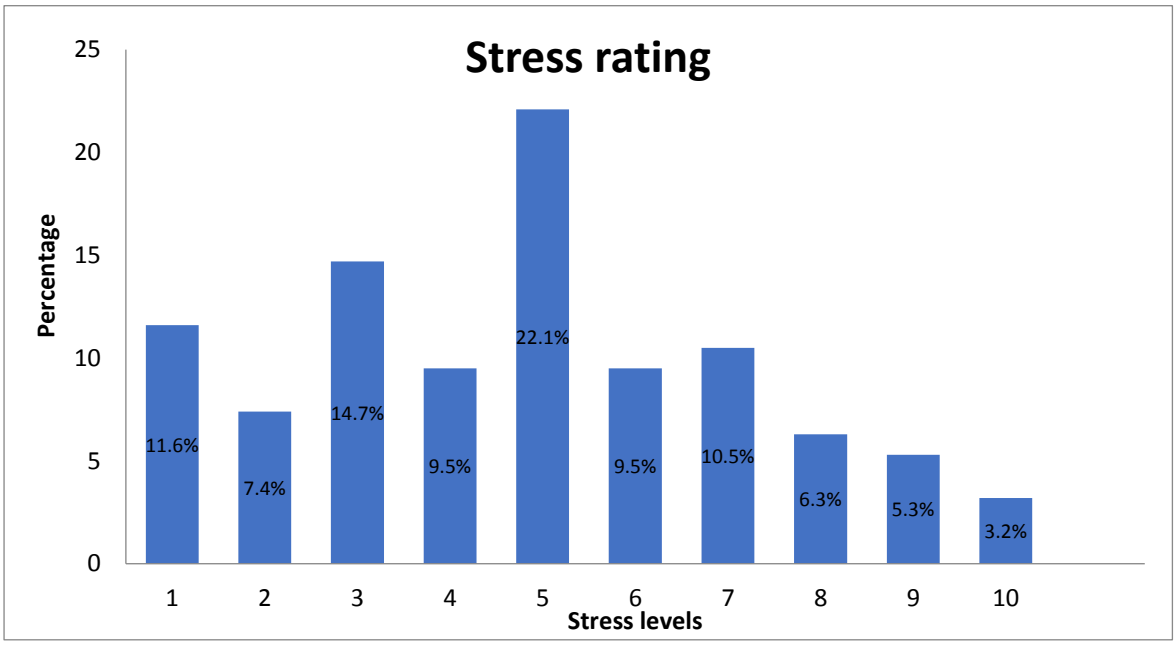


Figure 4.7 Stress rating

4.3.7 Exercise

The majority of the participants (82.7%; $n = 374$; $p < 0.001$) engaged in some form of physical activity. Activities included running (28.6%, $n = 132$) and walking (27.1%, $n = 125$), Males and females had a preference for different activities ($p < 0.001$). As shown in Figure 4.8, men were more likely to engage in running (31.6%), weight training (11.0%) and soccer (12.0%) whilst women preferred walking (40.0%). Neither exercise involvement nor type of activity had an association with neck pain ($p = 0.157$).

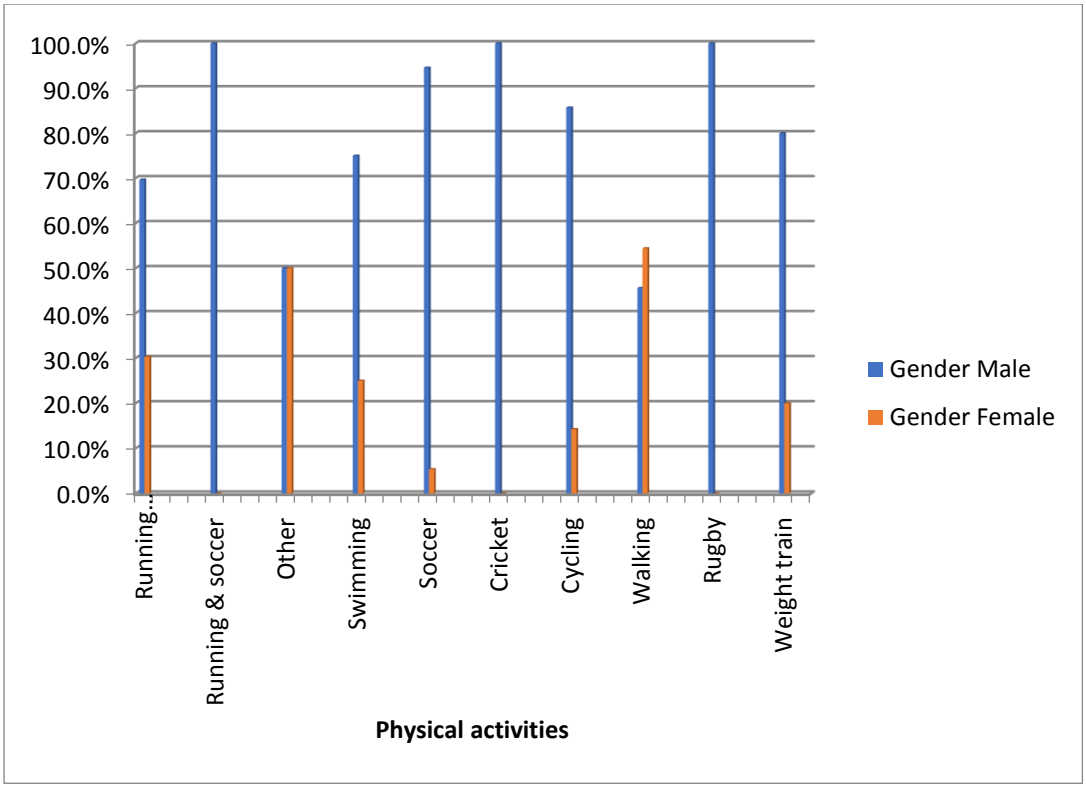


Figure 4.8 Physical activities

4.3.8 Transportation

The participants used either motor vehicles (29.5%; *n* = 136), bus/ public transportation (39.5%; *n* = 182), bicycle (1.5%; *n* = 7), taxi (10.0%; *n* = 46) or walking (13.7%; *n* = 63) as form of transportation. There was no difference between males and females for types of transport used ($p = 0.296$). There was no association between type of transportation and neck pain ($p = 0.339$).

A quarter of the population were involved in motor vehicle accidents (25%; *n* = 112). Motor vehicle accidents had no association with neck pain in our population ($p < 0.001$).

Approximately a tenth of the participants that were involved in a car accident experienced head and neck trauma (13.2%; *n* = 26). Head and neck injury were associated with neck pain ($p < 0.001$).

4.3.9 Sleep related risk factors

Almost the entire population (92.8%, *n* = 423, $p \leq 0.001$) used a pillow during sleep. The use of a pillow had no association with neck pain ($p = 0.541$). The mean number of pillows was 1.178 ± 0.4008 (mean ± SD), (range 1 – 3) per night. The types of pillows included feather (22.3%;

n = 92), sponge (53.5%; *n* = 221) and other (9.4%; *n* = 39). The type of pillows and self-reported neck pain was not associated (*p* = 0.059).

Three quarters of the population slept on their side (74.5%; *n* = 330). Majority of the participants used a bed (87%; *n* = 401). There was no relationship between sleep position (*p* = 0.502) and neck pain individually.

4.3.10 Leisure

Majority of the population (93.8%; *n* = 420) watched television. No relationship between watching television and neck pain was found (*p* = 0.260). Amongst the different positions participants watch television, the most common position was sitting up (68.8%; *n* = 285). These positions were not associated with neck pain (*p* = 0.81).

4.3.11 Headache

Almost half of the participants experienced headaches (43.1%; *n* = 193). More females (56.0%) than males (35.5%) suffered from headaches (*p* < 0.001). There was an association between headaches and neck pain (*p* < 0.001).

4.3.12 Shoulder pain

A small percentage of the participants experienced shoulder pain (29.8%; *n* = 132). More females (37.4%) than males (25.4%; *p* < 0.001) experienced shoulder pain. There was also an association between shoulder and neck pain (*p* < 0.001).

4.3.13 Low back pain

Low back pain was prevalent in 35.8% (*n* = 161) of the participants. More females (43.3%) reported low back pain in comparison to males (31.5%; *p* < 0.001). A relationship between low back pain and neck pain was found (*p* < 0.001). Table 4.5 below shows the distribution of variables between participants with neck pain and those without neck pain.

Table 4.5 Distribution of variables between participants with neck pain and those without neck pain.

Variable		Participants without neck pain		Participants with neck pain		
		Count (*n*)	%	Count (*n*)	%	*p*-value
Age	< 20	11	57.9%	8	42.1%	<.008*
	20 - 29	140	79.5%	36	20.5%	
	30 - 39	88	76.5%	27	23.5%	
	40 - 49	58	67.4%	28	32.6%	
	50 - 59	16	66.7%	8	33.3%	
	60 - 69	6	42.9%	8	57.1%	
	70 - 79	3	100.0%	0	0.0%	
	80 - 89	0	0.0%	1	100.0%	
Gender	Male	205	72.4%	78	27.6%	0.659
	Female	119	74.4%	41	25.6%	
Total monthly income before tax (USD)	0-400	131	72.4%	50	27.6%	0.258
	401-800	85	78.7%	23	21.3%	
	801-1200	23	63.9%	13	36.1%	
	1201-1600	7	58.3%	5	41.7%	
	1601-2000	7	70.0%	3	30.0%	
	2001-2499	1	100.0%	0	0.0%	
	2500 +	8	53.3%	7	46.7%	
Sufficient access to health care services	Yes	152	73.4%	55	26.6%	0.788
Smoking	Yes	19	79.2%	5	20.8%	0.493
Alcohol	Yes	73	70.9%	30	29.1%	12.109
Visual problems	Yes	50	58.1%	36	41.9%	<.001*
Self-reported stressed	Yes	169	66.8%	84	33.2%	<.001*
Exercise	Yes	272	74.7%	92	25.3%	0.069
Computer monitor positioned at eye level	Yes	109	70.3%	46	29.7%	0.201
Sitting with back support	Yes	159	74.6%	54	25.4%	0.584
Sitting with arm support	Yes	201	75.8%	64	24.2%	0.132
Excessive bending during your daily activities	Yes	91	67.9%	43	32.1%	0.075
Involved in a motor vehicle accident (Car, motorbike or truck.)	Yes	69	63.9%	39	36.1%	< .006*
Experienced head or neck trauma/injury	Yes	28	49.1%	29	50.9%	0.436
Use of a pillow during sleep	Yes	303	73.5%	109	26.5%	.541
Carrying of heavy items	Yes	113	69.8%	49	30.2%	0.225
Watching television	Yes	302	74.0%	106	26.0%	0.260
Suffer from headaches	Yes	113	60.1%	75	39.9%	<.001*
Suffer from shoulder pain	Yes	63	48.8%	66	51.2%	<.001*
Suffer from low back pain	Yes	98	62.4%	59	37.6%	<.001*

*. The Chi-square statistic is significant at the .05 level.

4.4 Clinical features of neck pain

4.4.1 Onset of neck pain

As shown in Figure 4.9, the onset of neck pain was highest at the age of 20 (range 5 – 62 years). The trendline (dotted line on the diagram below) shows that there is a relatively steady decline of onset of neck pain with increasing age.

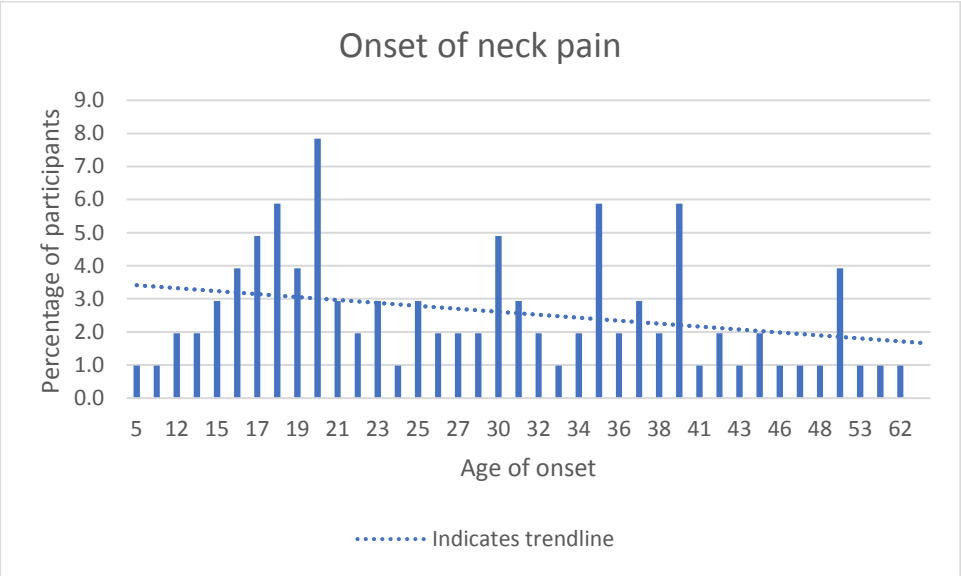


Figure 4.9 Onset of neck pain

The majority of the participants reported their neck pain onset as gradual with no injury (65.4%; n = 53), while the least number of participants reported an abrupt onset after injury (2%; n = 2; $p < 0.001$). Figure 4.10 shows the onset of neck pain in detail.

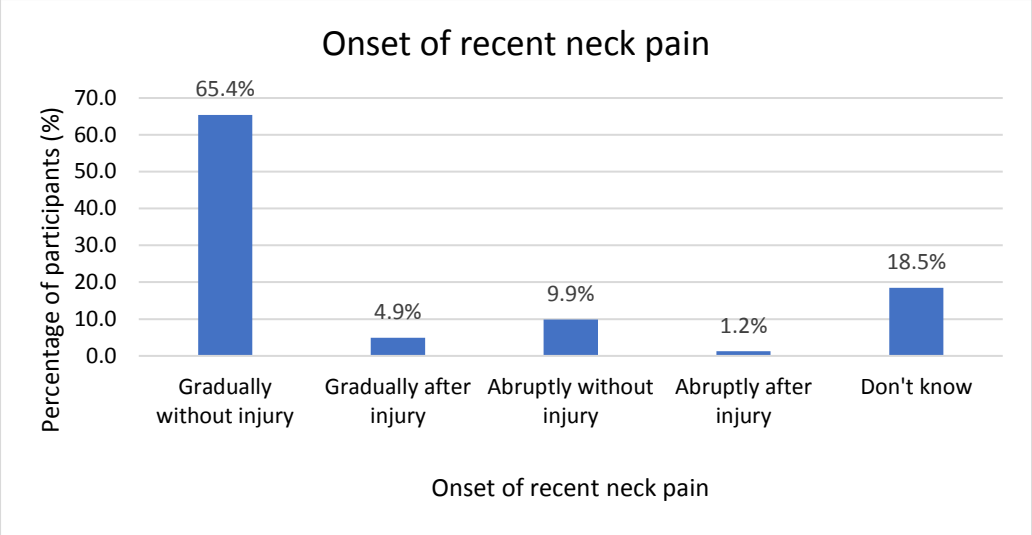


Figure 4.10 Onset of recent neck pain

4.4.2 The duration of recent neck pain

The majority of the population reported suffering from neck pain for up to a month (10.4%; *n* = 42; *p* < *0.001*). This population presented with the peak of duration at 6 months, as shown in Figure 4.11.

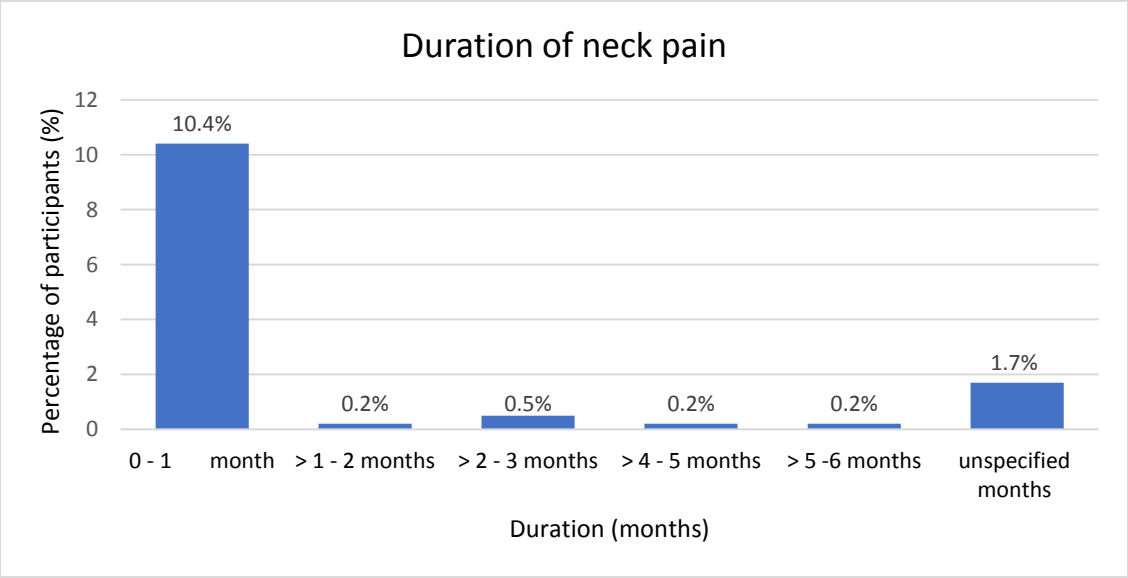


Figure 4.11 Duration of neck pain

4.4.3 The severity of neck pain

The participants were asked to rate their neck pain on a scale of one (least) to ten (worst). The most common rating was three (22.9%; *n* = 19; *p* < 0.001). Figure 4.12 shows the percentages of participants within their pain rating.

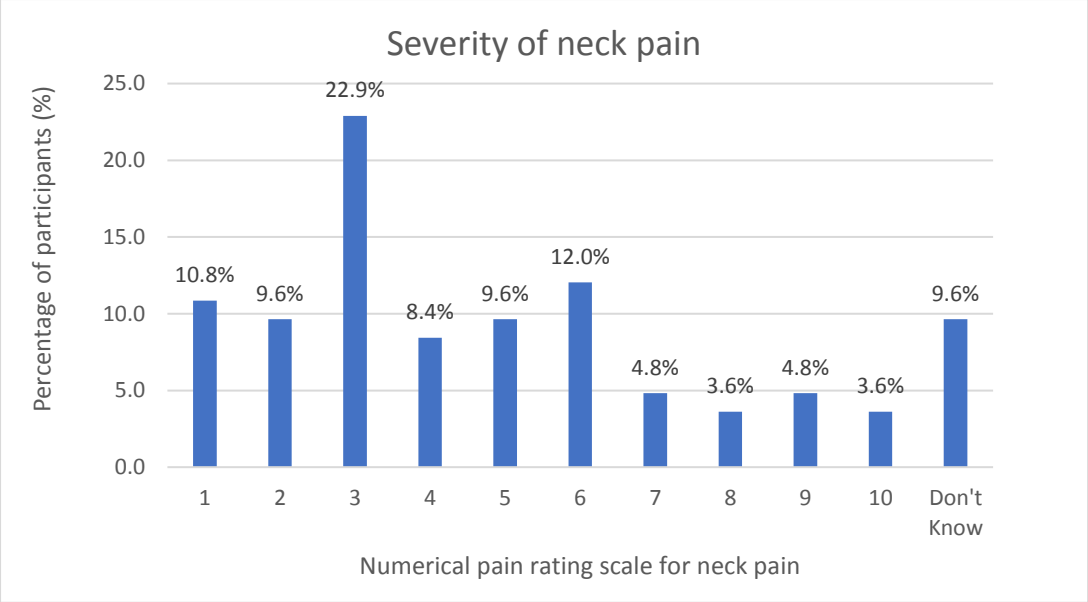


Figure 4.12 Severity of neck pain

The total percentage of participants that answered this question was 21%, of the 21%, most of the participants reported that the neck pain was worst in the morning (6.1%; $n = 28$). Figure 4.13 shows the different times of the day the participants found the pain to be most severe. The majority of participants suffering from neck pain reported the afternoon as the time of the day with the least amount of pain (38.9%; $n = 37$; $p < 0.001$).

Almost half of the participants believed that their neck pain was related to their stress (44.2%; $n = 42$; $p < 0.001$). More females (61.1%) than males (33.9%) felt that their neck pain was due to stress ($p = 0.001$).

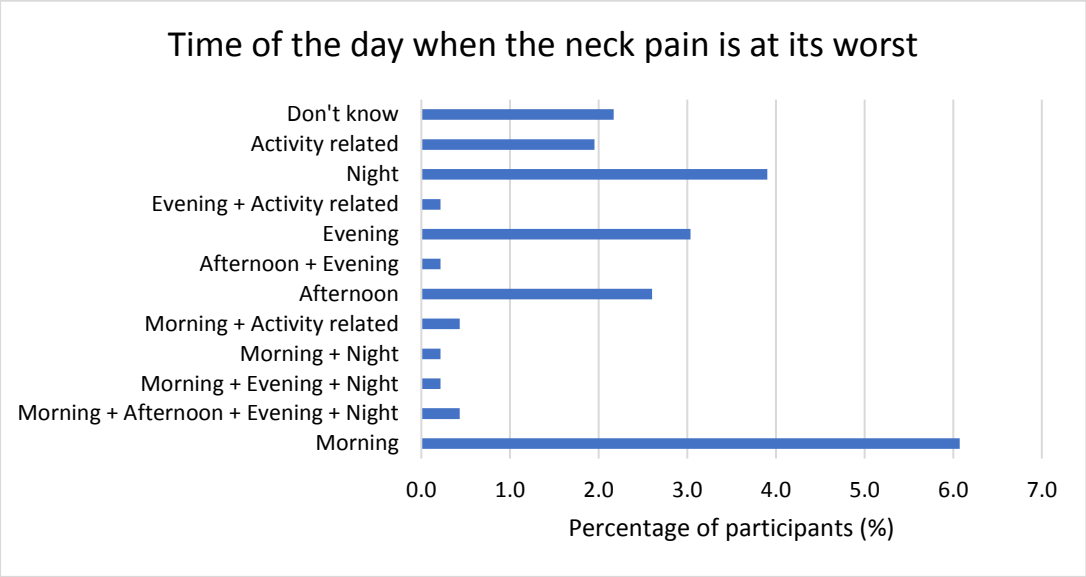


Figure 4.13 The time of day the neck pain is at its worst.

4.4.4 Frequency of neck pain

Almost half of the participants reported few episodes of neck pain (43.6%; n = 34), while a quarter reported frequent episodes (25.6%; n = 20); $p < 0.001$). These frequencies are shown in Table 4.6.

Table 4.6 Frequency of neck pain

Frequency of neck pain	**Percentage of participants (%)**	**Number of participants (n)**
Seldom	43.6 %	34
Frequently	25.6 %	20
Constantly	9.0 %	7
Intermittently	21.8 %	17

4.4.5 The progression of neck pain

Majority of the participants reported their neck pain to remaining the same (49.4%; *n* = 41; *p* < 0.001), with no progression. Very few participants reported that their neck pain worsened with time as shown in Figure 4.14 (9.6%; *n* = 8).

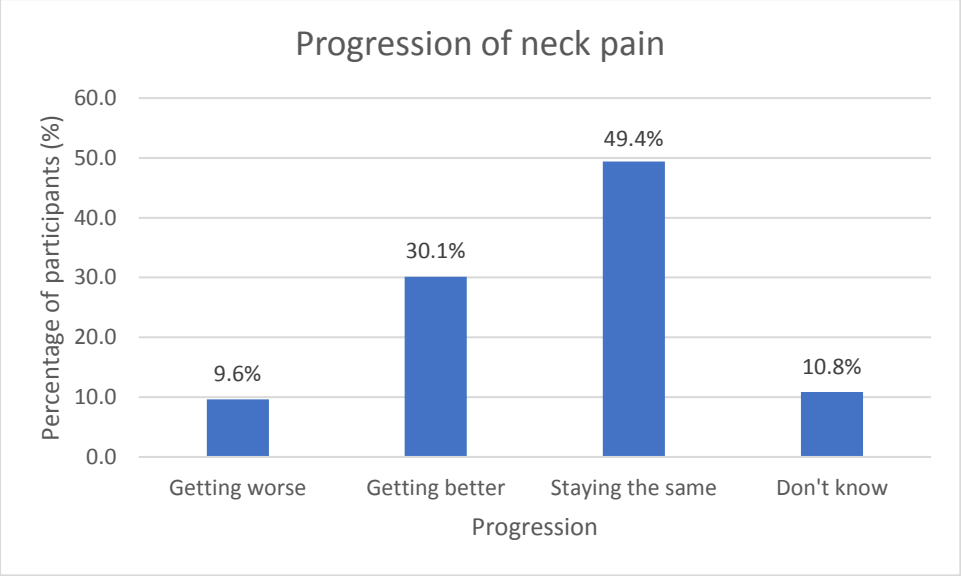


Figure 4.14 Progression of neck pain

4.4.6 Disability due to neck pain

Almost half the participants did not have any disability due to the neck pain (48.7%; *n* = 38). Some reported mild (29.5%; *n* = 23), moderate (17.9%; *n* = 14) or severe disability (3.8%; *n* = 3; *p* < 0.001; Figure 4.15).

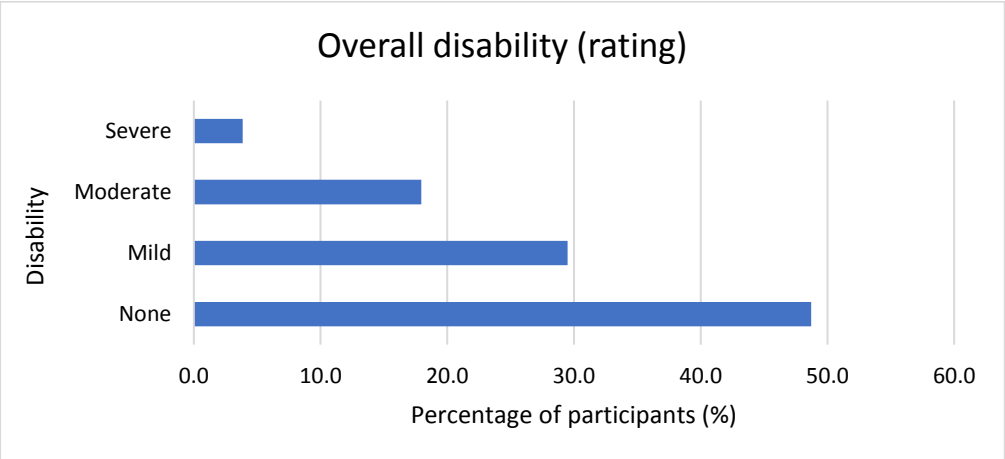


Figure 4.15 Overall disability rating of participants

Within the study population, very few activities were affected by neck pain. Some reported that sleeping (2.2%; *n* = 10), lifting objects (1.3%; *n* = 6) and work (1.1%; *n* = 5; *p* < 0.001) were negatively affected by their neck pain. A small percentage (8%; *n* = 37) reported that neck pain had no effect on their quality of life.

Almost half of the participants had recalled absenteeism from work because of neck pain (42.2%; *n* = 35; *p* < 0.001). Of this, almost all the participants took less than a week off from work (94.4%; *n* = 34), while few took two to four weeks off (5.6%; *n* = 2; *p* < 0.001).

Almost a quarter of the participants with neck pain had been bedridden (22.2%; *n* = 6; *p* < 0.001). Majority of these participants were bedridden for less than a week (80%; *n* = 8). Some were bedridden for either one to two weeks (10%; n = 1) or two to three weeks (10%; *n* = 1; *p* = 0.001). A small percentage of the participants had been medically boarded (4.3%; *n* = 4) or dismissed (1.1%; *n* = 1; *p* < 0.001) due to their neck pain.

As shown in Figure 4.16, treatment sought by the participants included examination by general practitioners (10.5%; *n* = 10), self-medication (34.7%; *n* = 33), or some other form of treatment (14.7%, *n* = 14). The majority of the participants sought no treatment for neck pain (40%; *n* = 38; *p* < 0.001).

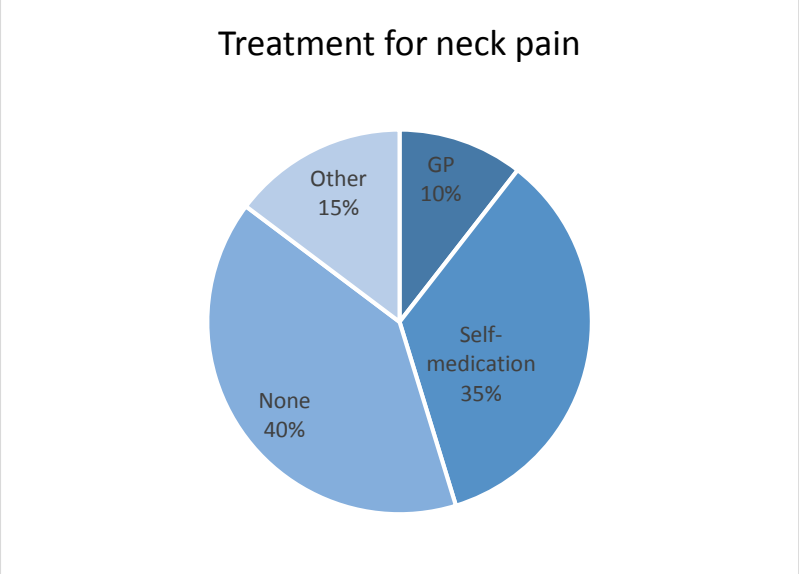


Figure 4.16 Treatment sought for neck pain

CHAPTER 5: DISCUSSION

5.1 Introduction

This chapter discusses the results of the study and compares these with other studies within the African and international context. Reasons for the findings are also discussed. The response rate of this questionnaire was 89.7%. This was satisfactory in comparison to response rates of other studies including the 66% in North Carolina (Goode, Freburger and Carey 2010) and a 91.1% in Saudi Arabia (Al-Mohrej *et al.* 2016).

5.2 Demographic information of participants

The mean age of the participants was 33.77 ± 11.9 years which was similar to studies in Saudi Arabia (38.0 ± 10.6 years) and the South African Indian populations (36.7 ± 24 years) (Muchna 2011; Al-Mohrej *et al.* 2016). The age group spanned between 18 – 86 years of age.

The target population was the indigenous Black African population, a population similar to studies performed in Durban, South Africa (Ndlovu 2006: 34) and Ethiopia (El-Sayed *et al.* 2010). The study in Ethiopia, however was conducted in a rural village, whereas this study was conducted in the urban population in Harare, Zimbabwe. In Brazil, the population study differed by inclusion of three ethnic groups (White, Black and Mulatto) instead of one (Genebra *et al.* 2017). The choice of one ethnic group in this study was due to lack of research within the ethnic group that made up the majority of the population (99.7%) (Zimstat 2012: 13) which was similar to studies in South Africa and included populations of Black, White and Indian ethnicity (Ndlovu 2006: 34; Slabbert 2010: 24 ; Muchna 2011: 34).

The marital status of the population comprised of single (46.9 %) and married (44.9%) participants. This was similar to studies conducted in Brazil, South Africa and Saudi Arabia (Ndlovu 2006: 47; Al-Mohrej *et al.* 2016; Genebra *et al.* 2017). The study in Ethiopia was different in that the target population was married people with children (El-Sayed *et al.* 2010).

More than half of the population reported having children (58.1%), with some participants having up to ten children. This is similar to other reports among the indigenous African population in South Africa (Ndlovu 2006: 48).

The levels of education within this population were generally high with 46.2% of the participants having tertiary education. The others had either O`level (29.1%), A` level (14.1%) or primary education (2.0%). The findings are similar to the White population in South Africa who also have some form of tertiary education (Slabbert 2010: 47). The level of education is

higher than Brazil and the Indian population in South Africa where the majority have only a high school / matric certification (Muchna 2011; Genebra *et al.* 2017).

The main form of occupation status was full time employment (38.6%) and self-employment (18.4%). This resembled the Indian population in South Africa, where fulltime employment (48.9%) was the most common occupation status. However, the indigenous South African population was mainly unemployed (Ndlovu 2006: 50).

5.3 Prevalence

The point prevalence of neck pain in this population was 16.4%, slightly higher than the point prevalence of neck pain in physiotherapists in Zimbabwe (12.2%) (Pfumojena 2015). However, neck pain prevalence in this study was significantly higher than the neck pain prevalence in rural Ethiopia (5%) (El-Sayed *et al.* 2010). In the latter study, El-Sayed *et al.* (2010) focused on the musculoskeletal symptoms in patients with psychological conditions such as depression and anxiety in Ethiopia. Similarly, Abas and Broadhead (1997) also reported a low prevalence of 15.7% of neck pain in women with depression in urban Zimbabwe. Depression and anxiety were closely linked to economic stress factors such as poverty, hunger, scarce public health services, gender inequality and economic reform, commonly found in developing countries like Zimbabwe (Patel *et al.* 2001). The economic strain may increase the prevalence of neck pain within the urban setting much like that of the rural population which presents with increased prevalence of musculoskeletal pain due to lack of adequate access to healthcare facilities and education (Solis-Soto *et al.* 2017).

A study in the indigenous African population, in South Africa (50%) had almost double the point prevalence than the current study. Ndlovu (2006: 88-89) found that the lower socioeconomic groups included people who were uneducated, and the poor had less access to healthcare facilities and little understanding of neuro-musculoskeletal diseases. Although, Zimbabwe has a lower income status according to its gross national income (Ngwira 2018), the majority of the study participants were educated. They also felt that they had adequate access to health care. Seeking early medical care may account for the lower prevalence of neck pain.

The prevalence of neck pain in Northern Sweden (43%) was also higher than that of the present study. A key difference between the two populations was that a larger percentage of participants in the Swedish study were smokers compared to only 5.2% of the participants smoking in this study. In the latter study smoking had a significant effect on neck pain (Guez *et al.* 2002b).

The annual prevalence of neck pain in this population was 26.9%. This was similar to a study in Brazil (24%) and Greece (20.4%) (Ferreira *et al.* 2011; Stranjalis *et al.* 2011). Within the Brazilian population the Mulatto (mixed race) and low-income females with two or more chronic diseases had the highest prevalence of neck pain. Although these factors were insignificant within our population, the stress associated with low income / finances was a significant factor. The results of the current study also concur with those found in the Indian population in Durban, South Africa, where the annual prevalence was 28.8%. Both populations had similar cultural and socioeconomic factors. Both cultures indicate gender inequality with male domination and low socioeconomic status (Chabaya, Rembe and Wadesango 2009; Muchna 2011) making the populations comparable.

5.4 Factors associated with neck pain

Factors that were associated with neck pain in the sample population included stress, age, headaches, shoulder pain, low back pain, motor vehicle accidents, and poor eyesight. Each of these are discussed in more detail below.

5.4.1 Demographics

Age was associated with neck pain in this study with neck pain being more common within the 21 – 35-year age group. In contrast to previous studies, (Cagnie *et al.* 2007; Uthaikhup *et al.* 2015; Eggers 2016), there was an inverse relationship between age and neck pain. According to Fejer and Leboeuf - Yde (2012) spinal pain would decline with age due to increased pain tolerance and less pain provoking activities in the elderly.

5.4.2 Transportation

The results of this study found a relationship between motor vehicle accident involvement and neck pain. This is similar to a study conducted in Sweden where a positive relationship between whiplash injuries and neck/ head injuries was shown (Guez *et al.* 2002b). Whiplash injuries are related to biomechanical overloading of the cervical spine, leading to injury of the facet joints, afferent nerve fibers and capsular ligaments. This causes nociceptive signaling in the peripheral and central nervous systems that lead to persistent pain (Ita *et al.* 2017). Our study however did not investigate the timeline of the trauma in relation to the presence of neck pain, therefore it would be difficult to define this as a causative factor.

5.4.3 Stress

A large proportion of the study participants experienced stress (58.9%). Reasons cited for high stress levels included lack of finances (22.6%), work (18%) and poor living conditions (5.6%). Stress, anxiety and depression have previously been linked to neck pain (Carroll, Cassidy and Côté 2004). Other studies also showed high levels of stress within indigenous populations in Africa where there was dependency on a single person within a household for economic support (Ndlovu 2006: 60-61). In his study on stress in employees in Zimbabwe, Mawanza (2017) found that factors such as anxiety of the unknown, perpetual economic calamity and work related restructuring affected employee productivity. In Zimbabwe subsidized businesses which discouraged investors and high taxes are some of the factors leading to economic instability with the resultant stress. In 2008, the unemployment rate was 94%, hyper-inflation lead to increased poverty and the economic situation lead to failure of businesses (Mufuka and Nguwi 2016; Index of economic freedom 2018) . The resulting stress affects the musculoskeletal system by placing strain on the physiological system leading to muscle tension and fatigue. It can also decrease immune responses (Theorell and Karasek 1996; Lundberg 2002; Magnavita *et al.* 2011). Stress can increase the sympathetic nervous system and hypothalamus pituitary adrenal axis which leads to release of hormones such as serotonin and adrenaline which can stimulate muscle nociceptors and cause overload, myofascial trigger points and pain referral patterns of tension type headaches (Waldie *et al.* 2015).

5.4.4 Headaches

There was an association between headaches and neck pain. This is similar to findings reported by Hogg-Johnson *et al.* (2008). Although headaches can arise from many different aggravating factors, overstimulation of second order neurons in the cervical spine (C1-2) and the trigeminal nerve lead to stimulation of the trigeminocervical nucleus, which can cause referred pain to the head and upper neck. Headache patterns such as pain in the forehead may either be from trigeminal nerve stimulation or from the second order afferent neurons in the cervical spine which receive input from the forehead (Bogduk 1995). There is also a possibility that the headache and neck pain relationship is due to tension neck syndrome which has headaches as a common symptom (Ijaz *et al.* 2016). Tension type headaches have been associated with neck injuries from childhood. The childhood injury leads to skeletal vulnerability while the myogenic referred pain from active myofascial trigger points lead to the formation of tension type headache referral pain patterns (Ijaz *et al.* 2016). The risk factors for tension type headaches include lack of sleep and an inability to self sooth after a busy day. Stress induced pain is larger in tension type headaches than in the other types of headaches, hence it is the most common headaches type in this population.

There is a tendency for musculoskeletal disorders to occur at more than one site which are possibly due to psychosocial factors leading to persistent musculoskeletal symptoms through the central influence of emotion and cognition (Croft 1996). In people with osteoarthritis, it may also be due to multiple joint pathology.

5.4.5 Shoulder pain

A relationship was found between shoulder pain and neck pain. The prevalence of neck (26.9%) and shoulder pain (29.8%) were relatively similar in this population. This supports previous reports of an association between shoulder and neck pain (Peek 2005: 89). Often anatomical shoulder pain, neck and trapezius muscle pain are confused as shoulder pain since specific anatomical areas may not be clear to the lay person (Igumbor *et al.* 2011). Shoulder pain has been associated with smaller bone and muscle structure/size as well as constant loading of the muscles, repetitive and mentally demanding activities (Alipour 2008; Pribicevic 2012: 164).

5.4.6 Low back pain

A prevalence of 35.8% low back pain was present and was associated with neck pain in the study population, this was lower than the prevalence found by Chiwaridzo and Naidoo (2014) in adolescents in Zimbabwe (42.9%). They related this to puberty changes which may cause low back pain that will further continue in adulthood (Chiwaridzo and Naidoo 2014). According to Guez *et al.* (2006), prevalence of low back pain was three times higher in patients with chronic neck pain, suggesting that chronic musculoskeletal pain commonly affects more than one site in the body. Furthermore, the presence of osteoarthritic features in the lower back may also be present in the neck(Jiménez-Sánchez *et al.* 2012). Low back pain has been reported as a co-morbidity and risk factor for neck pain (Goode, Freburger and Carey 2010).

5.4.7 Eyesight

A relationship was found between poor eyesight and neck pain in this population. This may be explained by the constraints of the visual motor pathway, resulting in muscle stiffness which can lead to static loading, fatigue and pain of the muscles. Furthermore, it also causes proprioception and balance disturbance, as well as dizziness. Proprioception is involved in a feedback system with the central nervous system and control of movement. When proprioception is affected in individuals with low /poor vision there is a vicious cycle of muscle pain.

5.4.8 Gender

In our sample population, there was no difference in the prevalence of neck pain between genders. In contrast, a study conducted in Spain reported a higher prevalence of neck pain in females than in their male counterparts (Fejer, Kyvik and Hartvigsen 2006; Fernandez-de-las-Penas *et al.* 2011). In the present study the lack of association between gender and neck pain may be due to the skewed sample, which is predominantly male.

5.4.9 Marital status

Marital status was not associated with neck pain in this population. This however, was different to the findings obtained in populations in South Africa and Greece where marital status was a significant factor for neck pain as married and divorced people had a higher prevalence of neck pain than their unmarried counterparts (Slabbert 2010: 46; Muchna 2011; Stranjalis *et al.* 2011). The difference may possibly be due to the predominance of single participants in this study.

5.4.10 Education

A relationship between level of education and neck pain in this population was not found. This may be due to the small number of uneducated (0.4%, n = 2) and low education level (2%, n = 9) participants. In Zimbabwe, there were education reforms after independence in 1980 where primary school education became free, resulting in an 87.6% increase in enrollment (Kanyongo 2005). Previous reports indicated that low levels of education are associated with low socioeconomic class and both of these were linked to neck pain (Siivola *et al.* 2004).

5.4.11 Income

Income was not found to be associated with neck pain in this population. The people of this country have a low income status, with a gross national income of less than USD $1025, making Zimbabwe similar to lower income bracket countries like Malawi, Tanzania and Somalia (Ngwira 2018). Low levels of income have previously been reported to have a significant effect on neck pain (Ndlovu 2006: 60; Genebra *et al.* 2017).

5.4.12 Smoking and alcohol

Smoking and alcohol consumption were not associated with neck pain in this population, This finding was similar to a study conducted in Sweden (Holmberg *et al.* 2006). Conversely, in America nonsmokers had less back pain than their smoking counterparts. The

musculoskeletal impact occurs because of the nicotine which increases pain sensitivity and pro- inflammatory states as well as the frequent coughing which causes a mechanical pain stimulation of the muscles in the back (Green *et al.* 2016). The latter study also reported that moderate alcohol consumption had a preventative effect on neck pain (Skillgate *et al.* 2009). It must be noted that the proportion of smokers and alcohol drinkers in the current study was very small, with only 5.2% reporting smoking and 23% reporting drinking alcohol.

5.4.13 Chronic disease

The presence of chronic diseases such as diabetes, arthritis, osteoporosis and high blood pressure were not associated with neck pain in this population. This was different to the findings in studies conducted in Madrid and Spain where neck pain was strongly associated with presence of other diseases including arthritis and osteoporosis (Fernandez-de-las-Penas *et al.* 2011; Pribicevic 2012). There was a relatively small number of people with chronic diseases with the exception of high blood pressure which affected 43.6% of the population. Although there was no relationship between neck pain and high blood pressure in our population, it was important to note that the high prevalence of high blood pressure may be due to the stress of work, family and low social status of the participants which was a significant factor in neck pain. The relationship between stress and high blood pressure includes the involvement of the renin angiotensin system and the hypothalamus pituitary adrenal axis which are activated during stress resulting in an increase of blood pressure (Hu *et al.* 2015).

5.4.14 Occupational risk factors

Our population had more full-time employees (38.6%) than self-employed (18.4%) and unemployed (11.3%) participants. Occupation status and neck pain did not have an identifiable relationship with neck pain. In contrast Slabbert (2010: 47) reported that neck pain was more prevalent in the self-employed population, due to the increased stress levels in these people. According to Ndlovu (2006: 91) and Walker-Bone *et al.* (2004), the unemployed and uneducated were most likely to present with neck pain.

Type of occupation and activities were not associated with neck pain in this population. The occupational activities most commonly performed were standing for long periods (21.9%) and sitting for long periods (10.4%). Previous research showed that standing for long periods with neck flexed, working with arms overhead, working in offices with air conditioning and lifting heavy items were identifiable risk factors for neck pain (Slabbert 2010: 50; Al-Mohrej *et al.* 2016). The work activities may not have affected this population due to adaption of the

participants to regular ergonomics and posture to prevent musculoskeletal disorders (Al-Mohrej *et al.* 2016).

Occupational ergonomics such as sitting with no back support, arm support, sitting at a computer, driving for long periods or answering telephones had no association with neck pain. This was similar to studies in Thailand. Despite these findings, ergonomic habits such as working in a seated position with a forward leaning posture has been found as a significant risk factor (Yue, Liu and Li 2012). Poor posture especially in the upper limbs with persistent flexion of the neck has been associated with increased muscular contractions of the extensors and sternocleidomastoid muscles, lack of relaxation leads to postural load and inflammatory states (Cagnie *et al.* 2007; Genebra *et al.* 2017). Sitting with no back support and arm support were relatively high within our population however these activities may have been carried out over short periods of time or with intermittent breaks which have been found to reduce musculoskeletal pain (Eggers 2016).

5.4.15 Exercise

A relationship between exercise and neck pain ,whether negative or positive was not found in this population. Fanavoll (2011) did find that exercise had an inverse relationship with neck pain for both genders. Lack of physical activity in a population has been shown to be closely linked to neck pain (Siivola *et al.* 2004). This effect may not be present due to the large percentage (82.7%, n = 374) of the population that engage in some form of activity.

5.4.16 Sleep-related risk factors

Sleep related risk factors such as use of pillow; sleep positions and type of bedding were not associated with neck pain in our study. This was in contrast to the findings in the White population in South Africa where sleeping on the stomach had a significant effect on neck pain (Slabbert 2010: 54).

5.5 Clinical features of neck pain

5.5.1 Onset of neck pain

The peak of onset of neck pain in this study population was 20 years of age. In the White and Indian populations in South Africa the onset on neck pain was similar (28 years of age ± 13 years), this may have been occupation related due to these years being the early years of work (Slabbert 2010:41; Muchna 2011:56).

The majority of those who suffered from neck pain had gradual onset with no injury. A similar onset was reported from Singapore (Praveen, Lim and O'Brien 2014). Associated factors include poor posture, the neck flexion that occurs with posture of handheld devices “text neck” leads to increased loading of the spine and the onset of wear and tear (Kanchanomai *et al.* 2011; Fares, Fares and Fares 2017).

5.5.2 Duration of recent neck pain

The most common duration of neck pain was one month with some participants reporting that it lasted for as long as six months. This was similar to the population in Norway, where the neck pain duration was mostly a month. Although most were likely to seek treatment for their neck pain, the complete resolution of symptoms after episodes does not occur (Vasseljen *et al.* 2013a).

5.5.3 Treatment

The majority of the participants did not use any treatment for their neck pain, however some self- medicated with over the counter medication and very few visited a doctor. In contrast neck pain sufferers in Australia were more likely to seek medical treatment from both doctors and physiotherapists (Johnston 2016). Several factors are associated with the seeking of treatment including the intensity of pain, the area affected and any possible disability (Leaver *et al.* 2013; Vasseljen *et al.* 2013b).

5.5.4 The severity of neck pain

The participants rated their neck pain as a three (mild) on a scale of one (least) to ten (severe). This was similar to the Indian population in South Africa who rated their severity as a four (Muchna 2011). Ndlovu (2006: 65) also reported a mild nature of neck pain within her study population. The neck pain in this population was reported to be worse in the morning (6.1%) with a few participants reporting the severity worse in the evening (3.0%) and night (3.9%). Neck pain that is worse in the morning is commonly associated with excessive strain on the cervical facets, mostly from poor sleeping postures, which lead to facet joint pain (Kirpalani and Mitra 2008).

5.5.5 Disability due to neck pain

Many participants (42.2%) reported that the neck pain led to absenteeism from work (42.2%), with confinement to bed (22.2%). Some also reported medical boarding (4.3 %) and difficulty with sleeping (2.2%). Similarly, female workers in Australia (57.5 %), also reported

absenteeism from work (Johnston 2016). It may be possible that with musculoskeletal disorders people use coping mechanisms to allow them to work despite experiencing pain, although there is an increased possibility of decreased productivity in those who do attend their work (Johnston 2016).

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

This study investigated the prevalence of neck pain in Harare, Zimbabwe within the indigenous African Population. The point prevalence and life-time prevalence were 16.4% and 26.9%, respectively. Factors that were associated with neck pain in the sample population included stress, age, headaches, shoulder pain, low back pain, motor vehicle accidents, and poor eyesight. Most of the participants did not seek treatment for their neck pain however many self-medicated. There was a low report of any associated disability, however many reported absenteeism from work.

6.2 Limitations

The study relied on self-reporting by using a questionnaire. No physical examination or assessment was conducted. The latter would have improved the outcomes of the study. In addition, the questionnaire did not have any questions related to seeking of alternative treatment from Chiropractors. This information would have been useful in determining whether this form of treatment is being used in Harare, Zimbabwe.

Although we achieved a response rate of 89.7%, the non-probability sampling of the population, specifically the purposive sampling may have skewed the sample. It is possible that only strongly opinioned people may have answered the questionnaire, threatening the external validity of the study (ability to be 100% confident that our small sample size accurately represents the entire population). Although the study was conducted in different sociodemographic areas, the distribution of people may not be completely representative of the target population. This makes it difficult to generalize the results of this study to the general population and therefore the results of this study are specific to its sample population only.

Hence the study is biased in terms of its sampling. The demographic characteristics of this sample population could be different from the population of Harare for instance there was a large proportion of males in the study population compared to the general population. Other characteristics such as age would also differ from the target population as people of certain age groups are more likely to visit shopping centers, for instance fewer old people may frequent these centers. Future studies should take cognizance of this. A randomly selected sample will be more representative of the target population.

6.3 Recommendations

Future studies should use random sampling and possibly a larger sample size. A longitudinal study, which follows participants over a long period of time will also be useful to determine the risk factors associated with neck pain. Prospective studies to determine treatment and prognostic factors should be carried out. Physical examinations may be included in future studies to verify the self-reported current neck pain.

The high prevalence of neck pain, shoulder pain and low back pain within this population shows that chiropractic awareness may be useful within the population, since chiropractic treatment has been shown to improve well-being, decrease pain and increase the quality of life in patients with neck pain (Hays *et al.* 2018). Awareness of other methods of pain relief, such as massage therapy, yoga, and physical therapy would also be useful.

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APPENDICES

Appendix A

Appendix B : Letter of permission to C. Smith

DUT DURBAN UNIVERSITY OF TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE

PERMISSION TO USE NECK PAIN QUESTIONNAIRE

Dear Mr Smith

My name is Aimee Ann Blumears and I am currently in my Masters of Chiropractic at Durban University of Technology. I kindly ask for permission to use your questionnaire on neck pain in Harare on my population base for my research project. I have included the details below as well as a slip to be filled out as standardized proof of your permission if you do choose to agree.

The study to be conducted is:

The epidemiology of neck pain in the African population in Harare, Zimbabwe

I, Christopher Smith give full permission for the respective researcher to use the questionnaire from my study "An Epidemiological study on Neck Pain of a selected Harry Gwala district clinic", for the purposes of data collection in Harare, Zimbabwe.

Name: Christopher Smith

Date: [redacted]

Signature: [redacted]

Thank you for your Cooperation

Yours sincerely

Aimee Ann Blumears [Researcher]

Appendix B

Letter to potential shops locations

AUTHORISATION LETTER FOR PREMISES USE TO CONDUCT MY RESEARCH DATA COLLECTION.

To whom it may concern

RE: Permission to use your premises to conduct my research.

The title of my study is: The epidemiology of neck pain in Harare, Zimbabwe.

My name is Aimee Ann Blumears. I am a Masters student of Chiropractic and would like to request your permission to use shop premises to distribute my questionnaire and obtain data from your customers. I have included the detail of my study. If you choose to agree please fill out blank spaces below as confirmation.

The study to be conducted is:
The epidemiology of neck pain in the Indigenous African population in Harare, Zimbabwe

The questionnaire will take approximately 15 minutes to complete. All data attained will be anonymous and will not in any way be associated back to the participant, you or your church members.

I, Ms. C. J. Makuchete (Manager/ Shop owner) am satisfied with the research procedures and give permission for the respective research to be conducted at Cream Teasing (name of Shop) at a date and time to be settled upon by myself and the researchers.

Name of Manager/ Shop owner Ms C. J. Makuchete

Date 28/6/17

Signature [redacted]

Thank you for your cooperation.

Yours sincerely

Aimee Ann Blumears (Researcher)

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Appendix C

PG 2a

Letter to potential shops locations

AUTHORISATION LETTER FOR PREMISES USE TO CONDUCT MY RESEARCH DATA COLLECTION.

To whom it may concern

RE: Permission to use your premises to conduct my research.

The title of my study is: The epidemiology of neck pain in Harare, Zimbabwe.

My name is Aimee Ann Blumears. I am a Masters student of Chiropractic and would like to request your permission to use shop premises to distribute my questionnaire and obtain data from your customers. I have included the detail of my study. If you choose to agree please fill out blank spaces below as confirmation.

The study to be conducted is:
The epidemiology of neck pain in the indigenous African population in Harare, Zimbabwe

The questionnaire will take approximately 15 minutes to complete. All data attained will be anonymous and will not in any way be associated back to the participant, you or your church members.

I, Ernest Mukinguende ___ [Manager/ ~~Shop owner~~] am satisfied with the research procedures and give permission for the respective research to be conducted at Village Walk Bonanzole (name of Shop) at a date and time to be settled upon by myself and the researchers.

Name of Manager/ ~~Shopowner~~ Ernest Mukinguende

Date 23/11/2017

Signature [redacted]

Thank you for your cooperation.

Yours sincerely

Aimee Ann Blumears (Researcher)

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Appendix D

Letter to potential shops locations

DUT DURBAN UNIVERSITY OF TECHNOLOGY — INSTITUTIONAL RESEARCH ETHICS COMMITTEE

AUTHORISATION LETTER FOR PREMISES USE TO CONDUCT MY RESEARCH DATA COLLECTION.

To whom it may concern

RE: Permission to use your premises to conduct my research.

The title of my study is: The epidemiology of neck pain in Harare, Zimbabwe.

My name is Aimee Ann Blumears. I am a Masters student of Chiropractic and would like to request your permission to use shop premises to distribute my questionnaire and obtain data from your customers. I have included the detail of my study. If you choose to agree please fill out blank spaces below as confirmation.

The study to be conducted is:
The epidemiology of neck pain in the indigenous African population in Harare, Zimbabwe

The questionnaire will take approximately 15 minutes to complete. All data attained will be anonymous and will not in any way be associated back to the participant, you or your church members.

I, _____ (Manager/ Shop owner) am satisfied with the research procedures and give permission for the respective research to be conducted at _____ (name of Shop) at a date and time to be settled upon by myself and the researchers.

Name of Manager/ Shop owner _____

Date _____

Signature _____

OLD MUTUAL PROPERTY ZIMBABWE
24 NOV 2017
Approved
EASTGATE SHOPPING CENTRE

Thank you for your cooperation.

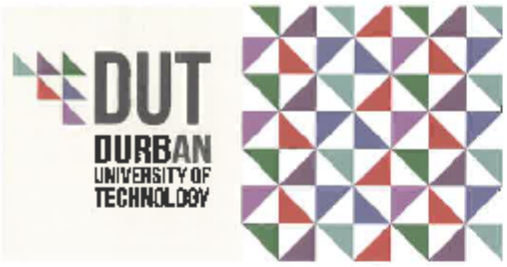
Yours sincerely

Aimee Ann Blumears (Researcher)

Mikwakwire 24/11/2017
Consultant with Marketing
Milton Chiwaakwa

2!

Appendix E



Institutional Research Ethics Committee
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www.dut.ac.za

6 December 2017

IREC Reference Number: REC 93/17

Ms A A Blumears
30 Blackhurst Avenue
Musgrave
Durban

Dear Ms Blumears

The epidemiology of neck pain within the indigenous African population in Harare, Zimbabwe

The Institutional Research Ethics Committee acknowledges receipt of your notification regarding the piloting of your data collection tool.

Kindly ensure that participants used for the pilot study are not part of the main study.

In addition, the IREC acknowledges receipt of your gatekeeper permission letter.

Please note that FULL APPROVAL is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely,

[redacted]

Professor J K Adam
Chairperson: IREC

Appendix F

Telephone: 791792/791193
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Medical Research Council of Zimbabwe
Josiah Tongogara / Mazoe Street
P. O. Box CY 573
Causeway
Harare

APPROVAL

REF: MRCZ/B/1388

28 November, 2017

Aimee Ann Blumears
Durban University Of Technology
Department of Basic Medical Sciences
P.O Box 1334, Durban, 4000
South Africa

RE:- The Epidemiology Of Neck Pain Within The Indigenous African Population In Harare, Zimbabwe

Thank you for the application for review of Research Activity that you submitted to the Medical Research Council of Zimbabwe (MRCZ). Please be advised that the Medical Research Council of Zimbabwe has reviewed and approved your application to conduct the above titled study.

This approval is based on the review and approval of the following documents that were submitted to MRCZ for review:-

a) Study Proposal
b) Informed Consent Forms (English and Shona)
c) Data Collection Tools (English and Shona)

APPROVAL NUMBER : **MRCZ/B/1388**

This number should be used on all correspondence, consent forms and documents as appropriate.

- **TYPE OF MEETING** : **Expedited**
- **EFFECTIVE APPROVAL DATE** : **28 November, 2017**
- **EXPIRATION DATE** : **27 November, 2018**

After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the MRCZ Offices should be submitted three months before the expiration date for continuing review.

- **SERIOUS ADVERSE EVENT REPORTING:** All serious problems having to do with subject safety must be reported to the Institutional Ethical Review Committee (IERC) as well as the MRCZ within 3 working days using standard forms obtainable from the MRCZ Offices or website.
- **MODIFICATIONS:** Prior MRCZ and IERC approval using standard forms obtainable from the MRCZ Offices is required before implementing any changes in the Protocol (including changes in the consent documents).
- **TERMINATION OF STUDY:** On termination of a study, a report has to be submitted to the MRCZ using standard forms obtainable from the MRCZ Offices or website.
- **QUESTIONS:** Please contact the MRCZ on Telephone No. (04) 791792, 791193 or by e-mail on mrcz@mrcz.org.zw

Other

- Please be reminded to send in copies of your research results for our records as well as for Health Research Database.
- You're also encouraged to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study.

Yours Faithfully

[redacted]

MRCZ SECRETARIAT
FOR CHAIRPERSON
MEDICAL RESEARCH COUNCIL OF ZIMBABWE

MEDICAL RESEARCH COUNCIL OF ZIMBABWE
2017 -11- 28
APPROVED
P O BOX CY 573, CAUSEWAY, HARARE

PROMOTING THE ETHICAL CONDUCT OF HEALTH RESEARCH

Appendix G

Questionnaire on Neck Pain

Thank you for agreeing to be part of this pilot study and for taking the time to fill out this questionnaire with us.

PLEASE READ THIS BEFORE STARTING.

- It's your choice whether or not to do the survey.
- Your answers will be kept **confidential**.
- Whether or not you answer the questions will **not** affect your health care or any benefits you may get.
- Please put a cross (X) next to your chosen answer.

(A) Demographics

1. **Age?**

   _____ Years

2. **Gender?**

   ☐ Male ☐ Female

3. **What is your marital status?**

   ☐ Married ☐ Divorced ☐ Separated

   ☐ Widowed ☐ Living together ☐ Single

4. **How many children do you have?**

   _____ Number of children

5. **What is your highest level of education?**

☐ None ☐ Primary ☐ O`Level

☐ A`Level ☐ Tertiary ☐ Other

6. **What is your present occupational status?**

☐ Unemployed ☐ Retired ☐ Housewife

☐ Employed (full time) ☐ Employed (part time) ☐ Student

☐ Self Employed

7. **If employed, what is your occupation or if unemployed or retired what was your longest occupation?**

☐ Businessman ☐ Artisan ☐ Labourer

☐ Housewife ☐ Salesman ☐ Cashier

☐ Farmer ☐ Student ☐ Educator

_____ Other

8. **For how long have you been in your current occupation? (years)**

☐ 0-5 ☐ 6-10 ☐ 11-15

☐ 16-20 ☐ 21-25 ☐ 26-30

☐ Over 30 ☐ N/A

9. What was the duration of your previous occupancy? (years)

☐ 0-5 ☐ 6-10 ☐ 11-15

☐ 16-20 ☐ 21-25 ☐ 26-30

☐ Over 30 ☐ N/A

10. Total monthly income before tax? (USD)

☐ 0- 400 ☐ 401-800 ☐ 801-1200

☐ 1201-1600 ☐ 1601-2000 ☐ 2001-2499

☐ 2500 and above

11. Do you feel you have sufficient access to health care services?

☐ Yes ☐ No

(B) Risk Factors

12. Do you Smoke?

☐ Yes ☐ No

13. If yes to Question 12, approximately how many cigarettes a day?

_____ Number

14. Do you drink alcohol?

☐ Yes ☐ No

15. If yes to question 14, how many units per week?

_____ Number

16. Do you wear glasses?

☐ Yes ☐ No

17. If yes to Question 17, what are the glasses used for?

☐ Reading ☐ Distance ☐ Don't know

18. Have you been diagnosed with any of the following?

☐ Diabetes ☐ Osteoporosis ☐ Cholesterol

☐ High blood pressure ☐ Arthritis ☐ Kyphosis

☐ Depression Other_____

19. Are you taking any medication for the above conditions(s)?

☐ Yes ☐ No

20. If yes, are they?

☐ Prescribed ☐ Over the counter ☐ Herbal

21. How many hours do you spend a day at work?

_____ Hours

22. How many days a week do you work?

____ Days

23. Does your occupation involve any of the following?

☐ Lifting heavy objects ☐ Sitting for long periods

☐ Driving for long periods ☐ Excessive side movement

☐ Standing for long periods ☐ Working with arms overhead

☐ Answering telephones ☐ Working on computer

☐ Working in air-conditioned room

24. Do you feel stressed?

☐ Yes ☐ No

25.If yes to Question 24, what in your opinion causes the stress?

☐ Family ☐ Work

☐ Finances ☐ Studies/school

☐ Friends ☐ Crime

☐ Living Conditions

26. Rate your stress levels according to the following numbers. 1 being the least and 10 being the worst.

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

☐ 8 ☐ 9 ☐ 10

27. Do you do any exercise?

☐ Yes ☐ No

28. What type of exercise/sport do you do?

☐ Running ☐ Swimming ☐ Soccer

☐ Cricket ☐ Cycling ☐ Walking

☐ Rugby ☐ Tennis ☐ Weight training

_____ Other

29.What is the total amount of time spent doing exercise each week?

_____ Hours

30.If you work at a computer, is the monitor in line with your eye level and in front of you?

☐ Yes ☐ No ☐ N/A

31. Do you sit without back support?

☐ Yes ☐ No

32.Do you sit without arm support?

☐ Yes ☐ No

33. During your daily activities, do you bend over excessively?

☐ Yes ☐ No

34. If yes to question 33, for how long?
_____ Hours

35.Which type of transport do you utilize the most?

☐ Car ☐ Bus ☐ Bicycle

☐ Taxi ☐ Walking Other _____

36.If you answered walking or bicycle, is it by choice?

☐ Yes ☐ No ☐ N/A

37. Have you ever been involved in a motor vehicle accident? (Car, motorbike or truck.)

☐ Yes ☐ No

38. If yes to question 37, did you suffer a head or neck trauma in the accident?

☐ Yes ☐ No ☐ Don't Know

39.Have you experienced any other head or neck trauma/injury ?

☐ Yes ☐ No

40. Do you use a pillow when you sleep?

☐ Yes ☐ No

41. How many pillows do you use under your head when you sleep?

_____Number

42. For how long have you been using your current number of pillows?

_____Years

43.What kind of pillow do you use?

☐ Feather ☐ Sponge ☐ Don't know

Other _____

44. What position do you normally fall asleep in?

☐ Side ☐ Stomach ☐ Back

Other _____

45. What do you sleep on?

_____ Answer

46. Do you carry heavy items?

☐ Yes ☐ No

47. Do you favour a particular side of the body when carrying a heavy item?

☐ Yes ☐ No

48.Do you watch television?

☐ Yes ☐ No

49.If yes, how many hours per day?

_____ Hours

50. What position do you watch television in?

☐ Lying on side ☐ Lying on stomach ☐ Lying on back

☐ Sitting up Other _____

51. Do you suffer from headaches?

☐ Yes ☐ No

52. Do you suffer from shoulder pain?

☐ Yes ☐ No

53. Do you suffer from low back pain?

☐ Yes ☐ No

54. Do you currently suffer from neck pain?

☐ Yes ☐ No

55. Did you suffer from neck pain in the last year ?

☐ Yes ☐ No

56. Have you suffered from neck pain at any time in your life?

☐ Yes ☐ No

57. In your own opinion , do you think that your daily activities contribute to your neck pain?

☐ Yes ☐ No ☐ Unsure

(C) Clinical

(Only participants with neck pain are to answer this section)

58. How old were you when you first experienced neck pain?

_____ Years old ☐ Don't know

59. How long have you had neck pain?

Initial _____ days/months/years (circle)

Recent _____ days/months/years (circle)

60. How severe is the pain? Rate the severity with 1 being very mild and 10 being extremely severe.

63.1 Initial?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

☐ 8 ☐ 9 ☐ 10

☐ Do not know

60.2 Recent?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7

☐ 8 ☐ 9 ☐ 10

☐ Don’t know

61.At what time of the day is the pain worst?

64.1 Initial?

☐ Morning ☐ Afternoon ☐ Evening

☐ Night ☐ Activity related ☐ Don’t know

64.2 Recent?

☐ Morning ☐ Afternoon ☐ Evening

☐ Night ☐ Activity related ☐ Don’t know

62. At what time in the day is the pain the least?

65.1 Initial?

☐ Morning ☐ Afternoon ☐ Evening

☐ Night ☐ Activity related ☐ Don’t know

65.2 Recent?

☐ Morning ☐ Afternoon ☐ Evening

☐ Night ☐ Activity related ☐ Don’t know

63. How often do you experience neck pain?

66.1 Initial?

☐ Seldom ☐ Frequently ☐ Constantly

☐ Intermittently

66.2 Recent?

☐ Seldom ☐ Frequently ☐ Constantly

☐ Intermittently

64. How did your neck pain begin?

67.1 Initial

☐ Gradually without injury ☐ Gradually after injury

☐ Abruptly without injury ☐ Abruptly after injury

☐ Don't know

67.2 Recent?

☐ Gradually without injury ☐ Gradually after injury

☐ Abruptly without injury ☐ Abruptly after injury

☐ Don't know

65. How would you describe your progression of neck pain?

68.1 Initial?

☐ Getting worse ☐ Getting better

☐ Staying the same ☐ Don't know

68.2 Recent?

☐ Getting worse ☐ Getting better

☐ Staying the same ☐ Don't know

66. Do you have any trouble doing any of the following activities due to your neck pain?

69.1 Initial?

- ☐ Dressing
- ☐ Bathing
- ☐ Lifting
- ☐ Concentration
- ☐ Work
- ☐ Reading
- ☐ Driving
- ☐ House cleaning
- ☐ Sleeping
- ☐ Recreation
- ☐ N/A

69.2 Recent?

- ☐ Dressing
- ☐ Bathing
- ☐ Lifting
- ☐ Concentration
- ☐ Work
- ☐ Reading
- ☐ Driving
- ☐ House cleaning
- ☐ Sleeping
- ☐ Recreation
- ☐ N/A

67. How would you rate the overall disability of your neck pain?

70.1 Initial?

- ☐ None
- ☐ Mild
- ☐ Moderate
- ☐ Severe

67.2 Recent?

- ☐ None
- ☐ Mild
- ☐ Moderate
- ☐ Severe

68. Have you ever had to stay away from work because of neck pain?

71.1 Initial?

☐ Yes ☐ No ☐ Don't know

71.2 Recent?

☐ Yes ☐ No ☐ Don't know

69. If yes to question 71, for how long?

72.1 Initial?

☐ 0-1 week ☐ 1-2 weeks ☐ 2-3 weeks

☐ 3-4 weeks ☐ More than 4 weeks

69.2 Recent?

☐ 0-1 weeks ☐ 1-2 weeks ☐ 2-3 weeks
☐ 3-4 weeks ☐ More than 4 weeks

73. Have you been bedridden because of neck pain?

73.1 Initial?

☐ Yes ☐ No

73.2 Recent?

☐ Yes ☐ No

74. If yes to question 73, for how long?

74.1 Initial?

☐ 0-1 week ☐ 1-2 weeks ☐ 2-3 weeks

☐ 3-4 weeks ☐ More than 4 weeks

74.2 Recent?

☐ 0-1 week ☐ 1-2 weeks ☐ 2-3 weeks

☐ 3-4 weeks ☐ More than 4 weeks

75. Have you ever been _____ because of neck pain?

☐ Demoted ☐ Medically boarded ☐ Dismissed

☐ N/A

76. What treatment have you sought for your neck pain?

☐ GP ☐ Self-medication ☐ None

Other _____

77. In your opinion, Do you feel stress is related to your neck pain?

☐ Yes ☐ No

Thank you for participating in the pilot study.

Appendix H

GWARO REMUBVUNZO: BOKA

Nhamba Yekupinda Mutsvagurudzo: ___

<u>Gwaro remubvunzo yekurwadza kwemutsipa</u>

Ndinokutendai nekuva muri mumwe wevanhu vapinda mutsvagurudzo ino nekuwana nguva yekupindura mibvunzo nesu.

NDAPOTA VERENGAI ZVIRIPAZASI MUISATI MATANGA

- Isarudzo yako kuva kana kusava mutsvagurudzo
- Mhinduro dzako ndichachengetedzwa pakavanika
- Kupindura kana kusapindura mibvunzo akukanganisi muabatirwo wako kumakiriniki kana zvauchawana
- Unokwanisa kusapindura mimwe mibvunzo yausingadi kupindura
- Ndapota isai X pamberi pemhinduro yawasarudza

○

(A) **Demographics**

1.Makore ekuberekwa?

_____

2.Rudzi?

☐ Murume

☐ Mukadzi

3.Isai X panoenderana nezvamuri ikozvino

☐ Ndakaroorwa/Ndakaroora

- ☐ Ndakasiyana nemurume kana mudzimai
- ☐ Atisi kugara tese nemudzimai kana murume
- ☐ Ndakashayikirwa nemurume kana mudzimai
- ☐ Tinogara tese

4.Mune vana vangani?

_____ Nhamba yevana

5.Makazvikira pachidanho chipi kuchikoro

- ☐ Andina kuenda kuchikoro
- ☐ Primary
- ☐ O Level
- ☐ A Level
- ☐ Tertiary
- ☐ Other

6.Murikuita basa ripi ?

- ☐ Andishandi
- ☐ Ndakarithaya
- ☐ Ndakaroorwa ndinogara pamba
- ☐ Ndinoshanda
- ☐ Ndinoshanda ,kwete nguva dzese
- ☐ Ndinoenda kuchikoro
- ☐ Ndinozvishandira

7.Kana muchishanda , nderipi basa ramunoita ,kana musingashandi kana wakarithaya nderipi basa rawakaita kwenguva yakareba?

- ☐ Muzvinabhisimisi
- ☐ Makanikha,Ndinogadzira magetsi
- ☐ Mushandi
- ☐ Ndinogara pamba
- ☐ Mutengesi
- ☐ Murimi

- ☐ Mudzidisi
- ☐ Ndinoenda kuchikoro
- ☐ Kashiya
- ☐ Rimwe_____

8.Mava nemakore mangani muchiita basa raurikuita? (makore)

- ☐ 0-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 26-30
- ☐ 30 zvechikwira
- ☐ Apana

9.Makashanda makore mangani pabasa ramanga muchiita mushure meramurikuita ikozvino?(makore)

- ☐ 0-5
- ☐ 6-10
- ☐ 11-15
- ☐ 16-20
- ☐ 21-25
- ☐ 26-30
- ☐ 30 zvechikwira
- ☐ Apana

10.Munotambira marii pamwedzi isati yabviswa mutero?(USD)

- ☐ 0-400
- ☐ 402-800
- ☐ 801-1200
- ☐ 1201-1600
- ☐ 1601-2000

- ☐ 2001-2499
- ☐ 2500 zvechikwira

11.Takatarisa panyaya dzezveutano mukufunga kwenyu mune mukana wakakwana here wekubatsirwa muzvipatara nemumakiriniki?

- ☐ Hongu
- ☐ Kwete

(B).Njodzi

12.Munoputa fodya here?

- ☐ Hongu
- ☐ Kwete

13.Kana mati hongu ,munoputa midzanga mingani pazuva?

_____ Nhamba

14.Munonwa doro here?

- ☐ Hongu
- ☐ Kwete

15.Kana mati hongu kumubvunzo uripamusoro , zvikamu kana marita mangani pavhiki ?

_____ Nhamba

16.Munopfeka magirazi here?

- ☐ Hongu
- ☐ Kwete

17.Kana mati hongu kunemubvunzo uripamusoro ,magirazi munomashandisa kuita chii?

- ☐ Kuverenga
- ☐ Kuona zvinhu zvirikure
- ☐ Andizivi

18.Wakamborapwa nechimwe chevirwere izvi here?

- ☐ Chirwere cheshuga

- ☐ Pera Mabhonzo
- ☐ Re Mafuta akawandisa
- ☐ Che BP
- ☐ chirwere chemumajoini
- ☐ chirwere chinoita kuti muzongoza ubhende
- ☐ Kusuruvara
- ☐ Zvimwe _____

19.Murikumwa mushonga kune chipi chezvirwere zviripamusoro here?

- ☐ Hongu
- ☐ Kwete

20.Kana wati hongu , mishonga yacho yakaita sei?

- ☐ Ndakamapihwa mushure mekuona chiremba
- ☐ Ndakatenga mushonga ndisina kuona chiremba
- ☐ Gurumbadzi

21. Munotora maawa mangani pazuva murikubasa?

_____ maawa

22.Munoshanda mazuva mangani pavhiki?

_____mazuva

23. Basa renyu munoita chimwe chezviri pazasi here?

- ☐ Kusimudza zvinhu zvinorema
- ☐ Kugara pasi kwenguva yakareba
- ☐ Kutyaira mota kwenguva yakareba
- ☐ Kufamba nedivi zvakanyanyisa
- ☐ Kumira kwenguva yakareba
- ☐ Kushanda maoko aripamusoro
- ☐ Kudaira runhare
- ☐ Kushandisa computer
- ☐ Kushandira mukamuri ine air condition

24.Munonzwa kushungurudzika mupfungwa here ?

- ☐ Hongu
- ☐ Kwete

25.Kana mati hongu kune mubvuno uripamusoro kufunga kwako chii chinoita kuti ushungurudzike ?

- ☐ Mhuri
- ☐ Basa
- ☐ Nyaya dzemari
- ☐ Shamwari
- ☐ Kupwarwa kwemhosvamhaka
- ☐ Maramiro andirikuita

26.Kubva panhamba 1-10 ,1 zvechiva izvo zvisina kunyanya ,10 achiva iye zvakanya ungati kushungurudzika kwenyu mupfungwa kuri pachidanho chipi.

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10

27.Munotwasanudza muviri here?

- ☐ Hongu
- ☐ Kwete

28.Chii chamunoita pamunonga muchitswasanudza muviri?

- ☐ Kumhanya
- ☐ Kushambira
- ☐ Kutamba Nhabvu
- ☐ Cricket
- ☐ Kuchovha bhasikoro
- ☐ Kufamba
- ☐ Rugby
- ☐ Tenisi
- ☐ Kusimudza simbi
- ☐ _____ zvimwe

29. Pavhuiki munotora nguva yakawanda sei muchitswanaudza muviri?

_____ maawa

30. Kana muchishandisa kombiyuta ,monita yekombuyuta yakaenderana nepane maziso enyu here?

- ☐ Hongu
- ☐ Kwete

31. Munogara musina chekutsigira nacho kumusana here?

- ☐ Hongu
- ☐ Kwete

32. Munogara nechinotsigira maoko ako?

- ☐ Hongu
- ☐ Kwete

33. Munokotama zvakanyanya here pamunenge muchiita zvimwe zvinhu zuva nezuva?

- ☐ Hongu

☐ Kwete

34. Kana mati hongu kune mubvunzo uripamusoro ,munokotama kwenguva yakareba sei?

_____maawa

35.Munonyanya kushandisa chii kufamba?

☐ Mota

☐ Bhazi

☐ Bhasikoro

☐ Tekisi

☐ Kufamba

☐ _____ zvimwewo

36. Kana mati kufamba kana bhasikoro ,kusarudza kwenyu here?

☐ Hongu

☐ Kwete

☐ Apana mhinduro

37. Makamboita njodzi nemota here?(mota,mudhudhudhu)

☐ Hongu

☐ Kwete

☐ Andizivi

38. Kana mati hongu kune mubvunzo uripamusoro ,makakuvara musoro kana mutsipa here panjodzi yacho?

☐ Homgu

☐ Kwete

☐ Andizivi

39. Kana mati hongu kune mubvunzo uripamusoro ,kukuvara kwacho inga kuripachidanho chakaita sei, chakanayanya here techishandisa 1 sekwete zvakanyanya ,10 ari zvakanyanya.

☐ 1

☐ 2

☐ 3

☐ 4

- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10

40. Makamborwadziwa nemusoro kana kuti mutsipa here?

- ☐ Hongu
- ☐ Kwete

41. Kana mati hongu kune mubvunzo uripamusoro ,techitarisa kukuvara kwacho kuti inga kwakanyanya sei kubva 1-10 ,1 ari kwete zvakanyanya , 10 ari zvakanyanya.

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10

42. Munoshandisa piro here pamunorara?

- ☐ Hongu
- ☐ Kwete

43. Munoshandisa mapiro mangani pamunorara?

_____ nhamba

44. Mapiro amurikushandisa .mamashandisa kwenguva yakareba sei?

_____ makore

45. Munoshandisa piro rakaita sei?

- ☐ Munhenga
- ☐ Chipanji
- ☐ Andizivi
- ☐ Zvimwewo_____

46. Munorara sei?

- ☐ Nerutivi
- ☐ Nedumbu
- ☐ Nemusana
- ☐ Zvimwe_____

47. Munorara pai?

_____ Mhinduro

48. Munotakura zvinhu zvinorema here?

- ☐ Hongu
- ☐ Kwete

49. Pamunotakura zvinhu zviniorema munofarira kana kunyanya kutakura muchishandisa rutivi rumwe chete here?

- ☐ Hongu
- ☐ Kwete

50. Kana mati hongu munowanzosimudza kangani?

- ☐ Kamwe pazuva
- ☐ Kamwe pavhiki
- ☐ Kamwe pamwedzi
- ☐ Kudarika kamwe pazuva
- ☐ Kudarika kamwe pavhiki

51. Munoona terevhizheni here?

- ☐ Hongu
- ☐ Kwete

52. Kana mati hongu munoona terevhizheni kwema awa mangani pazuva?

_____ maawa

53. Pamunonga muchiona terevhizheni munonga makaita sei?

- ☐ Ndakarara nerutivi
- ☐ Ndakarara nedumbu
- ☐ Ndakarara nemusana
- ☐ Ndakagara
- ☐ _____Zvimwe

54. Munorwadziwa nemusoro here?

- ☐ Hongu
- ☐ Kwete

55. Munorwadziwa nepfudzi here?

- ☐ Hongu
- ☐ Kwete

56. Munorwadziwa nemusana here?

- ☐ Hongu
- ☐ Kwete

57. Ikozvino munorwadziwa nemutsipa here?

- ☐ Hongu
- ☐ Kwete

58. Makamborwadziwa nemutsipa here mwedzi wadarika?

- ☐ Hongu
- ☐ Kwete

59. Makamborwadziwa nemutsipa here muupenyu hwenyu?

- ☐ Hongu
- ☐ Kwete

60. Sekuona kwenyu munofunga kuti zvamunoita zuva rega rega zvinoita kuti murwadziwe nemutsipa here?

- ☐ Hongu

- ☐ Kwete
- ☐ Andinyatsokuziva

(C) Kiriniki

(Vanorwadziwa nemutsipa ndivo vanopindura mibvunzo iri muchikamu chino)

61. Manga mune makore mangani pamakatanga kurwadziwa nemutsipa?

_____ makore

- ☐ Andizivi

62. Marwadziwa nemutsipa kwenguva yakareba sei?

_____

63. Mutsipa wenyu unorwadza zvakanyanya sei?Unorwadza zvakanyanya sei ,1 kwete zvakanyanya ,10 zvakanyanya

63.1 Pakutanga?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10
- ☐ Andizivi

63.2 .Izvezvi?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4

- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10
- ☐ Andizivi

64. Mutsipa unonyanya kurwadza nguva ipi ?

64.1 .Pakutanga?

- ☐ Mangwanani
- ☐ Masikati
- ☐ Manheru
- ☐ Usiku
- ☐ Kana ndechiita basa
- ☐ Andiivi

64.2. Izvezvi?

- ☐ Mangwanani
- ☐ Masikati
- ☐ Manheru
- ☐ Usiku
- ☐ Kana ndechiita basa
- ☐ Andizivi

65. Ndeipi nguva isinganyanyi kurwadza mutsipa?

65.1 Pakutanga?

- ☐ Mangwanani
- ☐ Masikati
- ☐ Manheru
- ☐ Usiku
- ☐ Kana ndechiita basa

- ☐ Andizivi

65.2 Izvezvi?

- ☐ Mangwanani
- ☐ Masikati
- ☐ Manheru
- ☐ Usiku
- ☐ Kana ndechiita basa
- ☐ Andizivi

66. Munowanzo rwadziwa nemutsipa zvakaita sei?

66.1 Pakutanga?

- ☐ Kashoma
- ☐ Nguva dzose
- ☐ Zvakasimba
- ☐ Pano nepapo

66.2 Izvezvi?

- ☐ Kashoma
- ☐ Nguva dzose
- ☐ Zvakasimba
- ☐ Pano nepapo

67.Mutsipa wenyu wakatanga kurwadza sei?

67.1 Pakutanga

- ☐ Kashoma nekashoma pasina kukuvara
- ☐ Kashoma nekashoma mushure mekukuvara
- ☐ Ndisingatarisiri pasina kukuvara
- ☐ Ndisingatarisiri mushure mekukuvara
- ☐ Andizivi

67.2 Izvezvi?

- ☐ Kashoma nekashoma pasina kukuvara
- ☐ Kashoma nekashoma mushure mekukuvara
- ☐ Ndisingatarisiri pasina kukuvara
- ☐ Ndisingatarisiri mushure mekukuvara
- ☐ Andizivi

68. Mungatsanangura sei kurwadza kuri kuita mutsipa wenyu?

68.1 Pakutanga

- ☐ Zvirikutowedzera
- ☐ Zvirikuita nani
- ☐ Zvingori zvazvanga zviri
- ☐ Andizivi

68.2 Izvezvi?

- ☐ Zvirikutowedzera
- ☐ Zvirikuita nani
- ☐ Zvingori zvazvanga zviri
- ☐ Andizivi

69. Nekuda kwekurwadza kurikuita mutsipa murikunetseka kuita zvinhu zviri pazasi here?

- ☐ Kupfeka hembe kana kuti rokwe
- ☐ Kugeza
- ☐ Kusimudza zvinhu
- ☐ Ubindikiti
- ☐ Kuita Basa
- ☐ Kuverenga
- ☐ Kudhiraivha
- ☐ Kutsvaira mumba
- ☐ Kurara
- ☐ Kutandara

69.2 Izvezvi?

- ☐ Kupfeka hembe kana kuti rokwe

- ☐ Kugeza
- ☐ Kusimudza zvinhu
- ☐ Ubindikiti
- ☐ Kuita Basa
- ☐ Kuverenga
- ☐ Kudhiraivha
- ☐ Kutsvaira mumba
- ☐ Kurara
- ☐ Kutandara

70. Urikurwadza sei mutsipa wenyu?

70.1 Pakutanga?

- ☐ Apana
- ☐ Bijana
- ☐ Pakati nepakati
- ☐ Zvakanyanya

70.2 Izvezvi?

- ☐ Apana
- ☐ Bijana
- ☐ Pakati nepakati
- ☐ Zvakanyanya

71. Makamborega kuenda kubasa here nekuda kwekurwadza kwemutsipa?

71.1 Pakutanga?

- ☐ Hongu
- ☐ Kwete
- ☐ Andizivi

71.2 Izvezvi?

- ☐ Hongu
- ☐ Kwete

- ☐ Andizivi

72. Kana mati hongu kune mubvunzo uri pamusoro , kwenguva yakareba sei?

72.1 Pakutanga?

- ☐ Vhiki rimwe
- ☐ Vhiki rimwe kusvika maviri
- ☐ Mavhiki maviri kusvika matatu
- ☐ Mavhiki matatu kusvika mana
- ☐ Kupfuura mavhiki mana

72.2 Izvezvi?

- ☐ Vhiki rimwe
- ☐ Vhiki rimwe kusvika maviri
- ☐ Mavhiki maviri kusvika matatu
- ☐ Mavhiki matatu kusvika mana
- ☐ Kupfuura mavhiki mana

73. Makambosvika panguva yekurara pasi nekuda kwekurwadza kwemutsipa here?

73.1 Pakutanga?

- ☐ Hongu
- ☐ Kwete

73.2 Izvezvi?

- ☐ Hongu
- ☐ Kwete

74. .Kana mati hongu kune mubvunzo uri pamusoro, kwenguva yakareba sei?

74.1 Pakutanga?

- ☐ Vhiki rimwe
- ☐ Vhiki rimwe kusvika maviri
- ☐ Mavhiki maviri kusvika matatu
- ☐ Mavhiki matatu kusvika mana
- ☐ Kupfuura mavhiki mana

74.2 Izvezvi?

- ☐ Vhiki rimwe
- ☐ Vhiki rimwe kusvika maviri
- ☐ Mavhiki maviri kusvika matatu
- ☐ Mavhiki matatu kusvika mana
- ☐ Kupfuura mavhiki mana

75. Makambo_____ nekuda kwekurwadza kwemutsipa?

- ☐ Kudzikisirwa pabasa
- ☐ Kupinda muchipatara
- ☐ Kudzingwa pabasa

76. Makarapwa nani kurwadza kwemutsipa wenyu?

- ☐ GP
- ☐ Ndakazvirapa
- ☐ Apana
- ☐ _____zvimwe

Maita basa nekuva mutsvagurudzo ino.

Appendix I

Letter of Information

Dear Participant

Welcome to my study.

Title of research study: The prevalence, risk factors, impact of neck pain in the African population in Harare, Zimbabwe

Principal Investigator/ Researcher: Aimee Ann Blumears

Co-investigators/ supervisors: Dr F Haffejee, Dr Alistair Makowe

Brief Introduction and purpose of the Study: Due to the unstable economic situation in Zimbabwe, risk factors for neck pain such as high levels of stress, anxiety and depression are common within the population. This study aims to determine if the situation has led to a greater predisposition to neck pain and if the clinical features differ from the data collected in developed countries, determining of the management plans from the international arena are appropriate for Zimbabwe.

Outline of procedures: If you participate in this study, you will be asked to fill in a questionnaire which will take approximately 15 min to complete the questionnaire. You will then be required to return the questionnaire to the researcher. Your name and other personal information will not be included in the questionnaire document. The consent form that you sign will be kept separately from the questionnaire document.

Risk or Discomfort to the participant: There will be no risks or discomforts if you participate in the study.

Benefits: (To the participant and to and to the researcher/s e.g. publications)

The profiling of demographic, physical and clinical data seeks to assist the Chiropractic profession in terms of management plans within socio-economic and personal context.

The researchers will benefit by publishing the data.

Reason/s why the Participant May Be Withdrawn from the Study:

You may withdraw from the study, if you feel uncomfortable about answering any of the questions. There will be no adverse consequences for you if you choose to withdraw from the study.

Remuneration: There will be no remuneration for participant in the study.

Cost of study: You will not be expected to pay towards any cost of the study.

Confidentiality: (Description of the extent to which confidentiality will be maintained and how will this be maintained?)

All information gathered by this study is confidentiality. Data is being collected only for research purposes. Your data will be identified by a study number, not names, and stored in a locked research area. Access to all data will be limited to study personnel. What we find from this study may be presented at meeting or published in papers, but your name will never be used in these presentations or papers.

Research –related injury:

The research will not cause any injury to you.

Persons to Contact in the Event of Any Problems or Queries:

Researcher: Aimee Ann Blumears (+27764789967)

Supervisor: Dr F Haffejee (+27832918796)

Co-Supervisor: Dr. Alistair Makowe (stair101@gmail.com)

Institutional Research Ethics administrator on 031 373 2900.

Complaints can be reported to the DVC: Acting Director: Research and Postgraduate Support, Prof C Napier on 031 373 2577 or carinn@dut.ac.za

Thank you for participating in research.

Appendix J

Tsamba yekupinda mutsvagurudzo

Tsamba yeruzivo uye mvumo yekupinda mutsvagurudzo
Anodiwa ari mutsvagurudzo
Ndinokutambirai mutsvagurudzo yandirikuita

Zita retsvagurudzo : Chidzidzo chandirikuita ichi chinonzi icho huwandu, kurwadza kwemutsipa ,zvinoita kuti kurwadza kwemutsipa kuwedzere nezvinokanganiswa nekurwadza kwemutsipa kune vanhu vemuafrica muHarare muZimbabwe.

Mukuru Muchengeti / Muongorori: Aimee Blumears

Co-vatsva / vatariri: Dr F Haffejee, Dr Alistair Makowe

Tsvagurudzo muchidimu : Nekuda kwekusamira zvakanaka kwakaita zveupfumi munyika yeZimbabwe zvikonzero zvinoita kuti kurwadza kwemutsipa kuwande muvanhu zvakaita sekusagadzikana mupfungwa kana kushungurudzika ,bandika kana kufunganywa nekusuruwara kana kudotora zvirikunyanya kuwanika muvanhu.Tsvagurudzo ino inoda kuona kuti kusamira zvakanaka kwakaita zveupfumi kune chekuita nehuwandu hwekurwadza kwemutsipa here.Humbowo huchawanikwa mumakiriniki nehwakaonekwa mutsvagurudzo dzakaitwa munyika dzichirikubudirira huchatariswa ,kuda kuona kuti hurongwa hwekutarira kana kumanija kunoitwa pasi pose hunoita ere muZimbabwe.

Chinangwa chetsvagurudzo: Kuona huwandu,zvikonzero , nezvinoitika nekuda kwekurwadza kwemutsipa kune zvizvarwa zvemuAfrica ,muHarare munyika yeZimbabwe.

Zvichaitika mutsvagurudzo : Mumwe namumwe achapiwa zvinyorwa zvinofana kunge zvechishandiswa mutsvagurudzo zvinova izvo: Tsamba ine humbowo hwetsvagurudzo ne Tsamba inoratidza kuti vapinda mutsvagurudzo vapa mvumo.

Kana iwe uchiita chikamu muchidzidzo ichi, uchakumbirwa kuzadza mubhuku remibvunzo iyo inotora anenge maminitsi gumi nemashanu kuti apedze rugwaro rwemashoko. Iwe zvino uchazodiwa kuti udzorere mubhuku remibvunzo kumutsvakurudzi. Zita rako nedzimwe ruzivo

rako pachako hazvizobatanidzwi mubhuku remibvunzo yekutsvaga. Fomu yemvumo yaunosayina ichachengetwa yakasiyana nedhipatimendi remibvunzo

Dambudziko kana kushungurudzika kune uyo anobatanidzwa: Hapachazovi nengozi kana kuvhiringidzika kana iwe ukatora chikamu muchidzidzo.

Mabatsiro: (Kumubatanidzwa uye kune uye kumutsvakurudzi / s ezvinyorwa mabhuku) Kufuridzirwa kwehuwandu hwevanhu, muviri uye kuchipatara dambudziko rinoda kubatsira Chiropractic basa maererano nezvirongwa zvekugadzirisa mukati mehupfumi nehupfumi hwehupenyu. Vatsvakurudzi vanobatsirwa nekudhinda dheta.Chikonzero / chikonzero nei Muiti weMubatanidzwa Anogona Kubviswa kubva **Padzidzo:** Iwe unogona kubvisa kubva pakudzidza, kana iwe uchinzwa usina kunetseka nekupindura chero ipi yeipi mibvunzo. Hakuzovi nemigumisiro yakaipa pamusoro pako kana ukasarudza kurega kubva pachidzidzo.

Mubairo: Hapachazovi nemubairo wevatora chikamu muchidzidzo.

Mari yekudzidza: Haungatarisiri kubhadhara kune chero mari yekudzidza.

Kuvanzika: (Tsanangudzo yehuwandu hwekuchengetedzwa kwakavanzika huchaita sei uye izvi zvichachengetedzwa sei?). Zvose mashoko akaunganidzwa nekudzidza iyi ndeyekuvanza. Dhiyabhorosi iri kuunganidzwa chete nekuda kwekutsvakurudza. Dhawenyu yako ichave yakatarwa nenhamba yekudzidza, kwete mazita, uye yakachengetwa munzvimbo yakatsvakurudza nzvimbo. Kuwanika kune deta rose kuchave kwakakwana kune vanoongorora. Zvatinowana kubva pakuongorora izvi zvinogona kuiswa pamusangano kana kuparidzirwa mumapepa, asi zita rako harizomboshandiswi muzvirevo izvi kana mapepa.Kutsvakurudza -kubatana kukuvara: Tsvakurudzo haingakonzeri kukuvadza kwako.

Kana uine mibvunzo yakanangana netsvagurudzo ,kodzero dzako semunhu arikupinda mutsvagurudzo kana zvinhu zvamanga musingatarisiri ndapota sunungukai kufonera vanhu ava:

Researcher : Aimee Ann Blumears (+27764789967)
Supervisor : Dr F Haffejee (+27832918796)
Co-Supervisor: Dr. Alistair Makowe (stair101@gmail.com)
Institutional Research Ethics administrator on 031 373 2900
Zvichemo kana zvamusina kunzwisisa kana kufarira zvinotaurwa kuna DVC : TIP , Prof F Otieno panamba dzerunhare dzinoti idzo 031 373 2382 kana kuti dvctip@dut.ac.za
Ndinokutendai nekuva mutsvagurudzo
Ndini wenyu

Appendix K

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Aimee Ann Blumears, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _____,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerized system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____	_____	_____	_____
Full Name of Participant	**Date**	**Time**	**Signature**

I, Aimee Ann Blumears, herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Aimee Blumears	_____	_____
Full Name of Participant	**Date**	**Signature**

Appendix L

Mvumo: **Boka**

Sitatimendi yekubvuma kuva mutsvagurudzo:

- Arikuita tasvagurudzo Aimee Ann Blumears anyatsokundirayira pamusoro pekuti tsvagurudzo iyi ndeyeyi,batsiro nenjodzi kuburikidza nekupinda mutsvagurudzo ino.Nhamba yekodzero yemunhu arikupinda mutsvagurudzo :_____.
- Ndaverenga, ndanzwisisa uye ndapihwa tsamba yezvakanyorwa pamusoro (tsamba yearimutsvagurudzo) maringe netsvagurudzo.
- Ndinonzwisisa kuti zvichawanikwa mutsvagurudzo ,zvechisanganisira zvatakurukura kusanganisira makore angu ekuzvarwa nemavanga(akaitika pandakakuvara) zvichashandiswa kuburitsa zvinonga zvaoneka mutsvagurudzo.
- Maererano nezvinodiwa mustvagurudzo , ndinobvuma kuti humbowo huachawanikwa mutsvagurudzo ino zvichaiswa nekushandiswa zviri mukombiyuta nearikuita tsvagurudzo.
- Ndinokwanisa kuregedza kuva mutsvagurudzo kana kuchinja pfungwa kusava mutsvagurudzo nguva ipi zvayo.
- Ndawana nguva yakakwana yekubvunza mibvunzo nekutaura kuti ndavakukwanisa kuva mutsvagurudzo.
- Ndinonzwisisa kuti zvese vichawanikwa mutsvagurudzo zvinoenderana nekuva kwangu mutsvagurudzo ndichazvipihwa.

Kana watpindura Kwete kune upi zvawo mubvunzo uri pamusoro apo , pihwa ruzivo rwakakwana nearikuita tasvagurudzo musati masaina.Maita basa.

_____ _____ _____

Zita reari mutsvagurudzo Zuva Sainecha

Ini Aimee Ann Blumears ndinosimbisa kuti ndapa ruzivo rwakakwana kune ari kupinda mutsvagurudzo pamusoro petsvagurudzo , muitirwe uchaitwa tsvagurudzo nezvinokwanisa kuitika zvisingatarisirwi mutsvagurudzo.

_____ _____ _____

Zita rearikuita tsvagurudzo Zuva Sainecha

Appendix M

CONFIDENTIALITY STATEMENT-PILOT GROUP DECLARATION

CONFIDENTIALITY STATEMENT-PILOT GROUP

DECLARATION

Important Notice: It is mandatory for every member of the focus group to read and complete all blocks below

1] Confidentiality of all the information within the research documents and any content discussed during the focus group sessions must be made mandatory especially in regard to the information on any research participants

2] The questionnaires must be kept anonymous by coding with no block for identifying data

3] The content discussed within the focus group must not be discussed with any outside party.

4] The content from the focus group will be made public in research journals; however no identifying data will be shared to keep anonymity.

Once read and agreed to, please complete the blocks below and sign to agree to the above terms and conditions.

Member stands for	Member's Name	Signature	Contact Details

Appendix N

GWARO REZVAKAVANZIKA RETSVAGURUDZO REBOKA

<u>Chiziviso Chakakosha: Zvakakosha kuti munhu wese ari muboka reavo varimutsvagurudzo kuti vaverenge nekuzadzisa panofana kunyorwa pasi apo</u>

1] Kuchengetedzwa kwezvese zvauchatipa zvinosanganisira makore ako ,kero yako mumagwaro etsvagurudzo patichange techikurukura seboka zvinofana kukohomedzerwa nekunyatsokuitwa kunyanya vapinda mutsvagurudzo.

2] Magwaro emubvunzo achachengetwa pakavanzika maita evanhu vapinda mutsvagurudzo asipo.

3] Zvataurwa mutsvagurudzo azvifani kutaurwa nemunhu asina kupinda mutsvagurudzo.

4] Zvichawanikwa mumapoka zvichaburitswa kune vamwe vanhu asi vanonga vasingazivi kuti zvabva kuna ani.

Kana maverenga nekubvumirana nezviripamusoro apo , zadzisai gwaro riri pasi apo.

Anomirirwa nearimutsvagurudzo	Zita reari mutsvagurudzo	Sainecha	Nhamba derunhare