The effect of migraine-type headaches on quality of life in an adolescent population in the Westville ward of the Pinetown School District

By

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I, Amy Jane Wurzel, do hereby declare that this dissertation is representative of my own work in both conception and execution (except where acknowledgements indicate to the contrary)

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DEDICATION

I dedicate this dissertation to my parents, Lisa and Neil Wurzel; without your constant support, this would not have been possible.

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ABSTRACT

BACKGROUND

Migraine-type headaches (MTHs) are the most common disabling disorder in children and adolescents, affecting approximately 10% of children and adolescents. Migraine-type headaches are common in children over the age of 14 years and the incidence peaks between the ages of 15 and 24 years. Migraine-type headaches affect many aspects of an adolescent's life often leading to comorbid psychological issues such as anxiety and depression. The headaches also affect productivity and cause an increase in school absenteeism.

AIM

The aim of this study was to explore the effect of migraine-type headaches on the quality of life in an adolescent population in the Westville ward of the Pinetown School District.

METHODOLOGY

Data were collected through semi-structured interviews using a qualitative descriptive approach. Probing questions supplemented the main questions being asked. The interviews relied on the participants' own perspective to provide insight into the effects of migraine-type headaches. Adolescents who met the inclusion criteria and agreed to participate in the study were interviewed. A minimum of 10 participants were required for this study. Data were collected until data saturation was obtained and, therefore, the total number of research participants who participated in the study was 14. The data were audio recorded and thereafter transcribed verbatim. Thematic data analysis was used to analyse the data using the Tesch method.

RESULTS

The participants explained that their migraine-type headaches affected their education, homework, concentration and/or chores. Some participants mentioned that they had to miss social events or cancel plans with friends, while others mentioned that it has affected their relationships with family and friends. Many participants mentioned that their MTHs affected them emotionally in some way and resulted in anger, frustration and/or worry. Most of the participants explained that their MTHs affected their extra-curricular activities, hobbies and general movement.

CONCLUSION

Migraine-type headaches have a negative effect on the quality of life in the adolescent population. This is consistent with similar studies done on migraine-type headaches in adolescent populations.

KEYWORDS: Migraine-type headaches, adolescents, quality of life.

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LIST OF ABBREVIATIONS, ACRONYMS AND SYMBOLS

%:	Percentage
CSD:	Cortical Spreading Depression
DUT:	Durban University of Technology
IHS:	Internal Headache Society
IREC:	International Research and Ethics Committee
MTHs:	Migraine-type headaches
NSAIDs:	Non-Steroidal Anti-Inflammatory Drugs
TACs:	Trigeminal Autonomic Cephalalgias
TTHs:	Tension-type headaches
SUNA:	Short-lasting unilateral neuralgiform headache attacks with autonomic symptoms
SUNCT:	Short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing
WHO:	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION TO THE STUDY

A headache is defined as “pain located in the head, above the orbitomeatal line and/or nuchal ridge” (International Headache Society (IHS) 2019) and is one of the most common complaints seen in practice (Rizzoli and Mullally 2018: 17). Headaches have many patterns of presentation and are divided into primary and secondary headaches (Ravishankar 2012: 7). Primary headaches are not caused by an underlying disease or condition, while secondary headaches are a result from an underlying disease or condition (IHS 2019). Primary headaches are far more common than secondary headaches, making up 90% of headaches seen in practice (Ravishankar 2012: 7). Primary headaches are further divided into migraine-type headaches (MTHs), tension-type headache (TTH), trigeminal autonomic cephalalgias and other primary headache disorders (IHS 2013: 643). The focus of this study was on MTHs.

Migraine-type headaches are described as intermittent disabling neurovascular disorders commonly affecting productivity and quality of life (Bartleson and Cutrer 2010: 36). Migraine-type headaches are typically unilateral, pulsating and are usually accompanied by many autonomic, affective, cognitive and sensory symptoms (Burstein, Noseda and Borsook 2015: 6619-6620). The most common symptoms are nausea, vomiting, photosensitivity, phonophobia and cutaneous allodynia (Dodick 2018: 1315).

The World Health Organization (WHO) (2019) defines an adolescent as an individual between the ages of 10 to 19 years of age. Migraine-type headaches affect many aspects of an adolescent’s life often leading to comorbid psychological issues such as anxiety and depression (Gazerani 2021: 10). The headaches also

impact productivity and cause an increase in school absenteeism (Sproul, MacCallum and Ledger 2017: 1277).

1.2 PROBLEM STATEMENT

Migraine-type headaches are the most common disabling disorder in children and adolescents, affecting approximately 10% of children and adolescents (Böttcher et al. 2020: 29; Peeler Peden and Temples 2019: 657). Migraine-type headaches are common over the age of 14 years and the incidences peak between the ages of 15 and 24 years (Abu-Arafeh *et al.* 2010: 1096; Bartleson and Cutrer 2010: 36). Migraine-type headaches usually begin mid to late adolescence and continue into adulthood with its highest prevalence in late adolescences and early adulthood (Colon et al. 2019: 1; Peeler Peden and Temples 2019: 657). There is a paucity in the literature on the effects of MTHs in adolescents in South Africa. Further research in this field will be beneficial to health care providers and practitioners, especially in terms of management, as it will contribute to the body of knowledge. Qualitative research will also provide a more detailed understanding of how MTHs affect the adolescent population.

1.3 AIM

The aim of this study was to explore the effect of migraine-type headaches on the quality of life in an adolescent population in the Westville ward of the Pinetown School District.

1.4 RESEARCH QUESTIONS

1. What effect do migraine-type headaches have on daily activities in adolescents?
2. What impact do migraine-type headaches have on adolescents socially?
3. How do migraine-type headaches affect adolescents emotionally?

4. How do migraine-type headaches affect adolescents with respect to physical activity?

1.5 RATIONALE

Migraine-type headaches affect 11% of the global population and approximately 10% of children and adolescents (Peeler Peden and Temples 2019: 657; Semenov 2015: 218). The occurrences of migraine-type headaches are common in individuals over 14 years old. The incidence of MTHs tend to peak between the ages of 15 and 24 years (Abu-Arafeh *et al*. 2010: 1096; Bartleson and Cutrer 2010: 36).

There is a striking increase in the prevalence of MTHs at the onset of puberty (Larsson, Sigurdson and Sund 2018: 1). It is believed that those peaks in the incidences may be due to changes in hormones throughout adolescence, genetic factors and exposure to environmental stressors (Agosti 2018: 18; O'Brien and Cohen 2015: 1405). Throughout puberty, there is a female predominance and this is usually linked to the onset of menarche (O'Brien and Cohen 2015: 1405).

Migraine-type headaches affect many aspects of an adolescent's life often leading to comorbid psychological issues such as anxiety and depression (Gazerani 2021: 10). Due to of the severity of MTHs, scholars often avoid participating in many activities, such as attending school or going to social gatherings (Kabbouche and Gilman 2008: 535). Migraine-type headaches impact productivity and lead an increase in school absenteeism (Sproul, MacCallum and Ledger 2017: 1277). Scholars with MTHs have also reported having difficulty staying focused in class and completing their homework (Rees and Sabia 2009: 26). There is a reduced quality of life with respect to physical, socio-economic and school functioning in children and adolescents with MTHs, especially between the ages of eight to 17 years (Koller, Diesner and Voitl 2019). According to Gazerani (2021: 1), physical, social, and school functioning are negatively affected by MTHs.

Quality of life can be defined as "the perception of an individual's position in life associated with his objectives, expectations, interests, and standards of life"

(Taşkapilioğlu and Karli 2013: S60). According to a qualitative study conducted in the United States of America by Donovan, Mehringer and Zeltzer (2013), adolescents with MTHs often have difficulty explaining to others about their migraine experiences and they also did not believe that their family and friends understand what their headaches feel like. This results in the adolescents isolating themselves and having a negative self-image.

According to Crestani (2015: 36), 58% of the adolescents attending public high schools in the Pinetown School District are affected by primary headaches. According to the South African Schools Act 84 in 1996, public schools are government controlled (Government Gazette 1996). In the Pinetown School District, there was a prevalence of MTHs by 17.2%, which was the second most prevalent primary headache (Crestani 2015: 60). The risk factors for the primary headaches included a history of experiencing headaches, a decline in participation in sport, difficulty sleeping and sleep bruxism (Crestani 2015: 60).

Migraine-type headaches tend to differ considerably with respect to age, gender and sociodemographic variables (Agosti 2018: 18). Thus, MTHs may affect adolescents differently in South Africa in comparison to other countries where similar studies have been conducted. In South Africa, there is limited research into the effects of MTHs in adolescents and, therefore, further research into this field will be beneficial.

In South Africa, Crestani (2015) conducted an epidemiological investigation into primary headaches in an adolescent population in the Pinetown School District using quantitative research methods. Crestani (2015: 61) emphasized the importance of further research into the burden of specific headaches on adolescents. Qualitative research in this field can provide a deeper understanding of how MTHs effect adolescents and thus may be more helpful to chiropractors, especially in terms of management.

1.6 OUTLINE OF THE THESIS

Chapter One has included an introduction to the study. The problem statement, aim, research questions and rationale are stated.

Chapter Two is an extensive review of the literature relating to this study. This chapter also examines headaches, adolescents, and the chiropractic profession in more detail.

Chapter Three includes the methodology that has been used for this study. The study design, location, population, sampling strategy, sample characteristics, sample size, participant requirements, research tools and the data collection process have been included in this chapter.

Chapter Four includes the results of the study. The effect of migraine-type headaches on quality of life in an adolescent population in the Westville ward of the Pinetown School District are reported.

Chapter Five interprets and discusses the results of the study. The results are also compared to previous studies that are similar to this dissertation.

Chapter Six concludes the study and provides recommendations for further research.

1.7 SUMMARY OF THE CHAPTER

This chapter was an introduction to the study which included the definition of primary and secondary headaches, an overview of how migraine-type headaches affect adolescents and how it is relevant to the Chiropractic profession. The problem statement, aim and research questions were stated. The rationale behind the study was included to highlight the significance of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will present the available literature on MTHs. The search engines used to access the articles in the study included DUT Open Scholar, DUT Institutional Repository, ScienceDirect and Research Gate. The keywords that were used in order to find the articles were “adolescents”, “migraines”, “migraine-type headaches”, “primary headaches”, “impact”, “effect”, “quality of life”, “migraines AND adolescents” and “migraines AND impact”.

Migraine-type headaches are described as intermittent disabling neurovascular disorders commonly affecting productivity and quality of life (Bartleson and Cutrer 2010: 36). The headaches are typically unilateral, pulsating and are usually accompanied by many autonomic, affective, cognitive and sensory symptoms (Burstein, Noseda and Borsook 2015: 6619-6620). The most common symptoms being nausea, vomiting, photosensitivity, phonophobia and cutaneous allodynia (Dodick 2018: 1315). Migraine-type headaches are becoming increasingly common, affecting 11% of the global population and 10% of children and adolescents (Peeler Peden and Temples 2019: 657; Semenov 2015: 218). Migraine-type headaches are common over the age of 14 years and the incidence peaks between the ages of 15 and 24 years (Abu-Arafeh *et al.* 2010: 1096; Bartleson and Cutrer 2010: 36).

Migraine-type headaches affect many aspects of an adolescent’s life often leading to comorbid psychological issues such as anxiety and depression (Gazerani 2021: 10). The headaches also impact productivity and cause an increase in school absenteeism (Sproul, MacCallum and Ledger 2017: 1277). According to Gazerani (2021: 1), physical, social, and school functioning are negatively affected by MTHs.

2.2 DEFINITION OF A HEADACHE

A headache is defined as “pain located in the head, above the orbitomeatal line and/or nuchal ridge” (International Headache Society (IHS) 2019) and is one of the most common complaints seen in practice (Rizzoli and Mullally 2018: 17). Headaches have many patterns of presentation and are divided into primary and secondary headaches (Ravishankar 2012: 7). According to the IHS (2019), a primary headache is defined as a “headache, or a headache disorder, not caused by or attributed to another disorder” and a secondary headache is defined as a “headache, or a headache disorder, caused by another underlying disorder”.

2.3 DEFINITION OF AN ADOLESCENT

The World Health Organization (WHO) (2019) defines adolescents as individuals between the ages of 10 to 19 years.

2.4 EPIDEMIOLOGY OF HEADACHE DISORDERS

Headache disorders are one of the most common disorders of the neurovascular system and are highly prevalent throughout the world, affecting people of all ages, races, income levels and geographical areas (WHO 2016). Headaches are felt, at some time, by nearly everybody in the world and it is estimated that 50% of the global population are affected by current headache disorders (WHO 2011). Approximately 95% of people have experienced a headache at least once in their lifetime (Ahmed 2012: 124). According to Ahmed (2012: 124), headaches account for one in 10 general practitioner consultations, one in three neurology referrals and one in five of all acute medical admissions.

2.4.1 Prevalence of Headache Disorders

According to Hagen *et al*. (2018: 1), the prevalence of headaches in adults is 71.6%. In children and adolescents, the prevalence of headaches is 75.7% (Philipp *et al*. 2019: 1). The prevalence of headaches is higher in girls (82.1%), than in boys (67.7%) (Philipp *et al*. 2019: 1). The prevalence of MTHs varies between 2.6% and 21.7%, with an average prevalence of 12% of a variation among countries (Yeh, Blizzard and Taylor 2018: 1).

The prevalence of MTHs in South Africa is estimated to be 11.17% (Stovner *et al.* 2018: 965). According to Crestani (2015: 36), the prevalence of headache disorders in the Westville ward of the Pinetown School District is 58%, where the most common headache was a tension-type headache (TTHs) (27%), followed by MTHs (17%) and non-primary headaches (13%) (Crestani 2015: 36).

2.4.2 Incidence of Headache Disorders

The incidence of headaches in adults is 18.5% (Hagen *et al*. 2018: 1). According to WHO (2016), about 50% of adults globally currently suffer from headaches. According to Baykan *et al.* (2015: 3), the incidence of MTHs is estimated to be 2.38% per year. The incidences per year are estimated to be 2.98% of women and 1.93% of men (Baykan *et al.* 2015: 3).

2.5 CLASSIFICATION AND DESCRIPTION OF PRIMARY HEADACHES

Primary headaches are far more common than secondary headaches, making up 90% of headaches seen in practice (Ravishankar 2012: 7). Primary headaches are further divided into migraine-type headaches (MTHs), tension-type headache (TTHs), trigeminal autonomic cephalalgias and other primary headache disorders (IHS 2019).

2.5.1 Tension-Type Headache

Tension-type headaches are the most prevalent primary headaches, which present as recurrent episodes lasting minutes to weeks (Chowdhury 2012: S83; Jensen 2018: 339). The global active prevalence of TTHs is 40% (Rizzoli and Mullally 2018: 17). According to Magazi and Manyane (2015: 26), there are three classifications of TTHs: infrequent episodic (less than one day of headaches a month), frequent episodic (one to 14 days of headaches per month) and chronic episodic (15 or more days of headaches per month).

Tension-type headaches are classified as pressing or tightening in quality, mild to moderate in intensity, bilateral with respect to location and pain that is not worsened by physical activity (Chowdhury 2012: S83; Jensen 2018: 339). Nausea and vomiting are always absent which helps differentiate between MTHs and TTHs (Chowdhury 2012: S84). Either photophobia or phonophobia may be present but the presence of both is not allowed (Chowdhury 2012: S84).

Although the exact cause of TTHs is unknown; there are many aggravating factors that may contribute to a TTH (Chowdhury 2012: S84; Pluta, Cassio and Golub 2011: 450). According to Chowdhury (2012: S84), stress, lack of sleep and not eating on time are the most common factors. Less commonly, alcohol and menstruation may contribute to TTHs (Chowdhury 2012: S84). Sleep disorders, bruxism, stress, psychiatric conditions, and fibromyalgia are also commonly associated with TTHs (Magazi and Manyane 2015: 26-27).

A clinical diagnosis is only usually necessary as the diagnosis relies only on symptoms; therefore, it is extremely important to take a thorough case history (Chowdhury 2012: S83). Although no laboratory tests can confirm the diagnosis, some patients may be sent for further investigations to rule out any secondary causes of the headache (Chowdhury 2012: S84).

The treatment and management of TTHs includes pharmacologic and non-pharmacologic treatment (Magazi and Manyane 2015: 27). Triggers should be

avoided if possible and medication can be given for the treatment of acute attacks and for the prevention of TTHs (Magazi and Manyane 2015: 27). However, most people with TTHs never seek advice and treatment from a medical professional as they usually treat their headaches with over-the-counter analgesics (Chowdhury 2012: S83). As a result of this, major health issues can develop over time and the individual will suffer considerably (Chowdhury 2012: S83).

2.5.2 Trigeminal Autonomic Cephalalgias

According to the IHS (2013: 665), trigeminal autonomic cephalalgias include cluster headaches, paroxysmal hemicrania, short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing (SUNCT), short-lasting unilateral neuralgiform headache attacks with cranial autonomic symptom (SUNA), hemicrania continua and probable trigeminal autonomic cephalalgia.

Trigeminal autonomic cephalgias are very uncommon in comparison to MTHs and TTHs (Rizzoli and Mullally 2018: 17). Cluster headaches are the most common trigeminal autonomic cephalgia, with a global prevalence of 0.1% (Rizzoli and Mullally 2018: 17). Cluster headaches are classified as severe unilateral pain that can last between 15 to 180 minutes, once every other day, and up to eight times a day (IHS 2013: 665). The headache is associated with ipsilateral conjunctival injection, lacrimation, nasal congestion, rhinorrhoea, eyelid oedema, forehead, and facial swelling, miosis or ptosis (Weaver-Agostoni 2013: 811).

Paroxysmal hemicrania is described as attacks of severe unilateral pain that last between two to 30 minutes and occur several times a day (IHS 2013: 666). The headache is associated with ipsilateral conjunctival injection, lacrimation, nasal congestion, rhinorrhoea, forehead, and facial sweating, miosis, ptosis and/or eyelid oedema (IHS 2013: 666).

Short-lasting, unilateral neuralgiform headache attacks are classified as moderate to severe unilateral head pain that lasts seconds to minutes, at least once a day, and is usually associated with lacrimation and redness of the eye (IHS 2013: 667).

Short-lasting unilateral neuralgiform headaches are divided into headache attacks with conjunctival injection and tearing and attacks with cranial autonomic symptom (IHS 2013: 665).

Hemicrania continua is described as a unilateral headache, associated with ipsilateral conjunctival injection, lacrimation, nasal congestion, rhinorrhoea, forehead and facial sweating, miosis, ptosis and/or eyelid oedema, and/or with restlessness or agitation (IHS 2013: 668).

Probable trigeminal autonomic cephalalgia is defined as trigeminal autonomic cephalalgia that is missing one of the features of the criteria for either cluster headaches, paroxysmal hemicrania, SUNCT, SUNA or hemicrania continua and does not fulfil criteria for another headache disorder (IHS 2013: 669).

2.5.3 Other Primary Headache Disorders

According to the IHS (2013: 672), other primary headache disorders are divided into four categories: headaches associated with physical exertion, headaches attributed to direct physical stimuli, epicranial headaches and other miscellaneous primary headache disorders. The pathogenesis of these headaches are not well understood and the treatment is mostly based on unscientific reports and uncontrolled trials (IHS 2013: 672).

2.6 CLASSIFICATION AND DESCRIPTION OF SECONDARY HEADACHES

Secondary headaches include:

- Headaches attributed to trauma or injury to the head and/or neck.
- Headaches attributed to cranial or cervical vascular disorder.
- Headaches attributed to non-vascular intracranial disorder.
- Headaches attributed to a substance or its withdrawal.
- Headaches attributed to infection.

- Headaches attributed to disorder of homoeostasis.
- Headaches or facial pain attributed to disorder of cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cranial structure.
- Headaches attributed to psychiatric disorder (IHS 2013: 683; Rizzoli and Mullally 2018: 23).

2.7 MIGRAINE-TYPE HEADACHES

According to the IHS (2019), MTHs are described as recurrent headaches typically lasting between 4 to 72 hours. The headaches are typically unilateral, pulsating, moderate to severe, aggravated by routine physical activity and associated with nausea and/or photophobia and phonophobia (IHS 2019). The pain is usually quite severe but the intensity, as well as the frequency and duration, may vary with every individual and every episode (Bartleson and Cutrer 2010: 36). Migraine-type headaches are classified into two major categories: MTHs with an aura and MTHs without an aura (IHS 2013: 644).

Although MTHs are typically described as unilateral, MTHs in children and adolescents are often bilateral (IHS 2019). The location of the MTHs usually changes from bilateral to unilateral in late adolescence or early adulthood (IHS 2019). Adolescents tend to present with bilateral frontotemporal pain initially and later with unilateral temporal headaches, but it is common for the location and intensity to vary within or between attacks (Youssef and Mack 2019: 34). Migraine-type headaches in children and adolescence also tend to be of a shorter duration, typically lasting around two hours, in comparison to adults (Youssef and Mack 2019: 34).

Migraine-type headaches affect individuals in most aspects of their life and have a negative impact on their quality of life, even when they are not experiencing an attack (Burton *et al*. 2009: 436). Studies have suggested that individuals who suffer from MTHs tend to have a lower quality of life when compared to the general population (Burton *et al.* 2009: 436).

According to the WHO (2020), quality of life is defined as “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”. Physical, mental, social and functional health are frequently included when assessing an individual’s quality of life (Post 2014: 170-171).

2.7.1 Epidemiology of Migraine-Type Headaches

Migraine-type headaches affect 5% to 10% of the global population and 11% of children and adolescents (Lee 2020: 215; Peeler Peden and Temples 2019: 657). According to Chawla (2020), the global prevalence of current migraines is estimated to be 10%, while the lifetime prevalence is estimated to be 14%. According to Das and Qubty (2021: 5), the prevalence of MTHs ranges from 3% in children to 23% in adolescents. Migraine-type headaches are common over the age of 14 years and the incidence peaks between the ages of 15 and 24 years (Abu-Arafeh *et al.* 2010: 1096; Bartleson and Cutrer 2010: 36). According to Crestani (2015: 36), MTHs have a prevalence of 17.2% in the Westville ward of the Pinetown School District.

There has been a striking increase in the prevalence of MTHs at the onset of puberty (Larsson, Sigurdson and Sund 2018: 1). It is believed that the peak in incidence may be due to changes in hormones throughout adolescence, genetic factors, and exposure to environmental stressors (Agosti 2018: 18; O'Brien and Cohen 2015: 1405). Throughout puberty, there is a female predominance and this is usually linked to the onset of menarche (O'Brien and Cohen 2015: 1405). Approximately 50% of women have described a relationship between their attacks and menstrual cycle (Böttcher et al. 2020: 29). According to Böttcher et al. (2020: 29), women of reproductive age are three times more likely to suffer from MTHs in compareison to men.

2.7.2 Pathogenesis of Migraine-Type Headaches

There are various symptoms and neurological disturbances seen throughout all the phases of MTHs, which are the premonitory, aura, headache, and postdrome

phases (Goadsby *et al.* 2017: 554; Dodick 2018: 5). The symptoms and neurological disturbances are complex and poorly understood, and thus there are many theories surrounding the pathogenesis of MTHs (Goadsby *et al.* 2017: 554; Dodick 2018: 5).

The premonitory phase usually begins up to 72 hours before the headache, but it may also continue into the aura, headache and postdrome phases (Goadsby *et al.* 2017: 555). The symptoms related to the premonitory phase include changes in mood and activity, irritability, fatigue, food cravings, repetitive yawning, stiff neck and phonophobia and the symptoms are believed to be linked with an increase in hypothalamic blood flow (Goadsby *et al.* 2017: 555-556). With plenty of evidence linked to the involvement of the hypothalamus during the premonitory phase, the hypothalamus has been identified as having a crucial role in promoting pain transmission during a migraine attack (Dodick 2018: 5; Puledda, Messina and Goadsby 2017). According to Dodick (2018: 5), there are two theories that exist. The first theory suggests that increased parasympathetic tone activates meningeal nociceptors, and the second theory involves the modulation of nociceptive signal from the trigmenial nucleus caudalis to supratentorial structures involved in pain processing.

According to the IHS (2013: 646), an aura is defined as “recurrent attacks, lasting minutes, of unilateral fully reversible visual, sensory or other central nervous system symptoms that usually develop gradually and are usually followed by headache and associated migraine symptoms”. An aura commonly consists of visual disturbances (flashes of bright light, “foggy” vision, zigzag lines, and scotoma), sensory disturbances (numbness or tingling in the face or extremities) and speech disturbances (IHS 2013: 646; Viana *et al.* 2019: 6).

The aura phase is believed to be linked to cortical spreading depression (CSD), which is a transient wave of neuronal depolarization of the cortex (Goadsby *et al.* 2017: 556; Puledda, Messina and Goadsby 2017). According to Chawla (2020), the CSD causes potassium or the excitatory amino acid glutamate to be released from neural tissue and this release depolarizes the adjacent tissue, which releases more

neurotransmitters, and grows the spreading depression. The CSD is still poorly understood and many theories exist (Dodick 2018: 8).

The pain associated with MTHs is a result of the trigeminovascular pathway activation (Dodick 2018: 8). The CSD activates the trigeminal fibers and, as a result, it causes the headache phases (Chawla 2020). Plasma proteins and pain-generating substances, such as calcitonin gene-related peptide, substance P, vasoactive intestinal peptide and neurokinin A, are released by the dural blood vessels as the CSD stimulates nociceptive neurons (Chawla 2020). As a result of this, the inflammation is further accompanied by vasodilation, which ultimately produces pain (Chawla 2020).

Tiredness, difficulties in concentrating and neck stiffness are common postdrome symptoms that occur after the headache phase (Goadsby *et al.* 2017: 556). The pathophysiology of the postdrome phase is still unknown, although it has been suggested that the symptoms are linked to the medication taken to treat the MTHs (Goadsby *et al.* 2017: 557).

2.7.3 Aetiology, Trigger Factors and Risk Factors Related to Migraine-Type Headaches

Although the exact cause of MTHs is not well understood, it is known that MTHs have a large genetic component (Khan 2021: 2). Approximately 70% of migraine patients have a family history of MTHs (Chawla 2020). Many migraine patients have first-degree relatives who also suffer from MTHs (Goadsby 2012). Familial hemiplegic migraine (FHM) has been linked to chromosome 19p13 in 50% of the reported families (Goadsby 2012). According to Hansen (2010: 1), FHM is a rare subtype of migraine with transient hemiplegia during the aura phase.

Identifying trigger factors in migraine patients is extremely important as it is commonly seen as an effective way to prevent the development of MTHs (Mollaoğlu 201: 992). The most commonly reported trigger factors related to MTHs are dietary factors (hunger, milk and cheese, alcohol, coffee and chocolate); sleep (oversleep,

lack of sleep and changes in time of sleep); stress (crying, conflict, argument and aggressiveness); environmental (sun/clarity, cold weather, hot weather, cigarette smoking and smell, including perfume, gasoline, food and cleaning products); hormonal factors (menstruation, pregnancy, menopause and oral contraceptives) and physical activity (head and neck movements, exercise and sexual intercourse) (Mollaoğlu 201: 989).

According to Chawla (2020), predisposing migraine risk factors include the following:

- Increased levels of C-reactive protein.
- Increased levels of interleukins.
- Increased levels of TNF-alpha and adhesion molecules (systemic inflammation markers).
- Oxidative stress and thrombosis.
- Increased body weight.
- High blood pressure.
- Hypercholesterolemia.
- Impaired insulin sensitivity.
- High homocysteine levels.
- Stroke.
- Coronary heart disease.

2.7.4 Clinical Presentation and Diagnostic Criteria for Migraine-Type Headaches

Migraine-type headaches are typically unilateral and localised in the frontotemporal and ocular area, but pain can be felt elsewhere in the head and neck (Chawla 2020; IHS 2013: 645). In children and adolescents, MTHs are frequently often characterised by bilateral pain and a frontal location (Böttcher 2020: 29; Youssef and Mack 2019: 34). Migraine-type headaches are pulsating in nature and moderate to severe in intensity (IHS 2013: 645). A migraine attack can last around four to 72 hours, although it is usually for a shorter period in children and adolescents compared to adults (Böttcher 2020: 29; Youssef and Mack 2019: 34).

Table 2.1: Diagnostic classification of migraine-type headaches with and without an aura

Migraine without aura	Migraine with aura
A. At least five attacks fulfilling criteria B–D. B. Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated). C. Headache has at least two of the following four characteristics: 1. Unilateral location. 2. Pulsating quality. 3. Moderate or severe pain intensity. 4. Aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs). D. During headache at least one of the following: 1. Nausea and/or vomiting. 2. Photophobia and phonophobia. E. Not better accounted for by another ICHD-3 diagnosis.	A. At least two attacks fulfilling criteria B and C B. One or more of the following fully reversible aura symptoms: 1. Visual 2. Sensory 3. Speech and/or language 4. Motor 5. Brainstem 6. Retinal C. At least two of the following four characteristics: 1. At least one aura symptom spreads gradually over 5 minutes, and/or two or more symptoms occur in succession. 2. Each individual aura symptom lasts 5-60 minutes. 3. At least one aura symptom is unilateral. 4. The aura is accompanied, or followed within 60 minutes, by headache. D. Not better accounted for by another ICHD-3 diagnosis, and transient ischaemic attack has been excluded.

(IHS 2013: 645-646)

2.7.5 Impact of Migraine-Type Headaches

2.7.5.1 Adults

Migraine-type headaches were ranked as the third most prevalent disorder and the seventh highest specific disability worldwide in the Global Burden of Disease Survey in 2010 (IHS 2013: 644). The WHO ranked MTHs as the second most disabling neurological disorder in the world (Dodick 2018: 1315). Migraine-type headaches have been associated with having a lower quality of life and having a negative impact on work productivity in the general population (Burton *et al.* 2009: 440-441). It is estimated that eight work hours are lost per migraine attack and 88 work hours are lost per year due to MTHs (Burton *et al.* 2009: 437). Furthermore, there are many direct and indirect costs involved, thus causing a huge economic burden (Agosti 2018: 22). Direct costs include the costs for the diagnosis and treatment of

MTHs, including the medical visits and medication involved. Indirect costs include those caused by the negative impact on work productivity (Agosti 2018: 22).

Not only do MTHs have a negative impact on work productivity, but there are also many challenges associated with maintaining the home environment and caring for children and/or other family members; therefore, it negatively affects the sufferer's spouse and/or children (Kroon Van Diest *et al.* 2017: 3). The negative impact on the family members can result in them suffering from anxiety and depression (Kroon Van Diest *et al.* 2017: 3). Studies in America and Brazil have also shown that adults with MTHs also seem frequently to suffer from comorbid anxiety and depressive disorders (Peres *et al.* 2017; Kroon Van Diest *et al.* 2017: 3).

Physical activity is believed to either trigger or worsen a migraine attack and, therefore, it is commonly avoided (Lippi, Mattiuzzi and Sanchis-Gomar 2018: 3-4). In contradiction to this belief, recent studies have suggested that *regular* physical activity has been linked to a decrease in frequency, severity and duration of migraine attacks, because sudden/irregular physical activity can either trigger or worsen a migraine attack, resulting in a vicious cycle between physical inactivity and MTHs (Lippi, Mattiuzzi and Sanchis-Gomar 2018: 3-4).

According to Rogers *et al.* (2020), in America, people with MTHs participated in less physical activity than others. even on days in which an attack was not experienced. According to Basdav, Haffejee and Puckree (2016: 3), a third of the participants in a study conducted at the Durban University of Technology reported neglecting leisure activities due to their headaches. Reduced participation in social events and enjoyment in activities have also been reported in patients with MTHs (Buse *et al*. 2016: 608).

According to Lee (2020: 215), both adults and adolescents with MTHs have reported a reduced quality of life. Limitations in daily activities such as school, work and family activities have been experienced in adults and adolescents (Lee 2020: 215). Migraine-type headaches have also been reported to affect those around them, in

adults and adolescents, causing relationship difficulties with family and friends (Kroon Van Diest *et al.* 2017: 3

2.7.5.2 Adolescents

Migraine-type headaches affect many aspects of an adolescent's life often leading to comorbid psychological issues such as anxiety and depression (Gazerani 2021: 10). Research suggests that MTHs impact relationships with family and friends (Kabbouche and Gilman 2008: 535). Due of the severity of MTHs, scholars often avoid partaking in many activities, such as attending school or going to social gatherings (Kabbouche and Gilman 2008: 535). Migraine-type headaches impact productivity and have shown to increase school absenteeism (Sproul, MacCallum and Ledger 2017: 1277). Scholars with MTHs have also reported having difficulty staying focused in class and completing their homework (Rees and Sabia 2009: 26).

In a cross-sectional questionnaire-based study done in Austria by Koller, Diesner and Voitl (2019), it was shown that there is a reduced quality of life with respect to physical, socio-economic and school functioning in children and adolescents between the ages of eight to 17 years with MTHs.

A qualitative study conducted in the United States of America by Donovan, Mehringer and Zeltzer (2013) reported that adolescents with MTHs often have difficulty explaining to others about their migraine experiences and they did not believe that their family and friends understood what their headaches felt like. This resulted in the adolescents isolating themselves, which often lead to a negative self-image.

2.7.5.2.1 Impact on Daily Activities

Studies have suggested that children and adolescents with MTHs have been found to miss more school, have a poorer academic performance and difficulty paying attention in class when compared to their peers of the same age (Kroon Van Diest *et al.* 2017: 3; Shimomura 2021: 830). According to Agosti (2018), adolescents with

MTHs tend to miss a lot more time at school due to MTHs. At school, children and adolescents tend to function at less than 50% of their normal productivity due to a migraine (Kroon Van Diest *et al.* 2017: 3).

In a recent questionnaire conducted in Austria, more than a third of children and adolescents who suffer from MTHs thought that their grades would be better without migraines (Koller, Diesner and Voitl 2019: 5). According to Kabbouche and Gilman (2008: 535), MTHs affect daily activities such as attending school and has a significant impact on the adolescent's life and school performance. Children and adolescents should be able to perform daily activities, such as attending school and participating in extracurricular activities, as it is key in the development process. Therefore, limitations in these areas have a significant negative impact on the children and adolescents suffering with MTHs (Gazerani 2021: 1)

2.7.5.2.2 Impact on Social Life

Migraine-type headaches have a negative impact on adolescents' social life which is due to a number for reasons such as emotional issues, decreased quality of life, disability and the presence of pain (Gazerani 2021: 1; Raggi *et al.* 2012: 601). Adolescents with MTHs also tend to miss social events due to a migraine attack and, therefore, it can be seen that MTHs have a significant impact on their relationships with family and friends (Kabbouche and Gilman 2008: 535; Kroon Van Diest *et al.* 2017: 3). Adolescents have reported that they find it difficult explaining to others about their MTHs and they desire to isolate themselves as self-management during an attack (Donovan, Mehringer and Zeltzer 2013: 7).

The decrease in socialisation also negatively impacts their relationships with family and friends (Helvig and Minick 2013: 22). Family life is often impacted as changes have to be made in order to accommodate a child/adolescent with MTHs resulting in a decreased quality of life in both children/adolescents and their families (Donovan, Mehringer and Zeltzer 2013: 7; Shimomura 2021: 826). Some siblings have also reported being jealous or feeling neglected due to their parents giving

more attention to the child/adolescent with MTHs (Donovan, Mehringer and Zeltzer 2013: 7).

2.7.5.2.3 Emotional Impact

Migraines do not only impact the children and adolescents with MTHs, but they also impact the people around them (Kroon Van Diest *et al.* 2017: 3). Studies have suggested that there is an increased burden on parents and/or caregivers and decreased relationship quality, resulting in anxiety and depressive disorders in both the children/adolescent and parent/caregiver (Kroon Van Diest *et al.* 2017: 3). Anxiety and depression have been commonly seen among children and adolescents with MTHs (Gazerani 2021: 10; Pradeep *et al.* 2020: 21; Shimomura 2021: 827). Along with anxiety and depressive disorders, MTHs have also been associated with panic attacks, emotional and mental distress (Pradeep *et al.* 2020: 21; Youssef and Mack 2019: 35).

As well as the common anxiety and depressive disorders seen in children and adolescents with MTHs, children and adolescents also tend to worry about when the next attack may occur and the unpredictable interruptions in their daily activities (Estave *et al.* 2021: 1009; Kroon Van Diest *et al.* 2017: 3). Anger, stress, phobia and concerns about the disease have also been commonly seen in patients with MTHs (Raggi *et al.* 2012: 598; Shimomura 2021: 830).

2.7.5.2.4 Impact on Physical Activity

According to Koller, Diesner and Voitl (2019: 5), children and adolescents with MTHs exercise less often per week (less than three times a week), compared to children and adolescents without MTHs (Koller, Diesner and Voitl 2019: 7). Children and adolescents reported avoiding physical exercise either due to a migraine attack or in fear of triggering a migraine attack (Koller, Diesner and Voitl 2019: 7). According to Noor, Sajjad and Asma (2016: 161), 43% of scholars with MTHs noted that social and extra-curricular activities are affected due to MTHs, while 12.8% of scholars with MTHs reported avoiding extra-curricular activities due to MTHs.

Physical functioning is negatively affected in children and adolescents with MTHs (Gazerani 2021: 1). In the Westville ward of the Pinetown School District, it was noted that patients with MTHs reported having to miss sports or leisure activities due to an attack (Crestani 2015: 48).

2.7.6 Management of Migraine-Type Headaches

The management of MTHs depends on the duration, frequency and intensity of the headaches (Sonal Sekhar *et al*. 2012: 1). Migraine episodes that occur on 15 or more days per month, with at least eight moderate to severe episodes, with associated symptoms (nausea and/or vomiting, and photophobia and/or phonophobia) are considered chronic (Kroon Van Diest *et al*. 2017: 2).

2.7.6.1 Pharmacological

Pharmacological treatment depends on if the MTHs are acute or chronic (Weatherall 2015: 119).

2.7.6.1.1 Acute

Acute treatment is taken during attacks or exacerbations of chronic pain (Weatherall 2015: 119). The treatment of acute MTHs includes first-line and second-line therapies (Mayans and Walling 2018: 244-248). First-line therapies include combination analgesics, non-steroidal anti-inflammatory drugs (NSAIDs), triptans and a combination of triptans and NSAIDS (Gilmore and Michael 2011: 276-277). Combination analgesics are cheap, effective and available over the counter (Gilmore and Michael 2011: 276).

Non-steroidal anti-inflammatory drugs, such as aspirin, diclofenac, ibuprofen and naproxen, are commonly used for the treatment of mild to moderate MTHs (Mayans and Walling 2018: 244).

Triptans are migraine-specific drugs and are commonly used for the treatment of moderate to severe MTHs, or mild to moderate MTHs, that are unresponsive to analgesics (Gilmore and Michael 2011: 277). Triptans have the same mechanisms of action but have different routes of administration, absorption, distribution, metabolism and excretion, allowing the choice of triptan to be specific to each patient and migraine pattern (Mayans and Walling 2018: 245). Triptans also have very few major side effects (Mayans and Walling 2018: 245). Patients may also take a combination of triptans and NSAIDs which are effective in the treatment of acute MTHs (Gilmore and Michael 2011: 277).

Dihydroergotamine, opioids and antiemetics are just as effective for acute MTHs but they are described as second-line agents due to the side effects, route of administration, cost and potential abuse (Mayans and Walling 2018: 248). Dihydroergotamine is effective against MTHs but has many adverse effects due to its decreased receptor specificity (Mayans and Walling 2018: 248). Nausea, leg cramps and tingling of the extremities are the most common adverse effects and as a result of this, dihydroergotamine should not be used in pregnant women (Mayans and Walling 2018: 248).

Opioids, such as butorphanol, codeine, tramadol, and meperidine, are effective for the treatment of acute MTHs (Mayans and Walling 2018: 248). They have a high abuse potential and decrease response to therapy; therefore, everyday use is not recommended (Mayans and Walling 2018: 249). Independent of their anti-nausea effects, anti-emetics are effective in the treatment of acute MTHs (Gilmore and Michael 2011: 277). Anti-emetics are often administered parenterally (Mayans and Walling 2018: 249).

There is limited evidence in the treatment of acute MTHs in children and adolescents (Gilmore and Michael 2011: 279). Only three triptans are approved for use in children and adolescents: almotriptan for children and adolescents from 12 to 17 years of age, rizatriptan for children and adolescents from six for 17 years of age; and sumatriptan, in combination with naproxen, for children and adolescents from 12 years and older (Mayans and Walling 2018: 249). Due to the limited information

and studies in children and adolescents, prevention is essential (Gilmore and Michael 2011: 279).

2.7.6.1.2 Chronic

Chronic MTHs often interfere with work, school or social life; therefore, preventative treatment is usually necessary (Weatherall 2015: 119). Numerous medications, such as beta blockers, angiotensin blockers, tricyclics, anticonvulsants, flunarizine and onabotulinum toxin A, have been shown to be effective in the preventative treatment of MTHs (Weatherall 2015: 119-121). The choice of medication can depend on the pattern of headaches, comorbid conditions, patient's tolerance, teratogenicity, adverse effects and patient choice (Weatherall 2015: 119).

The treatment of chronic MTHs includes lifestyle and trigger management, acute treatments, and preventive treatment (Weatherall 2015: 118-119). Although lifestyle adjustments and trigger reduction have been found effective, medication is necessary in the majority of patients with chronic MTHs (Weatherall 2015: 118-119). Many patients with chronic MTHs have other co-morbid conditions, such as anxiety, depression and fibromyalgia, and these conditions may exacerbate the MTHs (Weatherall 2015: 119). Therefore, the correct management and treatment of the co-morbid condition is necessary (Weatherall 2015: 119).

2.7.6.2 Non-pharmacological

Many people avoid taking acute and prophylactic medication for a number of reasons, such as the side effects or other comorbid conditions (Chaibi, Tuchin and Russell 2011: 127). Prescribed medication may also increase the risk of medication overuse and dependence and thus non-pharmacological management is also a treatment option (Rist *et al.* 2019: 533). Physical and manual therapies are the most commonly used complementary and alternative therapies for the management of headaches in the world (Moore *et al.* 2017: 2).

Studies have suggested that massage therapy, physiotherapy, relaxation and chiropractic spinal manipulative therapy may be just as effective as prophylactic medication (Chaibi, Tuchin and Russell 2011: 127). Chiropractors are one of the most popular complementary and alternative medical practitioners in the world (Moore *et al.* 2017: 2). Chiropractors frequently treat headaches, with MTHs being the most common (Moore *et al.* 2017: 2). A chiropractor's approach to patients with MTHs may include spinal manipulative therapy; soft tissue therapies, such as myofascial release and massage; rehabilitative exercises; lifestyle adjustments; and nutritional and ergonomic advice (Bernstein *et al.* 2019: 2).

A recent study suggests that spinal manipulation may reduce migraine days, and pain and intensity (Rist *et al.* 2019: 541). There is evidence to support that chiropractic care is effective in the treatment and management of MTHs and many patients with MTHs respond favourably to chiropractic spinal manipulative treatment (Bryans *et al.* 2011: 283; Chaibi and Tuchin 2011: 189). With chiropractic treatment, there was an improvement in pain score, an increase in pain-free days and a reduction in the medication usage of patients with MTHs (Bernstein *et al.* 2019: 4). Chiropractors aim to reduce the patient's pain and enhance neuromusculoskeletal health (Bernstein *et al.* 2019: 2).

2.8 SUMMARY OF THE CHAPTER

Chapter Two is an extensive review of the literature relating to this study. It includes information relating to the effect of MTHs on quality of life in an adolescent population. This chapter also examined primary and secondary headaches, in particular MTHs, in more detail.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter will present the methodology used to guide this study. The research design, study location, study population, sampling procedures, data collection and analysis will be described. The ethical considerations and trustworthiness related to qualitative research will also be discussed.

3.2 RESEARCH DESIGN

This study utilised a qualitative descriptive approach to explore the effect of migraine-type headaches on the quality of life in an adolescent population.

According to Mohajan (2018:1), qualitative research explores the meanings and insights into certain phenomena. Aspers and Corte (2019: 155) defines qualitative research as an “iterative process in which improved understanding to the scientific community is achieved by making new significant distinctions resulting from getting closer to the phenomenon studied”. Qualitative research can help researchers to understand the thoughts and feelings of research participants, and thus allow for a more detailed understanding of their experiences (Sutton and Austin 2015: 226). Qualitative research was appropriate for this study as it provided a more detailed and richer understanding into the effects of MTHs on an adolescent population.

A descriptive research design focuses on gaining insight into specific events or experiences experienced by individuals or groups of individuals (Kim, Sefcik and Bradway 2017:1-2). Descriptive research describes a phenomenon and its characteristics (Nassaji 2015: 129). According to Bradshaw, Atkinson and Doody (2017: 2), “qualitative description research studies are those that seek to discover and understand a phenomenon, a process, or the perspectives and worldviews of

the people involved". This design is significant for research in that it focuses on exploring certain phenomena and gaining information from research participants concerning a poorly understood phenomenon (Kim, Sefcik and Bradway 2017:1-2). A descriptive research design was appropriate for this study as the effects of MTHs in the adolescent population is a poorly understood phenomenon and gaining further insight is relevant.

3.3 RESEARCH SETTING

The public high schools in the Westville ward of the Pinetown School District that were included in the study were Westville Boys High School and Westville Girls High School (Department of Basic Education, 2019). Pinetown Boys High School and Pinetown Girls High School were unable to participate in the study. Therefore, Kloof High School, a public high school on the border of the ward, was approached to participate in the study. Permission to conduct the study was granted from the Department of Education (Appendix A).

Due to COVID-19, the participating public high schools, as well as the participants, had an option to conduct the interviews online via Microsoft Teams or in person in a private room at the participating public high schools, with social distancing rules in place. All students opted for the first option; therefore, the interviews were conducted online via Microsoft Teams. Permission to record the interviews were obtained from the participants. All data obtained from the interviews were transcribed verbatim by the researcher thereafter. The data was also rechecked by the supervisor.

3.4 STUDY POPULATION

Adolescents who had MTHs were selected from the public high schools in the Westville ward of the Pinetown School District. Adolescents who met the inclusion criteria and agreed to participate in the study were interviewed.

3.5 SAMPLE CHARACTERISTICS

3.5.1 Inclusion Criteria

- Adolescents between the ages of 14 and 19 years.
- Adolescents attending public high schools in the Westville ward of the Pinetown School District.
- Adolescents who met the requirements of the International Headache Society diagnostic criteria for either migraine, with or without an aura.

According the to the IHS (2013: 644-645), the diagnostic criteria for a migraine without an aura includes the following:

A. At least five attacks, one fulfilling criteria B–D.

B. Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated).

C. Headache has at least two of the following four characteristics:
   1. Unilateral location,
   2. Pulsating quality,
   3. Moderate or severe pain intensity, and
   4. Aggravation by or causing avoidance of routine physical activity (e.g. walking or climbing stairs).

D. During headache at least one of the following:
   1. Nausea and/or vomiting, and
   2. Photophobia and phonophobia.

E. Not better accounted for by another ICHD-3 diagnosis.

According the to the IHS (2013: 645-646), the diagnostic criteria for migraine with an aura includes the following:

A. At least two attacks fulfilling criteria B and C.

B. One or more of the following fully reversible aura symptoms:
   1. Visual,
   2. Sensory,
   3. Speech and/or language,

4. Motor,
5. Brainstem, and
6. Retinal.

C. At least two of the following four characteristics:
   1. At least one aura symptom spreads gradually over 5 minutes, and/or two or more symptoms occur in succession,
   2. Each individual aura symptom lasts 5-60 minutes,
   3. At least one aura symptom is unilateral, and
   4. The aura is accompanied, or followed within 60 minutes, by headache.

D. Not better accounted for by another ICHD-3 diagnosis, and transient ischaemic attack has been excluded.

3.5.2 Exclusion Criteria

- Adolescents under the age 14 years.
- Adolescents who did not give informed consent.
- Adolescents under the age of 18 whose parents or legal guardians did not give informed consent.
- Adolescents who do not meet the requirements of the International Headache Society diagnostic criteria for either migraine with or without an aura.

3.6 SAMPLE SIZE

The estimated minimum number of research participants for this study was 10. However, 12 interviews were done and an additional two interviews were conducted to ensure data saturation had been reached. Data saturation is reached when there is adequate information in order to replicate the study and when there is no new information discovered (Fusch and Ness 2015: 1408). In particular, in qualitative research, data saturation is reached when additional coding is no longer necessary (Fusch and Ness 2015: 1408).

3.7 SAMPLE ALLOCATION

Adolescents who met the inclusion criteria and agreed to participate in the study were interviewed. Purposeful sampling was used to select the adolescents from each public high school. Yin (2011: 311) defines purposeful sampling as "the selection of participants or sources of data to be used in a study, based on their anticipated richness and relevance of information in relation to the study's research questions". According to Palinkas *et al.* (2013: 534), purposeful sampling is extensively used in qualitative research. With purposeful sampling, participants were selected based on the knowledge and experience of the particular interest. Availability and willingness to participate in the study were taken into account (Palinkas *et al.* 2013: 534).

3.8 SEMI-STRUCTURED INTERVIEW GUIDE

Data were collected through semi-structured interviews (Appendix B). The semi-structured interviews consisted of a set of specific questions with additional probes, where probing questions supplemented the main questions. This allowed the interviewees to express their views in their own terms but also encouraged them to elaborate and expand on their responses (Keller and Conradin 2019). Semi-structured interviews ensure reliable and valid qualitative data (Keller and Conradin 2019).

The semi-structured interview guide was developed by the researcher, using ideas and guidelines from similar studies that were done in similar studies, in other countries **(Table 3.1).** The questions were based on the aims and research questions of this study. The questions with additional probes in the semi-structured interview guide are summarised in **Table 3.2.**

Table 3.1: Examples of key questions in similar studies

Reference	Key questions
Ruiz de Velasco *et al.* (2003: 893)	1. What aspects of your daily life are affected by migraines? 2. How do migraines impact on your quality of life?
Helvig and Minick (2013: 20)	1. Tell me about how your migraine affects your daily life. 2. Tell me how you feel when you do not have a migraine. 3. What do other people think about your migraine?
Palacios-Ceña *et al.* (2017: 2-3)	1. What is your experience with chronic migraine? 2. What are the most relevant changes you have made in your life because of chronic migraine? 3. How much and in what ways does chronic migraine restrict you? 4. What have been the most relevant changes in your social and family life? 5. Has your relationship with your friends and close relatives changed because of your condition? If so, in what way? 6. Do you usually hide your migraine from your family or friends? Why? 7. How do you believe other people perceive your migraine?

Table 3.2: A summary of the main questions and additional probes used in the semi-structured interview guide

Main questions	Additional probes
1. Describe the effects your migraine headaches have had on your daily activities.	Have your migraine headaches ever prevented you from partaking in any of your daily activities? For example, going to school, doing your homework, or doing chores around the house? Please explain.
2. Describe the effect that your migraine headaches have had on your social life.	Probes: Have your migraine headaches ever prevented you from socialising with your friends or family or attending a social event? Have you noticed that your migraine headaches affect your relationship with family and friends? Please explain.
3. Explain how your migraine headaches have affected you emotionally.	Probes: Have you noticed a change in your self-esteem? Do your headaches ever make you feel sad, angry, or anxious? Please explain.
4. Describe the impact migraine headaches have had on you with respect to physical activity.	Probes: Have your headaches ever prevented or impacted you from performing or partaking in extra-curricular activities, i.e., sports or cultural activities? Please explain.

3.9 DATA COLLECTION

Once approval from IREC (Appendix C), the Department of Education (Appendix A) and the principles of the public high schools in the Westville ward of the Pinetown School District (Appendices D, E and F) were obtained, the scholars were identified by their teachers and counsellors through their medical records. Westville Girls High School was unable to identify the scholars and therefore a letter of information was sent out to the parents at Westville Girls High School. The parents then contacted the researcher if their child met the inclusion criteria and was willing to participate in the research study. Purposeful sampling was used to select the adolescents from each public high school. The researcher explained the information about the study to the potential participants and answered any questions that were posed.

Adolescents who met the inclusion criteria and agreed to participate in the study were then asked to select a suitable date and time for the interviews to take place. Participants under the age of 18 were required to complete a letter of assent in order to participate in the study (Appendix G). In addition to this, the participants were emailed a letter of information and an informed consent form (Appendices H and I) for a parent or legal guardian to sign. The participants and parents or legal guardians signed the informed consent form and emailed it back to the researcher.

Interviews were conducted by the researcher online via Microsoft Teams. With the permission from the participants, the interviews were voice recorded. The participants were informed that they could withdraw at any point should they wish to do so. All data obtained from the interviews were transcribed verbatim thereafter. All information related to the participant was kept confidential and participants were allocated pseudonyms to maintain anonymity throughout the process.

3.10 DATA ANALYSIS

Thematic data analysis was used to analyse the data using the Tesch method. The interviews were typed out and verified against the recorded interview. This process allowed the researcher to get a sense of the data and become familiar with it. The researcher then began making a list of all the topics or themes that emerged and the similar topics were grouped together. The topics or themes were then abbreviated as codes, and thereafter categories were produced to describe the experience of the phenomena being studied. The categories were verified against the data to ensure there was no unnecessary data or any important information missing. The researcher then wrote up a report with the interpretation of the data, looking at one category at a time (Creswell 2009: 186; Theron 2015: 7). NVivo was used to assist the thematic data analysis of the data.

Interviews were conducted by the researcher online via Microsoft Teams in November 2020. With the permission from the participants, the interviews were voice recorded. The researcher transcribed all data obtained from the interviews verbatim. The data was also rechecked by the supervisor. Data saturation was reached when there was adequate information, no new information was being discovered and further coding was no longer needed.

3.11 ETHICAL CONSIDERATIONS

3.11.1 Ethical Approval

Ethical approval for the study was obtained from the Institutional Research and Ethics Committee (IREC) of the Durban University of Technology. The IREC approval number for the study was IREC 018/20.

3.11.2 Ethical Principles

The principles of ethics include autonomy, beneficence, non-maleficence, and justice. Autonomy refers to the patient being able to make an informed decision, which is why the participants received an explanation of the research, as well as a letter of information and an informed consent form.

Beneficence promotes the well-being of the participant and non-maleficence ensures the researcher does not harm the participants. This research only involved interviews and therefore there was no risk of physical harm being done to the patient in keeping with non-maleficence.

Justice involves the fair distribution of social benefits and it was accounted for as no participants were excluded from the study due to race and gender (Avasthi *et al.* 2013: 87).

Permission was given from the Department of Education (Appendix A) and the principals of all the participating public high schools (Appendices D, E and F). The participants also gave appropriate time slots for the interviews to take place to ensure that it did not interfere with academic hours and other school activities.

According to section 71 of the National Health Act of 2012, written consent is required from a parent or legal guardian for a minor to participate in a research study (Buchner-Eveleigh and Vogel 2015: 281). Therefore, for the participants under the age of 18 a letter of information and informed consent form for a parent or legal guardian to sign were emailed (Appendices H and I).

Any information related to the participant was kept confidential. Participants were given pseudonyms to protect their identity. Only the researcher and supervisor had access to the data obtained in the interviews. The data will be stored at the DUT Chiropractic Department for a period of five years, after which all the data will be disposed of. Electronic data are password protected and stored on a USB at the

DUT Chiropractic Department and will be deleted after five years. Paperwork related to the study will be destroyed by means of shredding after five years.

3.12 TRUSTWORTHINESS

The trustworthiness of a study refers to the degree of confidence in the quality of the study, in terms of the data, interpretation and methods used. Credibility, dependability, confirmability and transferability were the criteria outlined by Lincoln and Guba (1985) and authenticity was later added in 1994 (Connelly 2016: 435).

Credibility focuses on the truthfulness of the research and its findings, therefore, making it the most important component of trustworthiness (Connelly 2016: 435). Credibility deals with the focus of the study and if sufficient data were collected and analysed to address the focus (Graneheim and Lundman 2004: 109). According to Roberto (2018: 3), the purpose of credibility is to ensure that the results are true and credible. Selecting the most effective way of data collection is important in credibility (Graneheim and Lundman 2004: 110) and this was ensured by using semi-structured interviews. This also allowed the interviewees to express their views in their own terms but also encouraged them to elaborate and expand on their responses (Keller and Conradin 2019).

Semi-structured interviews ensure reliable and valid qualitative data (Keller and Conradin 2019). The credibility of research findings examines the categories and themes and if any relevant data have been excluded and if any irrelevant data have been included (Graneheim and Lundman 2004: 110). The researcher, therefore, visited the data numerous times during data analysis to ensure there was no unnecessary data or any important information missing. The data were also rechecked by the supervisor.

Dependability is described as the stability of data over time and it is similar to reliability in quantitative research (Connelly 2016: 435). The purpose of dependability is to ensure that the results are repeatable if the study was done with

the same cohort of participants, coders and context (Roberto 2018: 3). In order to achieve dependability, the research process should be logical, traceable and clearly documented (Nowell 2017:3). This was ensured by the researcher by keeping the process logs with notes of the exact study procedure and decisions that were made throughout the study (Connelly 2016: 435). According to Nowell (2017: 3), when the readers understand the research process, they are able to judge the dependability of the research.

Confirmability looks at neutrality or a lack of bias and if the findings are consistent (Connelly 2016: 435). The purpose of confirmability in qualitative research is to ensure that the results can be confirmed by other researchers (Roberto 2018: 3). According to Nowell (2017: 3), “confirmability is concerned with establishing that the researcher’s interpretations and findings are clearly derived from the data, requiring the researcher to demonstrate how conclusions and interpretations have been reached”. The researcher kept an open mind throughout data collection to ensure neutrality. The data were also rechecked by the supervisor.

Transferability refers to the degree to which the research findings can represent other settings or groups (Graneheim and Lundman 2004: 110). According Korstjens and Moser (2018: 121), transferability is defined as “the degree to which the results of qualitative research can be transferred to other contexts or settings with other respondents”. The researcher enables the transferability judgement by other respondents through a detailed description of the study (Korstjens and Moser 2018: 121). The researcher needs to provide details on the study procedure and any information regarding the population and study location (Connelly 2016: 436). The transferability of the study is supported by providing the demographics of the participants and a detailed study procedure.

Authenticity allows a detailed description of the phenomena. This enhances the readers understanding of study and is therefore seen as an advantage in qualitative research (Connelly 2016: 436). According to Connelly (2016: 436), “authenticity is the extent to which researchers fairly and completely show a range of different

realities and realistically convey participants' lives". Appropriate participants were selected for the study sample and a detailed description was given to ensure authenticity.

3.13 SUMMARY OF THE CHAPTER

This chapter discussed the qualitative descriptive research design that was used in this study. The study location and population were explained. The inclusion and exclusion criteria and sample size have been discussed. The data collection process and semi-structured interviews were explained. Ethical considerations and trustworthiness of the research were also explained in depth. Chapter Four will present the findings of the study.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

This chapter includes the results that were obtained from 14 semi-structed interviews conducted on adolescents experiencing MTHs in the Westville ward of the Pinetown School District. The interviews were voice recorded, transcribed verbatim and analysed thereafter. The four main themes and associated subthemes emerged from the interviews are discussed in **Table 4.1.**

Table 4.1: The main themes and associated sub-themes

Theme	Sub-themes
1. Daily activities	• Effect on education • Inability to adequality do homework • Difficulty concentrating and thinking • Difficulty doing chores
2. Social aspect	• Effect on social activities • Impact on relationships
3. Emotional aspect	• Effect on emotions • Acceptance
4. Physical aspect	• Inability to partake in extra-curricular activities • Impact on hobbies • Difficulty in movement

4.2 GENDER, AGE, GRADE AND SCHOOL OF PARTICIPANTS

A total of 14 scholars were interviewed from Westville Boys High School, Westville Girls High School and Kloof High School. The gender, age, grade and school of participants are detailed in **Table 4.2.**

Table 4.2: Gender, age, grade and school of participants

Participant	Gender	Age	Grade	School
1	Male	17	11	Westville Boys High School
2	Male	17	11	Westville Boys High School
3	Female	14	9	Westville Girls High School
4	Male	17	11	Kloof High School
5	Male	17	11	Kloof High School
6	Female	17	11	Kloof High School
7	Female	17	11	Kloof High School
8	Female	17	11	Kloof High School
9	Female	17	11	Westville Girls High School
10	Female	17	11	Kloof High School
11	Male	15	9	Westville Boys High School
12	Female	16	10	Westville Girls High School
13	Male	17	11	Westville Boys High School
14	Female	14	9	Westville Girls High School

4.3 THEME ONE: DAILY ACTIVITIES

The 14 participants were asked to describe the effects that their MTHs have had on their daily activities. The participants explained that their MTHs have affected their education, homework, concentration and/or chores.

4.3.1 Effect on Education

Of the 14 participants, 10 explained that their MTHs have affected their education. Some students mentioned that they have had to leave school early when they had a MTH, while others mentioned that they did not attend school when they had a MTH. This is reflected in the following excerpts:

“I've skipped a couple of days of school um before because of migraines because I would wake up in the morning and like it would be too much.” (Participant 4)

“I recently had one where I had to be sent home because I was like seeing the black spots. I could barely like listen to anything. The sound of my own breathing hurt my head. Um and then I had to go home, and I just was given very heavy painkillers and put to sleep.” (Participant 8)

“Yes, sometimes when I've been at school, my migraines have gotten to the point where I'm throwing up and I'll have to ask to be fetched. And also, after school, when I have to do studying or extracurricular sports or yeah, stuff like that, it's very difficult.” (Participant 13)

“Uh so I stay home when I have these uh hectic headaches um they are very, very sore, sometimes I can't lift my head up or like move my head too fast.” (Participant 14)

One of the participants explained that they message their friends to see what work they missed at school, and they try catch it up the next day or over the weekend.

“I normally have to uh message my friends to send me what work I missed and I catch it up the next day or that weekend. Um it's normally just, while they're happening, I pretty much have to drop everything for one day and pretty much like lie my room with the aircon on and the curtains closed until it goes away.” … *“Uh um, on the day I I literally just dropped everything. Like um I just packed my uh whatever schoolwork I'll need to do uh once it's over, like um so I can catch it up later.”* (Participant 1)

Another participant provided an example of when their MTH affected them when they were writing a test.

“So, I remember the one time I went to school, and it started in the morning, I didn't feel 100 percent. And so, we had a physics test that day. And I remember I wasn't I was feeling awful and I was busy writing the test. And then, like my vision, my vision went blurry and then it went like black, black with white spots going on. And then, you know, when you in silence and you hear that white noise uh not white noise, the

high pitched like constant noise. Um I heard that, and I was just sweating. And so that didn't really help me with the test. And then I had to go and then yeah, I threw up in the bathrooms and [pause] it wasn't a very good day. But you can't really think when you have a migraine, I don't know what to call it. But you can't really think because you just got all these other distractions like. Yeah." (Participant 5)

4.3.2 Inability to Adequality Do Homework

Many participants explained that they were unable to complete their homework or study after school as a result of their MTHs. The following excerpts support this statement:

"When when I get a migraine, it generally makes like I have to drop anything I'm doing because obviously if I lose the vision and get the blind spots, I can't continue to do much so it stops me doing my homework almost completely." (Participant 2)

"[Pause] Um when I do get my headaches, I do become less productive. I tend to rather sleep, then try get my homework done or study so I become less proactive when my headaches do occur." (Participant 6)

"So, I can't do my homework after school if I have any. Um [pause] and obviously because of the pain and stuff and also. Well, essentially it stops me from doing anything when it's at its worst point." (Participant 12)

"Um generally, when I go to school, I will usually, by the end of the day, have a very bad migraine, and that can cause me to not be able to do studying in the afternoon." (Participant 13)

A participant also stated that they are unable to read while doing their homework when they have a MTH.

“And then just writing, I won't be able to read what I'm saying or read the questions.” *(*Participant 2)

4.3.3 Difficulty concentrating and thinking

Four participants mentioned that they had difficulty concentrating and thinking, whether at school or at home doing homework/studying, when they were experiencing MTHs. The following excerpts support this:

“Um uh often times, like I can't, perform like like basic tasks, like doing homework and or even just thinking straight because of the migraines because it generally leaves me like disorientated. And uh I found it hard to comprehend things when I have migraines. Um so it affects my thought processes as well.” (Participant 7)

“Um it's it um tampers with my focus, especially in class, so it's harder to focus on the lessons and actually absorb what the teachers are saying.” (Participant 8)

“Um when I get the migraines, it kind of prevents me from thinking straight, and I don't really like, I can't really do anything except sit there and hold my head for like a while until it goes away. So, it kind of slows me down with literally everything.” (Participant 11)

“So, usually when I get them, it's, I feel fine in the morning and then around the afternoon they start to develop So um. It's when I get them, I become very sensitive to light, so I can't really like focus on any anything or um like open my eyes because it hurts a lot. And obviously there’s like the actual headache part of it. Um so when they start developing um usually when it's at its worst point, I either like I have to go and like, go to bed and take a nap because I can't do anything else while it's happening.” (Participant 12)

4.3.4 Difficulty doing chores

A few of the participants mentioned that they having difficulty doing chores due to their MTHs. This is reflected in the following excerpts:

"And then chores, that's just probably like I struggle to do anything because I struggle to see what I'm doing." (Participant 2)

"And um yeah, I've had to not do chores and stuff like that as well because of the pain. And as I said, like disorientation and so on." (Participant 7)

"Um ya definitely my headache or the migraines or thing. They are definitely worse at night, um so it affects homework and definitely chores after school. Um because I just ya as I said, I get really tired and the bright lights and the noises like I just can't function. So, I tend to just skip it and sleep if I can." (Participant 9)

"Um doing chores, uh I also can't do them because basically I have to do I have to look down and move my head a lot." (Participant 14)

4.4 THEME TWO: SOCIAL ASPECT

The participants were asked what effect their MTHs have had on their social life. Some participants mentioned that they have had to miss social events or cancel plans with friends, while others mentioned that it has affected their relationship with family and friends.

4.4.1 Effect on Social Activities

Nine participants explained that their MTHs have prevented them from socialising with family or friends in the past. The following excerpts support this statement:

“Obviously, I do, when I do get a headache, I do tend to sleep more or I don't like going out because lights do, the light does affect my headache quite a lot. So, when a friend wants to go out and I do have a headache, I do just say no. And obviously that does affect because I don't get to go out as much when I do have a headache.” (Participant 6)

“Um I can't say it has really affected my social life, but I have had to cancel plans before because of having headaches um [pause] and not just like not wanting to go out or anything you know like that.” (Participant 7)

“Um I wouldn't really say emotionally, but afterwards I do feel very like drained and it's it's not like in my favour to communicate with other people because I just don't feel like being social. Um [pause].
It's not too bad, like it's something that once it wears off, I am okay again.” (Participant 8)

“I have had to cancel um like going out with friends or like going to see family a few times or have to like put it off until later into the day because I have to take pain killers and then, you know, get rid of it before you go out.” (Participant 12)

Understanding how MTHs affect social activities is important. Two of the participants provided examples of how their social life is affected:

“Uhh so I remember on the one Friday, I had a migraine in the morning and every Friday I am a youth leader at St. Agnes for the church. So that night I had a talk. I was going to talk to the kids about a life lesson. And I couldn't do that talk because I had a migraine, and I wasn't feeling well at all. So that's the only part that I could remember that would affect a social event.” (Participant 5)

“Um [pause] because they are more intense at night, it's usually just on the weekends that it affects it. Like last weekend, like this one just passed. Um uh my parents were going out and then I didn't go with him because I had such a bad migraine and was nauseous.” (Participant 9)

4.4.2. Impact on Relationships

Of the 14 participants, seven of them mentioned that their MTHs have had a negative impact on their relationship with family and friends, whereas the other seven participants explained that their family and friends are very understanding. This is shown in the following excerpts:

"Um it's just more it's like conflict between us because like they say something, and I just get really easily upset because of the pain. So, I am more, more on edge than usual." (Participant 4)

"Ya, sometimes um [pause] like just doing things with them or like doing things together as a family. Um it affects that because I like can't function, I just sleep and then have to skip [pause] events and stuff." (Participant 9)

"Mhh yeah, probably again. I get uh like very frustrated because they often ask me to do things and I have a headache and I just lash out at them." (Participant 10)

"Yes, um normally when I have these headaches, I distance myself from everyone uh I try sleep a lot so that the pain goes away faster, yeah, so I distance myself from everyone yes." (Participant 14)

It is essential to fully understand the effect that MTHs have on relationships. Three of the participants provided examples of how their relationships are affected:

"Um … [pause] oh oh at breaks maybe I get my headaches in like the second break and like, people would think, like, I'm angry at them or something but I just have a headache and its really bad and I just don't feel like talking to them. And then ya they think I am angry at them so I guess ya [pause] that is the best I can answer that." … *"Mhh [pause] yes like maybe if we are at a family family gathering and maybe if I have a headache and like I get asked a question by an adult and like, sometimes I just want to keep quiet, I don't want to speak they think I'm rude. Yeah."* (Participant 3)

“Um so at school, I was very like don't talk to me. I'm sorry. I'm not in the mood. Like people some people would take offence that and then I'd have to explain to them, I have a migraine. I'm not feeling the best. So, I didn't have a major long-term impact on my social life, but especially during that morning when I was really bad then I'd say like don't talk to me let me be.” (Participant 5)

“Yes, because of the fact that I have to, like sleep off my migraine. I won't spend much time with my family that day that I have it's or it can be over two days, or I've had it over three days before, so it depends on the extensiveness of the migraine.” … “Um well, like, it can sometimes frustrate my mom because my mom doesn't suffer from migraines and my dad is often working. So, um I just wouldn't see him at all that day. But it doesn't really affect our relationship in terms of like our communication or anything, but my mom does get upset from time to time because she is reliant on me being able to help around the house. And I have a little brother, so I do look after him after school. And when I have migraines, it's very hard to look after him, um you know, and then endure the migraine as well.” (Participant 7)

Of the 14 participants, three of them explained that their family and friends understand their MTHs, therefore, it has not affected their relationship. This is reflected in the following excerpts:

“I don't think they've affected it like my relationship at all. Most people understanding if I have to, like, just sit down, you know like if I'm at school, sleep or whatever. So, no one's really felt any bad effects of it except me, hurting, my sore head really.” (Participant 2)

“I don't think so. Um. My friends, like most of them, get uhh heavy headaches a lot as well. So, we understand like of another person has a headache. It's better to leave them be than to aggravate them or annoy them. Um my dad has MS at home, so we also understand like that migraines can get heavy and affect a person. So, we also know to just give each other space.” (Participant 8)

“Not really. Um. Most people understand that when you have a headache or migraine, that it's very painful. So, they they tend to just be like, okay, like, I'll leave you be. And yeah, it doesn't really affect them.” (Participant 12)

4.5 THEME THREE: EMOTIONAL ASPECT

The participants were asked how their MTHs affected them emotionally. Many participants mentioned that their MTHs have affected them emotionally in some way and resulted in anger or frustration and worry. One participant mentioned that their MTHs made them sad.

4.5.1 Effect on Emotions

Of the 14 participants, eight of them mentioned that their MTHs have caused anger or frustration in the past. The following excerpts support this:

“Yeah. So, as I said, it makes me a lot more on edge. Um [pause] it's more they make me like very like [pause] angry if I can say it that way. So, it’s not really like they um make me more sad or anything or um tearful, it just they make me really angry so I get really upset easily.” (Participant 4)

“I get angry more than anything because it does stop me from doing things. And I get frustrated that I can't partake in certain activities.” (Participant 6)

“I think it does make me angry from time to time because it's frustrating not being able to perform like your basic daily routine, um so that can get frustrating, but um it doesn't really make me sad or anything or anxious.” (Participant 7)

“It's not really to the extent of anger. But I do get annoyed that it's stopping me from carrying on with my day.” (Participant 12)

Of the 14 participants, five explained that their MTHs have made them worry. This is shown in the following excerpts:

“Um it can like sometimes I get a bit stressed or anxious if I like like can like feel one coming on or if it's like uh um if there's a glare in a classroom or something, because I start to worry, I'm going to get a migraine, which so, I worry that I that I like might have to end up going home. So sometimes I get a bit stressed.” (Participant 2)

“Um I think it's made like it makes me worry because, you know, it's it's like it's not. I don't think it's extremely common for people to get migraines. I could be wrong, but it's not very common. So, it does leave me concerned oftentimes. But I've also learned that it's hormonal, um but then indirectly it affects my emotions because at one point I was having to take a contraceptive pill and that had a very negative effect on my emotions because it was like making me sad on a lot more frequent basis if that makes any sense. So, it did affect me there indirectly because the migraines all hormonal and then. Yeah. Taking the pill. Yeah.” (Participant 7)

“Uh they have caused stress because um if I'm unable to work and so I'm in all of the top classes, so usually the pressure is quite high to keep on like putting in effort and like achieving well. So, when I can't to study, I can’t do like um the work before the day it's due or like revision or something like that, then usually I do get quite stressed.” (Participant 12)

“They do generally make me angry, and anxious to the point where I don't know what it is going to manifest into.” (Participant 13)

The emotions elicited by MTHs can vary from individual to individual. One participant mentioned that their MTHs make them sad:

“Um [pause] well, it makes me very sad when I get a migraine, because I know it's going to manifest into something worse, like nausea or me having to lie down, and that can stop me from doing certain activities during the day.” (Interview 13)

4.5.2 Acceptance

One of the participants explained that their MTHs did not affect them emotionally because they have learnt that there is nothing they can do about their MTHs:

"Um [pause] well, I mean, they haven't like [sigh]. I haven't really felt down about myself because, I mean, there's nothing I can do." (Participant 1)

Another participant explained that their MTHs did not affect them emotionally because they have learnt to deal with their MTHs:

"Um I don't think they've affected me emotionally. Um because I of just deal with them, I don't really think about it. Um [pause] so I don't think it's had an effect on my emotions besides like the pain if its sore." (Participant 9)

4.6 THEME FOUR: PHYSICAL ASPECT

The participants were asked to describe the impact their MTHs have on their physical activity. Most of the participants explained that their MTHs have affected their extra-curricular activities, hobbies and general movement.

4.6.1 Inability to Partake in Extra-Curricular Activities

Most of participants mentioned that their MTHs have prevented them from partaking in their extra-curricular activities after school. This is supported by the following excerpts:

"Yeah, like for example, when um I am at school and I have um (what do you call it) extra murals after school, sometimes I can't go to them because my headaches are so bad. Or maybe if I do, if I have to go, I'll just not do all the stuff that really put a strain on my headache. Ya." (Participant 3)

“Um I have them a lot when there, when it comes to me doing like swimming or running. When swimming, I'll start doing a couple of laps and then after I start to feel tired, a couple laps after that, then a migraine will hit hard and then I have to get out the pool and just sit on the side of the pool and have some Compral or Panado. Um if I continue swimming, it just gets too much like I actually can’t continue swimming. I have to get out and stop.” (Participant 4)

“So, the one time, I remember I couldn't go to a sports match because I had to go home. Just anything I had to do for the rest that day was cancelled.” … “Ok, so if I have I had a migraine in the morning, it was usually that I would have sports in the afternoon so I couldn't do the I couldn't do the sport or sports matches or go to the gym or go for a run. I couldn't do anything physical because I was in bed trying to sleep or I had a sore head. So that affected any physical capability I had for the rest of the day. And then the next day, the following day, after the headache, I would have a sore head. So, any running or quick moving would hurt my head.” (Participant 5)

“Uh yes, they have, so it's happened a few times where my headache or the migraine has developed during school, and then instead of going to my extra-curricular, I explain to the coaches, um like, this is what happened. Um or like, sometimes I just don't do that. And then I just call my mom and ask to go home because I need to, like, rest or do whatever I have to do to get rid of it.” (Participant 12)

Of the 14 participants, two of them made reference to one of their school subjects, physical education (PE), as follows:

“Um and I've had cases where I can't do PE and I've missed a PE assessment before because I had a migraine, which resulted in me losing 15 percent of that migraine because I had to skip the lesson. I mean sorry, losing 15 percent of that mark because I had to skip the lesson due to having a migraine.” (Participant 7)

“Um yes, it's a lot harder to do things and at school, it's not um something they'll take as an excuse. So, like for PE, it's, they don't. If you've got a migraine or a very bad headache, they kind of just shrug it off as you are um basically just making an excuse to not do it and they don't help with like in terms of medication or anything. It's better to bring your own. So, it's harder to participate in those classes. And then when you do have a migraine, they end up getting less marks and stuff like that.” (Participant 8)

4.6.2 Impact on Hobbies

Of the 14 participants, two explained that their MTHs have affected them while exercising. The following excerpts support this statement:

“Generally, when I'm exercising, I will generally get a migraine. And if I don't take a painkiller, then it will get a lot worse. But it generally gets aggravated whenever I do any form of sport or walking or physical exertion.” (Participant 13)

“Yeah, so over lockdown my migraines got um significantly worse and so you know how like everybody would have started doing exercises at home because we couldn't do sports at school anymore. Um so that stopped me from doing like the daily exercise that I had set out. (Participant 12)

Another one of the participants mentioned that their MTHs prevent them from playing their guitar. This can be seen in the following excerpt:

“Um [pause] usually when I get my migraines, I just, I can’t really do any physical activity because all of my focus is now on the pain in my head. So, say I am trying to play my guitar and the migraine starts, I kinda just let go of it and put it on the floor and lay down. So, it stops me from most of my physical activities.”

4.6.3 Difficulty in Movement

Of the 14 participants, two mentioned that general movement worsens their MTHs, and, therefore, prevents them from moving around. The following excerpts support this:

“Um and just in general, when moving around because it's painful, then um like it is quite difficult to get from place to place because I can't like open my eyes and obviously my head is so sore that it makes moving quite difficult.” (Participant 12)

“Um, so, like I said, I can't do things like bending and moving my head a lot and looking up with something or stuff like that because it just gets worse. Um they are they're very sharp. They, like, go through it. It's like the whole head ... sorry for the noise in the background ... it’s like the whole head is sore and it's like something stabbing it.” (Participant 14)

4.7 CONCLUSION

This chapter included the findings of the study as well as the main themes and subthemes. The gender, age, grade and school of participants were also discussed. The next chapter will discuss the findings of the study in greater detail.

CHAPTER FIVE

DISCUSSION

5.1 INTRODUCTION

This chapter will discuss the results that were obtained from 14 semi-structed interviews conducted on adolescents experiencing MTHs in the Westville ward of the Pinetown School District. The demographics of the adolescents who were interviewed, as well as the main themes and sub-themes, will be discussed in this chapter.

5.2 OVERVIEW OF THE RESEARCH DISCUSSION

The aim of this study was to explore the effect of MTHs on quality of life in an adolescent population in the Westville ward of the Pinetown School District. The four main themes were identified:

Theme one: Daily activities

Theme two: Social aspect

Theme three: Emotional aspect

Theme four: Physical aspect

The main themes and sub-themes are discussed below and supported by relevant literature.

5.3 DEMOGRAPHICS

5.3.1 Gender

Out of the 14 participants that were interviewed, there were eight females and six males. Migraine-type headaches commonly affect more females than males and it

is believed to be linked to fluctuations of oestrogen and progesterone (Al-Hassany *et al.* 2020: 2), which could explain why there were more females than males, in the study. According to Faubion, Batur and Calhoun (2018: 644), MTHs currently affect one-fourth (25%) of childbearing-aged females, which is commonly due to menarche, the use of contraceptives, pregnancy, lactation and the menopause transition.

In the United States, a qualitative analysis was conducted on the impact of MTHs on adolescents' social functioning. This study included eight females and four males (Donovan, Mehringer and Zeltzer 2013: e137). Another qualitative study done on adolescents and MTHs reported that 66% of the participants were female and the rest were male (Helvig and Minick 2013: 20).

5.3.2 Age

The ages of adolescents that were interviewed ranged from 14 to 17 years, with the mean age being 16.3. There has been a striking increase in the prevalence of MTHs at the onset of puberty (Larsson, Sigurdson and Sund 2018: 1). It is believed that the peak in incidence may be due to changes in hormones throughout adolescence, genetic factors and exposure to environmental stressors (Agosti 2018: 18; O'Brien and Cohen 2015: 1405). In similar studies done on MTHs, the ages of the adolescents ranged from 12 to 17 years and 13 to 17 years (Donovan, Mehringer and Zeltzer 2013: e136; Koller, Diesner and Voitl 2019: 2). According to a study by Helvig and Minick (2013: 20), the ages of adolescents ranged from 12 to 17 years, with the mean age being 14.5.

5.3.3 Grade

The grades of the adolescents that were interviewed ranged from Grade nine to 11. The majority of the students who were interviewed were in Grade 11. Grade eight scholars were excluded from the study as they fitted into the exclusion criteria. In a previous quantitative study done in the Westville ward of the Pinetown School

District, the grades of the adolescents ranged from Grade nine to 12 (Crestani 2015: 26).

5.3.4 School

Out of the 14 adolescents that were interviewed:

- Six of the adolescents went to Kloof High School.
- Four of the adolescents went to Westville Boys High School.
- Four of the adolescents went to Westville Girls High School.

5.4 THEME ONE: DAILY ACTIVITIES

The participants were asked to describe the effects their MTHs have had on their daily activities. This provided a more detailed and richer understanding into the effects of MTHs on their daily activities. The participants explained how their MTHs have had an effect on their education, homework, concentration and/or chores.

5.4.1 Effect on Education

The majority of the participants explained that their MTHs have had a negative effect on their education. Some students stated that they have had to leave school early when they had a MTH, while others stated that they simply did not attend school when they suffered from a MTH. This correlates with studies that found children and adolescents with MTHs have been found to miss more school and have a poorer academic performance when compared to peers of the same age (Kantor 2012: e168; Kroon Van Diest *et al.* 2017: 3). The study conducted by Kantor (2012) took place across many different regions in Brazil instead of focusing on a single city or school. Kantor (2012) emphasised that similar studies in different parts of the world can provide a more detailed understanding about adolescents and school.

According to Kantor (2012: 168), there were a number of reasons that lead to poor academic performance:

- More frequent MTHs
- Longer MTHs
- More intense/severe MTHs
- Nausea associated with MTHs
- Coming from a poorer home

Similarly, Al-Hashel *et al.* (2020: 5) and Shimomura (2021: 830) concluded that adolescents with MTHs have a higher absenteeism at school than adolescents without MTHs. About 25% of people with MTHs reported missing more than one day per week from school or work (Sproul, MacCallum and Ledger 2017: 1277).

In the Westville ward of the Pinetown School District, it was noted that most adolescents who missed school because of a headache experienced a MTH (33%), rather than a TTH (22%) (Crestani 2015: 59). According to Crestani (2015: 59), 72% of adolescents with MTHs reported a decrease in the ability to perform daily activities.

A participant provided an example of when their MTH affected them when they were writing a test. This finding corresponds with a recent questionnaire done in Austria, where it was noted that about 20% of the adolescents with MTHs have had an attack while writing a test (Koller, Diesner and Voitl 2019: 7).

Another participant explained that they message their friends to see what work they missed at school, and they try catch it up the next day or over the weekend. These findings are supported by an Austrian study that found that more than a third of children and adolescents who suffer from MTHs think that their grades would be better without migraines (Koller, Diesner and Voitl 2019: 5).

A participant also stated that they get very tired after an attack. According to Raggi *et al*. (2012: 598), fatigue and reduced vitality have also been linked to MTHs.

5.4.2 Inability to Adequately Do Homework

Many participants explained that they were unable to do their homework or study after school because of their MTHs. The participants explained that they are unable to do their homework or study due to vision loss associated with the MTHs and because they have to sleep to try to help with the pain associated with MTHs. This is consistent with quantitative studies done that stated adolescents with MTHs have difficulty completing homework (Al-Hashel *et al.* 2020: 5; Rees and Sabia 2009). In a recent questionnaire conducted in Austria, more than a third of children and adolescents who suffer from MTHs thought that their grades would be better without migraines (Koller, Diesner and Voitl 2019: 5). Similarly, Gazerani (2021: 1) and Kabbouche and Gilman (2008: 535) noted MTHs have a significant impact on the adolescent's school performance.

The findings of this study correlate with a similar study conducted in a private high school in Italy that explained adolescents who suffer from headaches also have trouble doing their homework (Tonini and Frediani 2012: S186). In the Westville ward of the Pinetown School District, it was noted that 80% of the adolescents who have MTHs reported a decreased ability to study or complete homework (Crestani 2015: 59).

5.4.3 Difficulty concentrating and thinking

Participants mentioned that they have difficulty concentrating and thinking, whether at school or at home doing homework/studying, when they are experiencing MTHs. The participants explained that when they get a MTH at school, they are unable to understand the work the teachers are explaining. Kroon Van Diest *et al.* (2017:3) did a systematic review in 2017 and found that children and adolescents with MTHs have been found to have poorer academic performance and more difficulty paying attention in class when compared to their peers of the same age. Children and adolescents with MTHs find it more challenging to pay attention and focus in class around the time of an attack (Estave *et al.* 2021: 1017; Rees and Sabia 2009).

Migraine-type headaches have been associated with poor cognitive performance (Doga, Cenk and Hayrunnisa 2018: 12).

At school, children and adolescents tend to function at less than 50% of their normal productivity due to a migraine (Kroon Van Diest *et al.* 2017: 3). If adolescents do attend school when they have MTHs, they reported that their productivity is reduced (Rees and Sabia 2009: 25). According to Crestani (2015: 59), the majority of the adolescents who experienced MTHs, have noticed a 50% decrease in productivity at school during an attack. A Korean study on primary headaches among school students noted 39.1% of scholars sometimes have difficulty concentrating, 24.8% of scholars often have difficulty concentrating and 26% always have difficulty concentrating due to primary headaches (Al-Hashel *et al.* 2020: 3).

5.4.4 Difficulty doing chores

A few of the participants mentioned that they are unable to do chores due to their MTHs. It was noted that during an attack they are unable to move their heads around and were thus unable to do chores/housework. There is limited research into the effects of MTHs on household chores in the adolescent population. According to Agosti (2018: 21), one to two days of housework are lost per month due to MTHs. The study done by Agosti in 2018 explored the effects of MTHs in adolescents and adults and not just adolescents in particular. Similarly, a reduction in housework has been reported in patients with MTHs (Buse et al. 2016: 599; Estave *et al.* 2021: 1013). A quantitative study conducted with university students in Durban noted that about 50% of the participants needed help when doing household chores because they had to stop doing chores to try to treat their headaches (Basdav, Haffejee and Puckree 2016: 3).

5.5 THEME TWO: SOCIAL ASPECT

The participants were asked what effect their MTHs have had on their social life and therefore provided a more in-depth understanding into the effects of MTHs. Some participants mentioned that they had to miss social events or cancel plans with

friends, while others mentioned that it has affected their relationship with family and friends. In contrast, a few of the participants explained that their family and friends are very understanding about their MTHs; therefore, it has not affected their relationships with them.

5.5.1 Effect on Social Activities

Most of the participants stated that their MTHs have prevented them from socialising with family or friends in the past. The participants explained that they have had to cancel their plans with family and/or friends in the past. The participants also mentioned that they try not to socialise with family and/or friends when they have a MTH. This correlates to a quantitative study that found that 32% of scholars with MTHs noted having to miss family and social events (Crestani 2015: 59). According to Estave *et al.* (2021: 1013) and Kabbouche and Gilman (2008: 535), adolescents with MTHs tend to miss social events due to migraine attacks.

A systematic review done in 2012 noted that patients with MTHs have a poor social functioning (Raggi *et al.* 2012: 602). A study by Buse *et al.* (2016: 608), conducted in New York, found reduced participation and enjoyment in activities in individuals with chronic migraines. About 30% of the students noted neglecting activities due to their headaches and 43.8% of the students stated that their headaches have prevented them from going out with friends or family (Basdav, Haffejee and Puckree 2016: 3). According to Buse *et al*. (2016: 599), 50% of participants reported having a reduced participation in family activities, one or more times in a month.

A participant also mentioned that if they did attend a social event when they were experiencing a MTH, it would most likely be ruined. Similarly, Basdav, Haffejee and Puckree (2016: 3) noted that if a headache occurred while they were out at a social activity/event, the headache resulted in them leaving early, isolating themselves, drinking water and/or taking medication. The study done by Basdav, Haffejee and Puckree (2016) looked at primary headaches in general and not MTHs in particular. Similar studies explained that adolescents with MTHs often disengage and isolate

themselves from friends and family during an attack (Estave *et al.* 2021: 1013; Helvig and Minick 2013: 22).

5.5.2 Impact on Relationships

Approximately, more than half of the participants of this study stated that their MTHs have had a negative impact on their relationship with family and friends. Some of the participants elaborated on this statement by explaining that they try to distance themselves from their friends and family when they have MTHs. Some of the participants also explained that they get frustrated easily and uptight with family and friends when they are experiencing a MTH and therefore it negatively affects their relationships. This is supported by a similar study, done in 2013, that discussed the negative impact MTHs have on relationships (Donovan, Mehringer and Zeltzer 2013: e140). Adolescents also reported difficulty communicating with others about their MTHs (Donovan, Mehringer and Zeltzer 2013: e140; Estave *et al.* 2021: 1014).

Family life is often impacted as changes must be made to accommodate a child/adolescent with MTHs (Donovan, Mehringer and Zeltzer 2013: e140; Shimomura 2021: 826). A decrease in socialisation can be caused by adolescents disengaging and isolating themselves from family and friends during attacks, resulting in a negative impact on their relationships (Helvig and Minick 2013: 23). High levels of distress within relationships due to MTHs were also noted in a study conducted in New York by Buse *et al.* (2016: 608).

Alternatively, other participants explained that their family and friends are very understanding about their MTHs. This correlates with a qualitative study done on chronic migraines that stated most patients believed their family is understanding about their MTHs (Palacios-Ceña *et al.* 2017: 9). Although some patients explained that there is some doubt even among some family members about how debilitating their MTHs can be (Palacios-Ceña *et al.* 2017: 9). The qualitative study done by Palacios-Ceña *et al.* (2017) focused on female patients in particular.

5.6 THEME THREE: EMOTIONAL ASPECT

The participants were asked how their MTHs affected them emotionally. This gave a more detailed insight into the emotional effects of their MTHs. Many participants mentioned that their MTHs have affected them emotionally in some way and caused anger or frustration and worry. A participant also mentioned that their MTHs make them sad. Other participants explained that their MTHs did not affect them emotionally, as they have learnt to deal with their MTHs.

5.6.1 Effect on Emotions

In this study, majority of the participants mentioned that their MTHs have caused anger or frustration in the past. A further, five participants explained that their MTHs made them worry because they did not know when they might experience attack again. One participant also mentioned that their MTHs made them feel sad. This is consistent with a study done in India, that noted that anxiety and depression have been seen to coexist among patients with MTHs (Pradeep *et al.* 2020: 21). The study also stated that MTHs have been linked with emotional and mental distress (Pradeep *et al.* 2020: 21). Anxiety and depression have been commonly seen among children and adolescents with MTHs in other studies (Gazerani 2021: 10; Pradeep *et al.* 2020: 21; Shimomura 2021: 827).

According to a systematic review done in 2012, people that suffer from MTHs have greater depression and anxiety when compared to others (Raggi *et al.* 2012: 598). According to Al-hashel *et al.* (2020: 3), 51.5% of scholars reported feeling sad (either sometimes or always), while 25% of scholars never experienced feeling sad. Although anxiety and depression are most commonly seen among patients with MTHs, anger, stress, concerns about the disease, a sense of inadequacy and fear of migraine attacks are also commonly reported (Raggi *et al.* 2012: 598; Shimomura 2021: 830).

Along with the common anxiety and depressive disorders seen in children and adolescents with MTHs, children and adolescents also tend to worry about when the next attack may occur and the unpredictable interruptions in their daily activities

(Estave *et al.* 2021: 1009; Kroon Van Diest *et al.* 2017: 3). According to Helvig and Minick (2013: 23), many of the adolescents that were interviewed in their study described having emotional distress, in particular frustration, during an attack. According to Al-Hashel *et al.* (2020: 3), 43.5% of the scholars reported sometimes being afraid of having an attack, while 8.1% of scholars reported always being afraid of having an attack.

5.6.2 Acceptance

One of the participants explained that their MTHs did not affect them emotionally because they have learnt there is nothing they can do about their MTHs. Another participant explained that their MTHs did not affect them emotionally because they have learnt to deal with their MTHs. These findings are supported by a study done on female patients living with chronic MTHs. The study stated that most of the patients have learnt to accept that they will never be completely pain free and they have learnt to accept and come to terms with it (Palacios-Ceña *et al*. 2017: 9). A quantitative study done in the UK, in 2017, found that people with MTHs have a higher pain acceptance and general acceptance when compared to others (Almarzooqi, Chilcot and McCracken 2017: 241). A three month follow-up study done on MTHs in 2012 noted that acceptance of pain has been associated with lower levels of anxiety and/or depression, greater physical and social functioning and greater pain tolerance (Dindo et al. 2012: 537).

5.7 THEME FOUR: PHYSICAL ASPECT

The participants were asked to describe the impact their MTHs have on their physical activity. This provided a more comprehensive understanding into the impact of MTHs on their physical activities. Most of the participants explained that their MTHs have affected their extra-curricular activities, hobbies, and general movement.

5.7.1 Inability to Partake in Extra-Curricular Activities

Most of the participants mentioned that their MTHs have prevented them from partaking in their extra-curricular activities after school. Some of the participants explained that they would not attend any extra-curricular activities when they have MTH while others explained that if they have to go, they would not perform certain activities that may worsen the MTH. Participants also made reference to one of their school subjects, physical education (PE), explaining that they have previously lost marks for this subject because they have been unable to participate due to their MTHs.

Similarly, Koller, Diesner and Voitl (2019: 7) mentioned that children and adolescents with MTHs tend to exercise less often per week than children and adolescents without MTHs. Some children and adolescents avoided physical exercise due to a migraine attack, while others made the assumption that physical exercise may trigger a migraine attack (Amin et al. 2018: 6; Koller, Diesner and Voitl 2019: 7). Significant disability, including missed school days and extra-curricular activities, is noted due to headaches (Jeong *et al.* 2018:1).

According to Rogers *et al.* (2020), in a cohort study done in America, individuals with MTHs participated in less physical activity compared to others, even on days in which an attack was not experienced. Migraine-type headaches have been seen to have a negative impact on the physical functioning in children and adolescents (Gazerani 2021: 1). The avoidance of academic and extra-curricular activities result in a high self-medication rate among individuals with MTHs (Jawed *et al*. 2019: 234). In a quantitative study done by Noor, Sajjad and Asma (2016: 161), 45.3% of individuals with MTHs noted that social and extra-curricular activities are affected due to MTHs. A total of 12.8% of individuals with MTHs reported avoiding extra-curricular activities due to MTHs (Noor, Sajjad and Asma 2016: 161).

Interestingly, a quantitative study done in 2018 by Seng *et al.* (2018) found that physical activity is beneficial for MTHs. According to Seng *et al.* (2018: 10), a lack of physical negatively affects individuals with MTHs on multiple levels. Individuals

with MTHs tend to avoid any activity, become more isolated and withdraw emotionally resulting in depression (Seng *et al.* 2018: 10)

5.7.2 Impact on Hobbies

Two of the participants explained that their MTHs have affected them while exercising. Another participant mentioned that his MTH prevented him from playing the guitar. This is consistent with a quantitative study done on primary headaches in the Westville ward of the Pinetown School District; it was noted that patients with MTHs reported having to miss sports or leisure activities due to an attack (Crestani 2015: 48). This is similar to the study by Basdav, Haffejee and Puckree (2016: 3), that mentioned a third of the participants reported neglecting leisure activities due to their headaches. According to Demarquay *et al.* (2021: 726), individuals with MTHs tend have a markedly reduced quality of life when compared to healthy individuals, during and between attacks, because of the negative affect on the individual's work performance, household tasks and leisure time activities.

It has been noted that hobbies, mostly the use of digital media, trigger MTHs (Koller, Diesner and Voitl 2019: 5). According to Mannix *et al*. (2016: 5), 75% of individuals with MTHs reported that their MTHs have had an impact on their hobbies. According to a quantitative study done on the burden of MTHs, 59% of individuals with MTHs reported not being able to participate in hobbies that they previously used to do (Martelletti *et al.* 2018: 6).

5.7.3 Difficulty to Move

Participants mentioned that general movement worsens their MTHs and therefore prevents them from moving around. A participant also explained that moving around in general worsens their MTH. Another participant explained that is difficult to move around when experiencing a MTH because of the severity of the pain and because they are unable to open their eyes. This is consistent with a recent study done that has suggested that regular physical activity has been linked to a decrease in frequency, severity, and duration of migraine attacks but because physical activity

can either trigger or worsen a migraine attack, it results in a vicious cycle between physical inactivity and MTHs (Lippi, Mattiuzzi and Sanchis-Gomar 2018: 3-4). According to Jeong *et al.* (2018: 1), decreased participation in regular activities is seen in individuals with headaches.

5.8 CONCLUSION

This chapter discussed the findings of the study, as well as the main themes (daily activities, social, emotional, and physical aspects) and subthemes. The gender, age, grade and school of participants were also discussed in detail. The next chapter will summarise the study and discuss the strengths, limitations and recommendations of the study.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 INTRODUCTION

This chapter summarises the study. The strengths and limitations of the study, as well as the recommendations are also included in this chapter.

6.2 SUMMARY OF THE STUDY

The participants explained that their MTHs have negatively affected their education, homework, concentration and/or chores. Some students stated that they have had to leave school early when they had a MTH, while others stated that they simply did not attend school when they had a MTH. The participants also reported that they had difficulty concentrating, doing homework and completing chores when they are experiencing a MTH. Some participants mentioned that they have had to miss social events or cancel plans with friends, while others mentioned that MTHs negatively affect their relationship with family and friends. A few of the participants explained that their family and friends are very understanding about their MTHs, and, thus, it has not affected their relationships with them.

Many participants mentioned that their MTHs have affected them emotionally in some way and resulted in anger or frustration and worry. Most of the participants explained that their MTHs have prevented them from partaking in extra-curricular activities after school. The participants also mentioned that their MTHs have prevented them for participating in their hobbies and movement in general.

6.3 STRENGTHS OF THE STUDY

This study contributed to the current literature and helped grow the body of knowledge on MTHs in adolescents. It has helped provide a more detailed understanding of how MTHs affect adolescents which is beneficial to chiropractors and other health care providers, especially in terms of management.

6.4 LIMITATIONS OF THE STUDY

This study took place during the Covid-19 lockdown. Two of the school principals would not let the researcher interview the scholars in person, thus, the interviews had to be conducted online. Perhaps if the interviews were done in-person, the participants might have felt more comfortable, and it might have yielded better results. Furthermore, some of the schools/principals declined to participate in this research study due to Covid-19 protocols and, therefore, the researcher was limited to a smaller sample population.

6.5 RECOMMENDATIONS

The recommendations to improve and enhance future research in this field are described below.

- Further probing can be done in order to obtain a more detailed response and allow greater insight.
- Some of the schools in the Westville ward of the Pinetown School District were unable to participate in the research study. Thus, future researchers could include more schools in South Africa.
- Majority of the scholars that participated in the study were in Grade 11. A greater range of grades could be included in future research.
- The interviews were done online via Microsoft teams. Thus, in-person interviews could be done in the future in order to make the participants feel more comfortable when answering the questions and yield better results.

- Further studies can look into providing guidelines or recommendations to the Department of Education on the effect of MTHs in adolescents. A mixed method design can be used to aid in the development of guidelines.

6.6 CONCLUSION

This qualitative study explored the effect of migraine-type headaches on quality of life in an adolescent population in the Westville ward of the Pinetown School District. The findings of this study have been consistent with other studies done in other countries. The results of this study found that MTHs have significant negative impact on adolescents' daily activities, social life, emotional life and physical activity. The chapter summarised the study and discussed the limitations, strengths, and future recommendations in great detail.

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APPENDICES

APPENDIX A: APPROVAL FROM THE KZN DEPARTMENT OF EDUCATION

education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Description: Macintosh
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Ref.:2/4/8/4104

Miss Amy Jane Wurzel
4 Cleevewood Heights
2 Edward Drive
GILLITS
3610

Dear Miss Wurzel

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **"THE EFFECT OF MIGRAINE-TYPE HEADACHES ON QUALITY OF LIFE IN AN ADOLESCENT POPULATION IN THE WESTVILLE WARD OF THE PINETOWN SCHOOL DISTRICT"**-, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the Intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 18 June 2020 to 10 January 2022.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Phindile Duma/Mrs Buyi Ntuli at the contact numbers above.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation/thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

Dr. EV Nzama
Head of Department: Education

APPENDIX B: INTERVIEW GUIDE

Date _____ Participant no: 

SECTION A: DEMOGRAPHIC DATA

Age _____

Gender _____

Grade _____

School _____

SECTION B: INTERVIEW QUESTIONS:

1. Describe the effects your migraine headaches have had on your daily activities.

Probes: Have your migraine-type headaches ever prevented you from partaking in any of your daily activities? For example, going to school, doing your homework or doing chores around the house? Please explain.

2. Describe the effects that your migraine headaches have had on your social life.

Probes: Have your migraine-type headaches ever prevented you from socializing with your friends or family or attending a social event? Have you noticed that your migraine-type headaches affect your relationship with family and friends? Please explain.

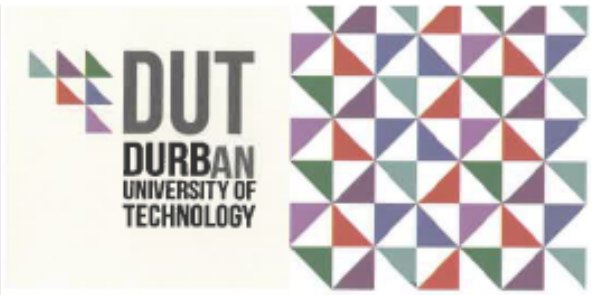
3. Explain how your migraine headaches have affected you emotionally.

Probes: Have you noticed a change in your self-esteem? Do your headaches ever make you feel sad, angry or anxious? Please explain.

4. Describe the impact migraine headaches have had on you with respect to physical activity.

Probes: Have your headaches ever prevented or impacted you from performing or partaking in extra-curricular activities i.e. sports or cultural activities? Please explain.

APPENDIX C: IREC APPROVAL



Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

14 October 2020

Ms A J Wurzel
4 Cleevewood Heights
2 Edward Drive
Gillits
3610

Dear Ms Wurzel

The effect of migraine-type headaches on quality of life in an adolescent population in the Westville ward of the Pinetown School District.
Ethical Clearance number IREC 018/20

The Institutional Research Ethics Committee acknowledges receipt of your gatekeeper permission letters.

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

APPENDIX D: APPROVAL FROM KLOOF HIGH SCHOOL

KLOOF HIGH SCHOOL

34 Emolweni Road
Kloof, 3610
KwaZulu-Natal

Tel:031 764 0451
Email: admin@kloofhigh.co.za
P O Box 1036, Kloof 3640

28 September 2020

To whom it may Concern

RE: AMY WURZEL

This letter is to confirm that Amy Wurzel has been given permission to conduct the following research study at Kloof High School:

"The effect of migraine-type headaches on the quality of life in an adolescent population in the Westville ward of the Pinetown School District"

Kind regards

MR RB HOLDING
PRINCIPAL

APPENDIX E: APPROVAL FROM WESTVILLE BOYS HIGH SCHOOL

6 October 2020

RE: AMY WURZEL

This letter serves to confirm that Amy Wurzel has been given permission to conduct the following research study at Westville Boys' High School:

"The effect of migraine-type headaches on the quality of life in an adolescent population in the Westville ward of the Pinetown School District."

Sincerely

Mr G.R. Steele
HEADMASTER

APPENDIX F: APPROVAL FROM WESTVILLE GIRLS HIGH SCHOOL

Westville
GIRLS' HIGH SCHOOL

WESTVILLE ROAD, WESTVILLE
P.O. BOX 286, WESTVILLE 3630
school@wghs.co.za
031 266 1258

6 October 2020

To Whom It May Concern

RE: PERMISSION TO CONDUCT RESEARCH

This letter serves to confirm that Amy Wurzel has been given permission to conduct the following research study at Westville Girls' High School:

"The effect of migraine-type headaches on the quality of life in an adolescent population in the Westville ward of the Pinetown School District."

Yours sincerely

MR R UNTIEDT
Principal

APPENDIX G: LETTER OF ASSENT

LETTER OF ASSENT

My name is Amy Wurzel and I am currently a student at Durban University of Technology doing a research study. To be a part of this study you will need to fill in this form, to say that you want to take part in this

study.

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Amy Wurzel, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: IREC 018/20.
- 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 computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had 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, _____ (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____	_____	_____
Full Name of Researcher	**Date**	**Signature**

_____	_____	_____
Full Name of Witness	**Date**	**Signature**

_____	_____	_____
Full Name of Legal Guardian	**Date**	**Signature**

APPENDIX H: LETTER OF INFORMATION AND INFORMED CONSENT

LETTER OF INFORMATION

Dear participant. I wish to welcome you to my research study and thank you for your co-operation.

Title of the Research Study: The effect of migraine-type headaches on quality of life in an adolescent population in the Westville ward of the Pinetown School District.

Principal Investigator/s/researcher: Amy Wurzel (B. Tech: Chiropractic)

Co-Investigator/s/supervisor/s: Dr Desiree Varatharajullu (M. Tech: Chiropractic)

Brief Introduction and Purpose of the Study: Migraine-type headaches are becoming increasingly common in adolescents affecting productivity and quality of life. Thus, the aim of this study is to explore the effect of migraine-type headaches on quality of life in an adolescent population in the Westville ward of the Pinetown School District

Outline of the Procedures: You will be required to participate in an interview that is estimated to be 30 minutes. Due to Covid-19, you and your school will have an option to conduct the interviews online via Microsoft teams or in person in a private room at your school.

Risks or Discomforts to the Participant: There are no risks or discomforts involved in this study.

Benefits: There is very little information on the effect of migraine-type headaches on quality of life in an adolescent population in South Africa. By participating in this study, you will help medical professionals understand your headaches more and possibly be able to treat your headaches more effectively and efficiently.

Reason/s why the Participant May Be Withdrawn from the Study: You may withdraw from the study at any point with no adverse consequences to you.

Remuneration: There will be no remuneration for your participation in this study.

Cost of the Study: There is no cost involved to participate in the study.

Confidentiality: All the information that you supply will be kept confidential and used for research purposes only.

Research-related Injury: The research involves interviews therefore there is no possibility for injury.

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

Principle investigator: Amy Wurzel Cell: 078 295 8759

Supervisor: Dr Desiree Varatharajullu Cell: 031 373 2533

Institutional Research Ethics administrator Tel: 031 373 2375

Complaints can be reported to the DVC: Research, Innovation and Engagement Prof S Moyo on 031 373 2577 or moyos@dut.ac

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Amy Wurzel, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: IREC 018/20.
- 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 computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had 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 / Right Thumbprint**

I, _____ (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____	_____	_____
Full Name of Researcher	**Date**	**Signature**
_____	_____	_____
Full Name of Witness	**Date**	**Signature**
_____	_____	_____
Full Name of Legal Guardian	**Date**	**Signature**

APPENDIX I: LETTER OF INFORMATION AND INFORMED CONSENT TO PARENT/LEGAL GUARDIAN

LETTER OF INFORMATION TO PARENT / LEGAL GUARDIAN

Dear parent/legal guardian. Thank you for your co-operation with respect to my research study.

Title of the Research Study: The effect of migraine-type headaches on quality of life in an adolescent population in the Westville ward of the Pinetown School District.

Principal Investigator/s/researcher: Amy Wurzel (B. Tech: Chiropractic)

Co-Investigator/s/supervisor/s: Dr Desiree Varatharajullu (M. Tech: Chiropractic)

Brief Introduction and Purpose of the Study: Migraine-type headaches are becoming increasingly common in adolescents affecting productivity and quality of life. This is poorly understood in the adolescent population. Thus, the aim of this study is to explore the effect of migraine-type headaches on quality of life in an adolescent population in the Westville ward of the Pinetown School District

Outline of the Procedures: Your child will be required to participate in an interview that is estimated to be 30 minutes. The interviews will be voice recorded. Due to Covid-19, your child and the school will have an option to conduct the interviews

online via Microsoft teams or in a private room at the school. Your child will have to provide consent to participate in the study and as such, an assent form will need to be signed by your child.

Risks or Discomforts to the Participant: There are no risks or discomforts involved in this study.

Benefits: There is very little information on the effect of migraine-type headaches on quality of life in an adolescent population in South Africa. By allowing your child to participate in this study, you and your child will help medical professionals understand migraine-type headaches in more detail and depth and possibly be able to treat migraine-type headaches more effectively and efficiently.

Reason/s why the Participant May Be Withdrawn from the Study: Your child may withdraw from the study at any point with no adverse consequences.

Remuneration: There will be no remuneration for your child's participation in this study.

Cost of the Study: There is no cost involved to participate in the study. Participation in the study is voluntary.

Confidentiality: All the information that you and your child supply will be kept confidential and used for research purposes only. Your child's name will not be revealed in any format and a pseudonym will be used to protect his/her identity.

Research-related Injury: The research involves interviews therefore there is no possibility for injury.

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

Principle investigator: Amy Wurzel Cell: 078 295 8759

Supervisor: Dr Desiree Varatharajullu Cell: 031 373 2533

Institutional Research Ethics administrator Tel: 031 373 2375. Complaints can be reported to the DVC: Research, Innovation and Engagement Prof S Moyo on 031 373 2577 or moyos@dut.ac

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Amy Wurzel, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: IREC 018/20.
- 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 computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had 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.

I, _____ (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____	_____	_____
Full Name of Participant	**Date**	**Signature Right / Thumbprint**
_____	_____	_____
Full Name of Researcher	**Date**	**Signature Right / Thumbprint**
_____	_____	_____
Full Name of Witness	**Date**	**Signature Right / Thumbprint**
_____	_____	_____
Full Name of Legal Guardian	**Date**	**Signature Right / Thumbprint**