DURBAN UNIVERSITY OF TECHNOLOGY

# THE PREVALENCE AND IMPACT OF PRIMARY HEADACHES ON STUDENTS AT THE DURBAN BASED CAMPUSES OF THE DURBAN UNIVERSITY OF TECHNOLOGY (DUT)

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# THE PREVALENCE AND IMPACT OF PRIMARY HEADACHES ON STUDENTS AT THE DURBAN BASED CAMPUSES OF THE DURBAN UNIVERSITY OF TECHNOLOGY (DUT)

**BY**

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**CO-SUPERVISOR: DR F HAFFEJEE**

# DECLARATION

This is to certify that the work is entirely my own and not of any other person, unless, explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the Durban University of Technology or to any other institution for assessment or for any other purpose.

_____ _____

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# DEDICATION

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# ABSTRACT


## Background:

Headaches affect different proportions of many populations and are experienced by any age, gender or ethnicity group. There is a paucity of data on the prevalence of headaches in South Africa, particularly amongst the university student population. Previous studies have suggested that headaches impact on daily activities as well as family and/or social activities. Studies on the impact of headaches on students are limited.

## Aim of Study:

The aim of this research study was to determine the prevalence and impact of primary headaches amongst students at the Durban University of Technology (DUT).

## Methodology:

A quantitative descriptive cross sectional survey was used to determine the prevalence of primary headaches in the student population at DUT. A minimum sample size of 384 was calculated using a confidence level of 95% and confidence interval of five percent. All six faculties were included. The course programmes and levels were chosen by multi-stage sampling. Each willing participant was required to sign a written consent form prior to enrolment in the study. Subsequently a self-administered questionnaire was filled out.

The International Classification of Headache Disorder Criteria was used to classify primary headaches. All data was captured on an Excel spreadsheet and subsequently analysed using SPSS version 23.0.

## Results:

The total of 471 completed questionnaires was received. The prevalence of primary and secondary headaches was similar (50.2%; $n$ = 222 versus 49.8%; $n$ = 220, $p$ = 0.92). More participants suffered from tension type (68.5%; $n$ = 152) headaches compared to migraines (16.2%, $n$ = 36) and mixed migraine and tension type headaches (15.3%, $n$ = 34; $p < 0.001$). None of the study participants suffered from cluster headaches. Poor

vision and stress increased the risk of a headache occurrence. The main relieving factor identified was the use of medication. Other relieving factors reported were sleep and relaxation. There was no correlation between suffering from headaches across the different faculties ($p$ = 0.65), age of the participant ($p$ = 0.77), ethnicity ($p$ = 0.40), marital status ($p$ = 0.84) and gender ($p$ = 0.35).

Headaches had a negative impact on the academic activities of the affected participants, including limited concentration and a complete halt to studies.

## Conclusion:

Tension type headaches were more prevalent amongst the study population. The impact of headaches limited concentration during tests and examination periods. An increased frequency and intensity of headaches was reported during this period. Family, social or leisure activities were also neglected when a headache occurred. This study adds to the current literature on headache prevalence in the student population. It also highlights that chiropractors are not consulted for headaches by students in the South African context. The chiropractic profession can benefit by tapping into this population.

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# CHAPTER 1: INTRODUCTION

## 1.1 Background of the Study

Headaches affect almost half of the population (Jensen and Stovner 2008). Previous reports have shown that the prevalence of headaches varies in different population across the world. Within the general population, Jordan had the highest prevalence of headaches when compared to other areas. Some countries, such as China, have a very low prevalence of headaches (Yu *et al.* 2012) . To date there are no published data on the prevalence of headaches in the general South African population. Studies conducted on prevalence of headaches in the student population focused only on medical students, Allied Health students and high school students (Ojini, Okubadejo and Danesi 2009; Prangley 2010; Tonini and Frediani 2012). It is unknown whether the headache prevalence is similar or different among students of different faculties.

Headaches can be classified as primary and secondary headaches (International Headache Society 2013; Mayo Clinic 2015). Primary headaches comprise of tension-type, migraine and cluster headaches (International Headache Society 2013). The occurrence of the various types of headaches differs geographically (Lipton *et al.* 2001; Vlajinac *et al.* 2003; Ojini, Okubadejo and Danesi 2009; Radtke 2009; Prangley 2010; Ertas *et al.* 2012; Mengistu and Alemayehu 2013). Many studies have reported that the rate of headache occurrence is higher in females than in males (Bicakei *et al.* 2008; Oshinaike *et al.* 2014; Özdemir *et al.* 2014). In many populations, the headache occurrence varied across age groups (Adoukonou *et al.* 2009; Alzoubi *et al.* 2009). However, there was no consistency among the different reports.

Previous international studies have shown that headaches can affect a person's daily life, which ultimately leads to a decreased quality of life. These factors, amongst others, may result in missing out on family activities and absenteeism from work (Lipton *et al.* 2001; Bussone *et al.* 2004; Barton-Donovan and Blanchard 2005). Amongst younger people, absenteeism from school and a decreased productivity have been reported (Deleu *et al.* 2001; Smitherman, McDermott and Buchanan 2011). The impact of headaches on South African university students requires investigation.

This study utilised a quantitative descriptive cross sectional design to determine the prevalence of primary headaches as well as the impact of these headaches on academic, family and social life of the student population at the Durban University of Technology (DUT).

## 1.2 Aim

This study aims to determine the prevalence and impact of primary headaches amongst students at the Durban University of Technology (DUT).

## 1.3 Objectives

1. To determine the prevalence of primary headaches in the student population at DUT.
2. To determine the types of primary headaches that occurs in the student population amongst different faculties at DUT.
3. To determine whether the prevalence and types of headaches differs amongst different gender and age groups of students.
4. To determine whether headaches occur more frequently around the time of assignments, tests and/or examination.
5. To determine risk factors for headaches.
6. To determine the impact of headaches on studying, family and social lives.

## 1.4 Hypothesis

Null hypothesis ($H_o$) 1: The prevalence of primary headaches is not significantly associated with risk factors such as vision, stress, sleep and family history.

Alternate hypothesis ($H_A$) 1: The prevalence of primary headaches is significantly associated with risk factors such as vision, stress, sleep and family history.

Null hypothesis ($H_o$) 2: Headaches have an impact on studying, family and social lives.

## 1.5 Limitations

- The campuses selected for this study included only DUT Durban based campuses.
- All six faculties were included in the study, however, only selected courses and years were selected.

## 1.6 Conclusion

This study identified the prevalence of primary headaches in the student population at DUT. The different types of primary headaches in this student population are reported. The frequency of headache occurrence, risk factors and the impact these headaches have on self-perceived academic performance, family and social lives' are described.

# CHAPTER 2: LITERATURE REVIEW

This chapter provides a layout of the literature available on headaches. The review includes the types of headaches, prevalence of headaches, risk factors, aggravating factors, relieving factors, burden and impact of headaches. Various search engines such as Summons, Google Scholar, EbscoHost, Taylor and Francis Online and Sabinet were used retrieve articles related to the study.

## 2.1 TYPES OF HEADACHES

A headache is defined as pain located in any region in the head with varied duration and course (Mayo Clinic 2015). Headaches are classified as primary and secondary (International Headache Society 2013). Primary headaches occur due to over-activity of pain sensitive structures in the head area. Blood vessels, nerves and muscles of the head and neck area contribute to the development of primary headaches (Mayo Clinic 2015). The pain sensitive structures of the brain can be affected in various ways such as torsion of the venous sinuses, damage to the tentorium or stretch to the dura can cause a headache (Guyton and Hall 2006). The blood vessels of the meninges are extremely sensitive especially the middle meningeal artery. This results in a headache due to stretching or trauma to these structures (Guyton and Hall 2006). Tension-type, migraine and cluster headaches are examples of primary headaches (Bill 2006; International Headache Society 2013).

Secondary headaches are due to another disorder. The location of the headache is close to the temporal region and there is evidence of a causal relationship with another disorder. The headache will either resolve within three months or less depending on the causative disorder, treatment or remission of the disorder. Some examples include: neck and/or head trauma, cranial or cervical disorders, infections and non-vascular intracranial disorders (International Headache Society 2013).

### 2.1.1. Primary Headaches

A tension-type headache is one of the most common types of primary headaches. It is described as a band-like sensation around the head and is associated with tension, anxiety and chronic contractions of the scalp muscles. It generally occurs bilaterally, moderate pain is experienced and the duration can last between thirty minutes and seven days (Blumenfeld, Schim and Brower 2010). Tension-type headaches are divided into frequent tension-type headache and infrequent tension-type headache. Frequent tension-type headaches occur with at least 10 episodes during a period of one -14 days per month. This recurs for more than three months. Tension-type headaches are regarded as infrequent if there is an average of 12 headache episodes per annum (International Headache Society 2013).

A cluster headache presents as a unilateral headache located within the orbital, supraorbital or temporal region. It may also occur in more than one of these regions (International Headache Society 2013). The headache lasts between one to two hours and can occur several times throughout the day. It may be accompanied by symptoms such as ipsilateral sweating, flushing of the facial or forehead area, rhinorrhoea, lacrimation, nasal congestion or eyelid oedema. Restlessness or agitation usually accompanies the headache (International Headache Society 2013). The headache attacks can be caused by changes in the circadian rhythm, which is the daily sleep-wake cycle (May 2005). A disturbance of this cycle causes molecular, biochemical, physiological and behavioural changes which can then result in the headache (Germain and Kupfer 2008).

Migraine headaches occur due to the activation of the trigeminal nerve fibres and inflammation of the meningeal blood vessels (Blumenfeld, Schim and Brower 2010). They present as unilateral, severe, pulsatile, throbbing pain in the temporal region accompanied by symptoms such as, photophobia, phonophobia, nausea and/or vomiting (Blumenfeld, Schim and Brower 2010). There are two types of migraine headaches which are migraine with aura which is also known as classic or complicated migraine and migraine without aura. An aura is a warning sign before the headache occurrence and these may be either visual, sensory or aphasia (International Headache Society 2013). Visual symptoms include scotoma or blurred vision and the sensory symptoms include pins and needles or numbness which may be localized to one side of the body, face and/or tongue. Either one or two auric

symptoms may occur unilaterally and these last between five - 60 minutes. The headache is experienced approximately 60 minutes after the aura.

Migraine without aura is also known as hemicrania simplex or common migraine. In order for one to be diagnosed with this type of migraine, the patient would have to experience at least five migraine attacks lasting between four - 72 hours. The headache is unilateral and a pulsating type of pain is experienced by the patient. The intensity varies from moderate to severe.

## 2.2 PREVALENCE OF HEADACHES

The prevalence of primary headaches differs with age and gender. Familial risk occurs due to genetic and environmental factors (Russell 2007). In the United States of America, a comparison study indicated that 53% of the population reported severe headaches (Lipton *et al.* 2001) . At least 23% of households had at least one person who suffered from migraine headaches. Lower income households had a higher headache prevalence compared to high income households (Lipton *et al.* 2001). In the Jordan adult population, 82.3% complained of headaches at least once a year (Alzoubi *et al.* 2009) The prevalence of headaches in the German population increased with age until the age of 50 and thereafter declined (Radtke 2009).

Within the general population, Jordan had the highest prevalence of headaches when compared to other areas (Table 2.1). Some countries, such as China, have a very low prevalence of headaches (Yu *et al.* 2012).

**Table 2.1 Prevalence of headaches in a general population**

| Country | Prevalence (%) |
|---|---|
| Jordan | 82.2% (Alzoubi *et al.* 2009) |
| India | 68% (Menon and Kinnera 2013) |
| Turkey (Eastern region) | 60.4% (Özdemir *et al.* 2014) |
| Germany | 60.2% (Radtke 2009) |
| USA | 53% (Lipton *et al.* 2001) |
| China | 0.9% (Yu *et al.* 2012) |

When comparing headache prevalence in various populations, high school students in Germany had the highest prevalence (83.1%) (Table 2.2).

**Table 2.2 The prevalence of headaches in various countries and populations**

| Various populations | Prevalence (%) |
|---|---|
| **1. University population** | |
| Southern Brazil | 74.5% (Falavigna *et al.* 2010) |
| Iran | 58.7% (Ghorbani *et al.* 2013) |
| **2. High school** | |
| Germany | 83.1% (Milde-Busch *et al.* 2010) |
| **3. Work Environment** | |
| Nigeria | 39.3% (Oshinaike *et al.* 2014) |

The migraine prevalence differed amongst the various populations worldwide. The highest prevalence identified amongst different populations were: USA in the general population, India in the university students and Italy in the high school population. When further subdividing migraine into migraine with aura and migraine without aura. Benin had the

highest prevalence of migraine with aura and Turkey had the highest prevalence of migraine without aura (Table 2.3).

**Table 2.3 Migraine prevalence in the various populations**

| | |
|---|---|
| **A. Migraine prevalence** | |
| **1. General population** | |
| USA | 23% (Lipton *et al.* 2001) |
| Turkey | 16% (Ertas *et al.* 2012) |
| Germany | 11% (Radtke 2009) |
| China | 10.3% (urban areas) and 8.9% (rural areas) (Yu *et al.* 2012) |
| Jordan | 7.7% (Alzoubi *et al.* 2009) |
| **2. University population** | |
| India | 42% (Menon and Kinnera 2013) |
| Southern Turkey | 21.9% (Bicakei *et al.* 2008) |
| Iran | 14.2% (Ghorbani *et al.* 2013) |
| Middle East | 12.2% (Deleu *et al.* 2001) |
| Turkey | 10.4% (Demirkirkan, Ellidokuz and Boluk 2006) |
| Nigeria | 6.4% (Ojini, Okubadejo and Danesi 2009) |
| **3. High school population** | |
| Italy | 53% (Tonini and Frediani 2012) |
| Germany | 10.2% (Milde-Busch *et al.* 2010) |
| **4. Working environment** | |
| Nigeria | 18.9% (Oshinaike *et al.* 2014) |
| | |
| **B. Migraine without aura prevalence** | |
| **1. University population** | |
| Ethiopia | 65.2% (Mengistu and Alemayehu 2013) |
| Benin | 57.9% (Adoukonou *et al.* 2009) |
| Brazil | 43% (Souza-e-Silva and Rocha-Filho 2011) |
| **2. General population** | |
| Turkey | 70% (Özdemir *et al.* 2014) |
| | |
| **C. Migraine with aura prevalence** | |
| **1. University population** | |
| Benin | 42.1% (Adoukonou *et al.* 2009) |
| Brazil | 18.3% (Souza-e-Silva and Rocha-Filho 2011) |
| Ethiopia | 2.6% (Mengistu and Alemayehu 2013) |
| **2. General population** | |
| Turkey | 30% (Özdemir *et al.* 2014) |

Cluster headaches were only reported in Ethiopia (1.3%) (Mengistu and Alemayehu 2013). Nigeria had the highest prevalence for tension type headaches and followed by Brazil with episodic tension type headaches (Table 2.4).

**Table 2.4 Tension-type headaches in various populations**

| | |
|---|---|
| **A. Tension-type prevalence** | |
| **1. University population** | |
| Nigeria | 18.1% (Ojini, Okubadejo and Danesi 2009) |
| Middle East | 12.2% (Deleu *et al.* 2001) |
| **2. General population** | |
| Jordan | 36.9% (Alzoubi *et al.* 2009) |
| China | 13.2% (urban areas) and 9.6% (rural areas) (Yu *et al.* 2012) |
| **3. Work environment** | |
| Nigeria | 72.8% (Oshinaike *et al.* 2014) |
| **4. High school** | |
| Germany | 48.7% (Milde-Busch *et al.* 2010) |
| Italy | 31% (Tonini and Frediani 2012) |
| **B. Frequent tension-type headache prevalence** | |
| **1. University population** | |
| Ethiopia | 8.2% (Mengistu and Alemayehu 2013) |
| **C. Infrequent tension-type headache prevalence** | |
| **1. University population** | |
| Ethiopia | 2.2% (Mengistu and Alemayehu 2013) |
| **D. Episodic tension-type headache prevalence** | |
| **1. University population** | |
| Brazil | 40.7% (Souza-e-Silva and Rocha-Filho 2011) |
| **2. General population** | |
| Tanzania | 5% (Winkler *et al.* 2009) |
| **E. Chronic tension-type headache prevalence** | |
| **1. University population** | |
| Brazil | 1.7% (Souza-e-Silva and Rocha-Filho 2011) |
| **2. General population** | |
| Tanzania | 0.4% (Winkler *et al.* 2009) |

A comparison of different faculties and/or course programme indicated a different headache prevalence for each. The Faculty of Exact Science and Engineering in Brazil had a higher prevalence of headaches when compared to the Pharmacy unit in Benin. Seventh year students had a higher headache prevalence when compared to their first and sixth year counterparts in Kuwait (Al-Hashel *et al.* 2014) (Table 2.5).

**Table 2.5 Headache prevalence in different faculties and/or course programmes**

| **Different course programmes and years in different countries** | **Headache prevalence (%)** |
|---|---|
| **1. Course programmes** | |
| Faculty of Exact Sciences and Engineering (Brazil) | 48.2% (Falavigna *et al.* 2010) |
| Health and Biological Sciences (Brazil) | 37.1% (Falavigna *et al.* 2010) |
| Kinesitherapy unit (Benin) | 19.4% (Adoukonou *et al.* 2009) |
| Humanities and Art (Benin) | 14.7% (Falavigna *et al.* 2010) |
| Social workers unit (Benin) | 14.3% (Adoukonou *et al.* 2009) |
| Medical unit (Benin) | 10.4% (Adoukonou *et al.* 2009) |
| Pharmacy unit (Benin) | 8.3% (Adoukonou *et al.* 2009) |
| **2. Course years** | |
| Seventh years (Kuwait) | 44% (Al-Hashel *et al.* 2014) |
| Sixth years (Kuwait) | 35.5% (Al-Hashel *et al.* 2014) |
| First years (Kuwait) | 31.1% (Al-Hashel *et al.* 2014) |

The highest one year and lifetime prevalence was identified in the Middle East with Taiwan having the lowest one year prevalence and Benin the lowest lifetime prevalence (Table 2.6).

**Table 2.6 One year and Lifetime prevalence of headaches**

| | |
|---|---|
| **A. General one year prevalence** | |
| **1. University population** | |
| Middle East | 96.8% (Deleu *et al.* 2001) |
| Brazil | 87.2% (Souza-e-Silva and Rocha-Filho 2011) |
| **2. Work environment** | |
| Taiwan | 49.6% (Lin, Huang and Wu 2007) |
| **3. High school** | |
| Italy | 84% (Tonini and Frediani 2012) |
| **B. One year prevalence of migraine headaches** | |
| **1. University population** | |
| Brazil | 48.5% (Souza-e-Silva and Rocha-Filho 2011) |
| **2. General population** | |
| China | 9.3% (Yu *et al.* 2012) |
| **3. Work environment** | |
| Taiwan | 28.5% (Lin, Huang and Wu 2007) |
| **C. One year prevalence of tension-type headaches** | |
| **1. General population** | |
| China | 10.8% (Yu *et al.* 2012) |
| **2. Work environment** | |
| Taiwan | 13.4% (Lin, Huang and Wu 2007) |
| **D. One year prevalence of mixed migraine and tension type headaches** | |
| **1. Work environment** | |
| Taiwan | 4.8% (Lin, Huang and Wu 2007) |
| **E. Lifetime prevalence of headaches** | |
| **1. University population** | |
| Middle East | 98.3% (Deleu *et al.* 2001) |
| Benin | 11.3% (Adoukonou *et al.* 2009) |

A South African study in 2010 on the prevalence of headaches in Allied health students at the Durban University of Technology (DUT), found that 75% of students in the Faculty of Health Sciences suffered from headaches (Prangley 2010). Migraine headaches had a marginally higher prevalence (31%) compared to tension-type (30%) headaches. It is not known whether the prevalence of headaches amongst students from other faculties differs from those in Health Science students.

From the above literature it is apparent that the prevalence of primary headaches in the general population in different countries varies markedly. None of these published data have explored the prevalence of primary headaches in the general South African population. Furthermore, studies that were conducted on the student population were restricted to the medical and health science student populations. It is important to investigate the prevalence in other student population to determine whether this differs amongst students from different faculties.

### 2.2.1 Gender

A worldwide prevalence indicated that females including the university population suffer more from headaches when compared to their male counterparts (Lipton *et al.* 2001; Kernick and Reinhold 2002; Vlajinac *et al.* 2003; Bruni *et al.* 2008; Adoukonou *et al.* 2009; Ojini, Okubadejo and Danesi 2009; Radtke 2009; Winkler *et al.* 2009; Smitherman, McDermott and Buchanan 2011; Yu *et al.* 2012; Mengistu and Alemayehu 2013).

A lifetime prevalence of headaches identified in Tanzania was 18.9% with the ratio of male versus female (13.6% versus 24.3%). Primary headaches accounted for 13.5% whilst the male: female ratio was 9.8% versus 17.3% and a yearly prevalence identified was 12.1%. A one year tension-type prevalence identified was 7% and in males (5.3%) and females (8.8%) (Winkler *et al.* 2009).

Table 2.7 indicates the migraine prevalence amongst females and males in different populations. From the table it can be noted that more females suffer from migraine headaches than do males.

**Table 2.7 Worldwide prevalence of migraine headaches in the general and university population**

| Prevalence of migraine headaches | Females | Males | Total (%) |
|---|---|---|---|
| **1. General Population** | | | |
| Southern Turkey | 28.1% | 17.3% (Bicakei *et al.* 2008) | 45.4% |
| Hospital based study in Nigeria | 23.7% | 5% (Oshinaike *et al.* 2014) | 28.7% |
| Turkey (survey study) | 23.1% | 10.3% (Özdemir *et al.* 2014) | 33.4% |
| **2. University population** | | | |
| Spain | 34% | 14% (Lopez-Mesonero *et al.* 2009) | 48% |
| Kuwait University | 31.1% | 20.1% (Al-Hashel *et al.* 2014) | 51.2% |
| Iran | 18.5% | 10.5% (Ghorbani *et al.* 2013) | 29% |
| Middle East | 15.5% | 6.6% (Deleu *et al.* 2001) | 22.1% |
| Turkey | 14% | 8.9% (Demirkirkan, Ellidokuz and Boluk 2006) | 22.9% |

Table 2.8 identified tension-type headache prevalence amongst females and males in different areas.

**Table 2.8 Worldwide prevalence of tension-type headaches in the general and university population**

| | Females | Males | Total (%) |
|---|---|---|---|
| **1. General population** | | | |
| Hospital based study in Nigeria | 70.3% | 80% (Oshinaike *et al.* 2014) | |
| China | 14% | 7.7% (Yu *et al.* 2012) | 21.7% |
| **2. University population** | | | |
| Iran | 39.2% | 49.2% (Ghorbani *et al.* 2013) | 88.4% |
| Middle East | 11.1% | 13.9% (Deleu *et al.* 2001) | 25% |

## 2.2.2 Race/Ethnic Groups

A study in the undergraduate population of Brazil indicated that 93.9% Caucasian; 4.8% Mulatto; 1.1% Black and 0.2% Asian suffer from primary headaches (Falavigna *et al.* 2010). This shows that headache prevalence differs in the different ethnic populations within the same geographic area.

### 2.2.3 Martial Status

In Benin, within the sample population of undergraduates and graduates in the Faculty of Health Science showed that married or widowed individuals have a higher migraine prevalence than single individuals (30.4% versus 9.9%), however, was not further investigated (Adoukonou *et al.* 2009). In Taiwan, married nursing staff suffered more from headaches (51.83%) when compared to divorcees (50%) and single staff (48.83%) (Lin, Huang and Wu 2007). A survey conducted in China indicated individuals affected by headaches differed due to their marital status (Table 2.9) (Yu *et al.* 2012).

**Table 2.9 Different types of headaches versus marital status**

| | Divorcees | Married | Widowed | Single | Total (%) |
|---|---|---|---|---|---|
| Migraine headache | 11.9% | 10.2% | 9.8% | 2.5% | 34.4% |
| Tension-type headache | 16.1% | 13.4% | 11.1% | 6.6% | 47.2% |
| Chronic daily headaches | 0% | 1% | 4.5% | 0.2% | 5.7% |

(Yu *et al.* 2012)

### 2.2.4 Age

A yearly headache prevalence of the adult Jordan population is as follows: 18-29 and 30-39 (82.3%); 40-49 (79.9%) and 50 and older (81.7%) (Alzoubi *et al.* 2009). At a university in Benin on undergraduates and graduates of the Faculty of Health Sciences revealed migraine prevalence of different age groups as follows: 16-19 (7.7%), 20-29 (11.1%) and 30 years and older (4.6%) (Adoukonou *et al.* 2009). In the United States of America, cluster headache onset percentage were different in each age group: 20 years or younger (35%), 21-30 years (36%), 31-40 years (16%), 41-50 years (10%) and 51 years or older (3%) (Rozen and Fishman 2012). In Taiwan, a study conducted on nursing staff suffering from headaches within various age groups ranged from 20-29 (51%), 30-39 (43%) and 40-49 (57.1%) (Lin, Huang and Wu 2007).

In Rome, the youngest mean age for a headache onset was 10.71 years. Migraine headaches indicated 10.41 years in Rome and 18.3 years for tension-type headaches in Tanzania (Tables 2.10 and 2.11).

**Table 2.10 Mean age onset of headaches in the high school and university population**

| | | Mean age for headache onset |
|---|---|---|
| **1.** | **High school population** | |
| | Rome | 10.71 years (Bruni *et al.* 2008) |
| **2.** | **University population** | |
| | Benin | 15 years (Adoukonou *et al.* 2009) |
| | Turkey | 14.37 years (Kurt and Kaplan 2008) |

Table 2.11 below refers to the mean age onset of migraine and tension-type headaches in different population.

**Table 2.11 Mean age onset of migraine and tension-type headaches in the high school and general population**

| | | Mean age onset of migraine headaches | Mean age onset of tension-type headaches |
|---|---|---|---|
| **1.** | **High school population** | | |
| | Rome | 10.41 years (Bruni *et al.* 2008) | - |
| **2.** | **General population** | | |
| | Nigeria | 19.2 years | 27.6 years (Oshinaike *et al.* 2014) |
| | Tanzania | - | 18.3 years (Winkler *et al.* 2009) |

### 2.2.5 Headache Frequency

Within different faculties in Turkey approximately 25% of students suffered from migraine headaches (Bicakei *et al.* 2008). In undergraduate students in the UK: 34% experienced headaches less than once a month, 43% experienced one - six headaches a month, 10% experienced more than six headaches a month and 13% experienced headaches more than 15 days a month (Kernick and Reinhold 2002). In a study conducted on medical students in India on migraine headaches, 40% experience one attack per month, 28% has an attack once in three months, 19% weekly and 6% daily (Menon and Kinnera 2013).

In the adult Jordanian population, 25.7% experienced fewer than daily to weekly headaches; 21.6% had fewer than weekly up to monthly headaches; 17.8% had fewer than monthly basis and 17.2% experienced daily headache attacks (Alzoubi *et al.* 2009). In the USA, an undergraduate population indicated an average of 9.39 headache attacks over a three month period (Smitherman, McDermott and Buchanan 2011). In the USA university student population, the number of headache attacks per month are: 5.0 (females) and 4.8 (males) (Demirkirkan, Ellidokuz and Boluk 2006).

The monthly frequency of migraine attacks in Benin in the Faculty of Health Science students were as follows: zero - four attacks (65.8%), five - nine (23.7%) and 10 or more attacks (10.5%) (Adoukonou *et al.* 2009). Within the university population in Turkey, most common headaches participants experienced were migraine and tension-type headaches. Headaches were experienced either more than once a week (15.19% versus 12.88%), once a week (22.65% versus 15.28%), two - three times a month (25.96% versus 32.97%), once a month (22.93% versus 12.66%) or less than one attack per month (13.6% versus 26.20%) (Kurt and Kaplan 2008). Adolescents at schools in Rome experience migraine headaches more than once a week or once a week (37.14%) whilst non-migraine sufferers have attacks more than once a week (34.81%) and once a week (42.22%) (Bruni *et al.* 2008).

This indicates that in different geographical areas of the world, the frequency of headaches attacks differ. The university population experienced a higher frequency of migraine headaches as compared to tension type headaches.

### 2.2.6 Headache Duration

In India, 91% of medical students indicated that their migraine attacks last for hours whilst 9% indicated the headache attack lasts for days (Menon and Kinnera 2013). In another study focusing on migraines within health science students in Benin indicated a mean duration of migraine attacks to be: four - six hours (34.2%), six -12 hours (23.7%), 12-24 hours (18.4%), 24-48 hours (13.2%) and 48 hours or more (10.5%) (Adoukonou *et al.* 2009). Migraine and tension-type headaches attacks of university students in Turkey ranged from less than four hours (10.22% versus 72.93%), four - 24 hours (62.71% versus 13.75%) to more than 24 hours (27.07% versus 13.32%) (Kurt and Kaplan 2008).

The duration of migraine headaches experienced by high school students differs from non-migraine headaches: more than one hour and less than two hours (32.86% versus 22.22%), however, migraine headache sufferers experience headaches of more than two hour duration (67.14%) and non-migraine sufferers experience headaches less than an hour (27.41%) (Bruni *et al.* 2008).

In migraine sufferers, the headache attacks lasts for many hours. The duration being longer compared to that of other primary headaches such as tension type headaches.

### 2.2.7 Pain Intensity

In a university population in Turkey, the mean pain intensity identified was 6.2 for females and 6.5 for males (Demirkirkan, Ellidokuz and Boluk 2006). Another university in Turkey indicated the pain range for students suffering from either migraine or tension-type headaches were: mild (1.93% versus 31.88%), moderate (46.96% versus 66.81%) and severe (51.11% versus 1.31%) (Kurt and Kaplan 2008). In the Faculty of Health Science undergraduates and graduates in Benin, 39.5% suffered from mild pain intensity whilst 60.5% moderate to severe pain intensity during a migraine headache attack (Adoukonou *et al.* 2009).

In a high school population in Rome, the main type of intensities migraine sufferers experience were moderate and strong (42.86% versus 40%). Non-migraine sufferers

experienced more mild type intensity than moderate type intensity (46.67% versus 37.04%) (Bruni *et al.* 2008).

The most common type of intensity described during a headache attack was mild and moderate. However, intensity of headaches differed in various populations and geographically.

### 2.2.8 Accompanying / Associated Signs and Symptoms

The most common symptoms accompanying a migraine headache within medical students in India are: photophobia, phonophobia, nausea and vomiting (Menon and Kinnera 2013). In the United States of America, the associated symptoms identified in cluster headaches are: eye lacrimation (91%), nasal rhinorrhoea (84%), forehead swelling (59%), photophobia (48%), phonophobic (42%), nausea (36%) and vomiting (17%) (Rozen and Fishman 2012). At a high school in Italy, nauseous during a headache attack (25%), vomiting (7%), photophobia (52%), phonophobia (72%) and missing meals during break and lunch (43%) were associated symptoms with headaches (Tonini and Frediani 2012).

A survey conducted in Turkey focusing on migraine headaches indicated associated signs and symptoms to be: phonophobia (91.5%), bright light (15.9%), moderate nausea (19.5%), intense nausea (17.1%) and photophobia (76.8%) (Özdemir *et al.* 2014). A study conducted in a private hospital indicated the symptoms experienced amongst migraine sufferers were: pins and needles or numbness in the limbs or face, photophobia, hyperacusis, ataxia, visual aura, pressure in the ears, speech disturbances and tremors (Preez and Papendorp 2011).

In a high school population, the accompanying symptoms for migraine headaches were nausea and vomiting (90%) and non-defined (1.4%). In non-migraine headaches, nausea and vomiting accounted for half the population (55.55%) and abdominal pain (37.78%) (Bruni *et al.* 2008).

In various populations worldwide, the most common accompanying or associated signs and symptoms indentified in migraine headaches were photophobia, phonophobia, nausea and vomiting.

### 2.2.9 Headache Cycles

The cluster headache cycle in an American population varied during the year (41%) and between 11-13% are evenly distributed throughout the year. The months identified where cluster headaches occur more frequently: October (26%), September (21%), April (21%), March and November (20%) (Rozen and Fishman 2012).

### 2.2.10 Time

In an American study on cluster headaches identified the most common times a headache attack would occur. At the same time of day (82%), 2am (41%), 1-3am (35%), midnight (32%), 8am (18%), 7pm and 7am (58%) and 7am and 7pm (42%) (Rozen and Fishman 2012). In Rome, high school students commonly experienced headaches in the afternoon and evening. Migraine headaches experienced more often in the evenings when compared to non-migraine headaches (40% versus 32.86%). Non-migraine headaches occurred more frequently in the afternoon when compared to migraine headaches (18.52% versus 15.71%) (Bruni *et al.* 2008).

### 2.2.11 Headache Attacks

The average number of cluster headache attacks that occur per day in an American population varies from two attacks per day (24%), one attack per day (22%), three attacks per day (18%), four attacks per day (12%), five - eight attacks per day (20%) to mostly on a daily basis (80%) (Rozen and Fishman 2012). In Turkey, a door-to-door survey of migraine headaches indicated headache attacks once or less than once per month (20%), one - four attacks per month (38%) and four times or more per month (42%) (Özdemir *et al.* 2014).

### 2.2.12 Headache Characteristics

A study conducted on university students in Turkey suffering predominately from migraine and tension-type headaches identified most headaches occur unilaterally (66.57% versus 15.72%). The common pain type experienced were: throbbing (87.57% versus 16.59%), tightness (6.35% versus 70.96%), sharp (2.48% versus 4.37%), burning (2.76% versus 3.37%) and heaviness (0.83% versus 4.80%) (Kurt and Kaplan 2008).

## 2.3. BURDEN / IMPACT

A headache can have multi-factorial causes which can affect the person's daily life and ultimately decrease quality of life (Barton-Donovan and Blanchard 2005). The multi-factorial nature of headaches requires appropriate strategies to preventing them from becoming chronic. Such strategies include early intervention, identifying risk factors and lifestyle association (Jensen and Stovner 2008). In a study conducted on the American population, 51% of the study population reported a decrease of work and school productivity by 50% (Lipton *et al.* 2001). Household, family and social activities were more likely to be disrupted due to the headaches that an individual experienced (Lipton *et al.* 2001).

Personal and work life may be equally affected in individuals who suffer from primary headaches (Bussone *et al.* 2004). Functional disability increased absenteeism from work and missing out on family activities (Bussone *et al.* 2004). In Reno, patients from a headache clinic reported a reduced capacity for everyday activities (Hauch 1999). In the German population, 16.4% of headache sufferers reported a decrease in usual activities at work and everyday life; however, the degree of impact these headaches had were not investigated (Radtke 2009).

A study conducted in students attending their last two years of secondary school in Italy indicated that 92% of headache sufferers have difficulty in paying attention to lessons, participation in afternoon sport and completing homework tasks given to them (Tonini and Frediani 2012). Within an American university undergraduate population, headaches have been shown to impact on productivity and attendance rates (Curry and Green 2007).

Within a UK undergraduate population, 19% of students indicated that headaches affected their quality of life. Activities of daily ranged from four percent - 50% were affected ranging from always to sometimes (Kernick and Reinhold 2002). In medical students in India, 22% indicated absence from college, 23% reported decreased in productivity by half and 18% missed family, social and leisure activities (Menon and Kinnera 2013). In the adult population of Jordan, 51.6% reported that headaches affect their activities of daily living (Alzoubi *et al.* 2009). In Milan, a study conducted at a headache centre 69 – 83% of chronic migraine sufferers indicated that activities of daily living, domestic and social activity have become impaired. More than 50% have decreased work performance. However, they still

continue working and 39% have stopped working, 82.7% of chronic migraine and 59.1% of chronic cluster headache sufferers have lost out on family, social and leisure activities (D'Amico *et al.* 2003).

In an undergraduate population in the USA, migraine sufferers miss twice as many days of school and have impaired home functioning (Smitherman, McDermott and Buchanan 2011). In the Middle East, 12% of medical students could not perform activities of daily living due to the headache attacks (Deleu *et al.* 2001). At a Brazilian university, 30.8% of social communication students missed classes due to their headaches with 13.4% of students missing three or more days of campus. A decreased productivity to half of up to two days were reported in 17.4% of students and 13.4% saw a decreased productivity for three days or more. Moderate intensity headaches interfered with activities of daily living (49%) and severe headaches interfered completely with activities of daily living (13.7%). The impact of these headaches were graded according to daily activities usually performed: some impact (20.6%), substantial impact (16.9%) and very severe impact (32%) (Souza-e-Silva and Rocha-Filho 2011).

In the American population, 17% lost their full time jobs due to cluster headaches. Those currently unemployed or were on work-related disability secondary to headaches accounted for 8%. Leave days for headaches ranged from one -10 days (47%), 11 days or more (21%), never lost a day (32%), unable to leave home one -12 days per year (38%) and 11% were bed bound for 31 or more days per year (Rozen and Fishman 2012).

Chronic tension-type headache sufferers within rural and urban areas in America indicated almost a third of the population (74%) reported disability days related to their headache attacks (Holroyd *et al.* 2000).

The impact of headaches has a negative effect on activities of daily living, work environment, school or university attendance. However, the degree of impact has not been investigated especially in the South African context.

### 2.3.1 Cost Factors

According to a study conducted by Jensen and Stovner (2008), the economic expenses of headaches such as migraines are estimated to be around $14.4 billion in the United States of America and €27 billion in Europe. Tension-type headaches cost approximately 54% more when compared with migraine costs in terms of necessary medication, general practitioner (GP) and specialists' visits (Jensen and Stovner 2008). In Brazil, a study conducted at a hospital within a small town of population 11, 208 indicated that expenses for each inhabitant per year amounts to R$ 7.59 (Bigal *et al.* 2001).

## 2.4 RISK FACTORS

The risk factors for tension type headaches include emotional stress, anxiety, depression, panic disorders, changes in sleep patterns, skipping meals and exposure to environments such as noise, heat and poor lighting (Black *et al.* 2004). A high intake of caffeine and alcohol has also been associated with a high risk of developing headaches (Black *et al.* 2004). Females suffering from premenstrual syndrome (PMS) have also been at a high risk; however, the study was conducted in an unknown age group (Buckley and Schub 2014).

A study conducted on the general population in the UK, Germany, Italy, Portugal and Spain indicated that risk factors for females with various disorders are high than that of males. This included comorbid anxiety and depressive disorders (28.5% versus 5.5%), major depressive disorders (21.3% versus 5.5%), insomnia disorder (14.4% versus 6.9%), musculoskeletal disorders (14.1% versus 7.1%), heavy alcohol consumption – more than six drinks per day (10.6% versus 7.7%), thyroid disease (13.1% versus 7.6%) and anxiolytic medication (20.1% versus 7.3%). A small percentage reported they wake up with a headache (7.6%) (Ohayon 2004).

The above shows that risk factors for headaches differed in different geographic areas, gender and age groups. There is a paucity of data concerning the risk factors involved in headache causation in South Africa and these need to be identified.

## 2.5 TRIGGERING FACTORS

A triggering factor causes the headache or initiates the process responsible for causing a headache. The trigger determines the effect it has on the headache attack. Triggers can be inconsistent depending from pairing to pairing such as a headache in a stress-free period versus a headache in a stressful period (Turner *et al.* 2013). In a secondary school population consisting of the last two years of high school aged 17-20, some of the trigger factors for a headache include: fatigue, stress, little sleep, change in weather, problems with family and/or friends, travelling by car or bus, smoking and alcohol intake (Tonini and Frediani 2012). Within an American undergraduate university student population, the common trigger factors for headaches were identified as stress, allergy or sinus symptoms, sleeping patterns (either too much or too little sleep), intense lights, smells and sounds (Curry and Green 2007).

In India, a study conducted on medical students focusing only on migraine headaches 79% of students indicated more than one triggering factors for a headache attack. Some less common triggering factors were missing meals, exertion and travelling (Menon and Kinnera 2013). In a cross sectional study conducted on medical students in Kuwait, some of the triggering factors identified were: stress (24.9%); irregular sleep (20.8%); substantial reading (18.5%); exams (11.1%); smoking (5.8%) and fasting (5.8%) (Al-Hashel *et al.* 2014). Within a population of first – third year medical students in Korea 97.4% experienced a headache due to prolonged cell phone usage and 7.1% frequently used their cell phones (Chu *et al.* 2011).

The trigger factors identified in migraine headaches in the Faculty of Health Science students were as follows: noise (71.1%), anxiety (65.8%), sleeping disturbances (63.2%), physical activity (57.9%), exposure to sun (55.3%), heat (55.3%), annoyance (52.6%), intense light (50%), studying for an exam (47.4%), emotional upset (47.4%), menstruation (16.7%) and eating habits (2.6%) (Adoukonou *et al.* 2009). In an American study focusing on cluster headaches only identifies trigger factors from alcohol/beer (57%), red wine (50%), hard liquor (49%), weather changes (36%), smells (28%), bright light (23%), flashing lights (17%), watching television (12%), hot wrap/shower (8%) to nitroglycerin (3%) (Rozen and Fishman 2012).

In Turkey, the following trigger factors for migraine headaches were emotional stress (85.4%), noise (69.5%), irregular sleep (67.9%), bright light (45.9%), hunger and skipping meals (38.6%), weather changes (33.7%) and smoking (31.7%). Migraine attacks were worse during menstruation in females (Özdemir *et al.* 2014). Another study in Turkey focusing on university students identified the following triggers for migraine and tension-type headaches: emotional upset, sleepiness, noise, fatigue, cold weather, excess sleep, studying for examinations, traveling, hot weather, smoking, taking a bath, flashing light, physical activity, menstrual cycles, tea/coffee consumption, strong odours, alcohol and food (Kurt and Kaplan 2008).

In a study population, triggers identified in acute migraine attacks were stress (79.7%), hormones (65.1%), not eating (57.3%), weather (53.2%), sleep disturbance (49.8%), perfume/odour (43.7%), neck pain (38.4%), lights (38.1%), alcohol (37.8%), smoke (35.7%), sleeping late (32%), heat (30.3%), food (26.9%), exercise (22.1%) and sexual activity (5.2%). More than half the population experiences four - nine triggers (61%) while the remaining experience one - three triggers (23.2%) and all triggers (0.4%) (Kelman 2007).

Migraine and non-migraine headache triggers identified were the same in high school students in Rome: bad sleep (32.86% versus 31.85%), emotional stress (25.71% versus 28.89%), intense noise/light (7.14% versus 20.74%), weather condition (12.86% versus 5.93%) and other including food or physical (21.43% versus 13.23%) (Bruni *et al.* 2008). The most common type of triggers identified in rural and urban American areas were stress (88%), diet (33%) and menstrual cycle (34%) (Holroyd *et al.* 2000).

Triggering factors most commonly identified across genders were stress, sleep patterns, smoking, intense or bright light, study periods and alcohol. The trigger factors was not specific according to gender, however, in females menstrual cycles are a common trigger for a headache attack.

## 2.6 AGGRAVATING FACTORS

An aggravating factor is defined as an occurrence, act or exposure which makes a pre-existing condition worse, intensifies or increases the severity (Kusnetz and Hutchison 1979). A study conducted in a Nigerian University indicated that 68.8% of the headaches were aggravated by movement and physical activity (Ojini, Okubadejo and Danesi 2009). Another study conducted in Nigeria indicated physical activity to be the main aggravating factors for primary headaches (Oshinaike *et al.* 2014). The main aggravating factors identified in medical students in the Middle East were lack of sleep (72.4%); either too much or excessively long hours of work (57.9%); lack of rest (52.3%); sunlight exposure (25.5%); working on a computer (15.2%); watching television (12.4%); menstruation (10.1%); head motion (8.8%) and exercise (7.7%) (Deleu *et al.* 2001). In Turkey, physical activity (67.1%) has been identified as an aggravating factor in migraine headaches (Özdemir *et al.* 2014). A high school study in Italy identified movement such as gym, jogging and going up stairs in 57% of headache sufferers (Tonini and Frediani 2012).

### 2.6.1 Smoking

In Spain, 29% of medical students who smoked suffered from migraine headaches. More than two thirds (77%) of migraine sufferers who smoked experienced more than one headache attack per month and 23% had less than one headache attack per month with smoking. A large proportion (71%) reported that smoking worsened the migraine headaches (Lopez-Mesonero *et al.* 2009). In an American population, smoking history was identified in cluster headaches: develop a cluster headache whilst smoking (51%), stopped smoking after the headache began (18%), smoked at the same rate (45%), decreased attack frequency (2%) and decrease severity of headache attack (8%) (Rozen and Fishman 2012).

### 2.6.2 Alcohol

In an urban non-residential university, a study population of 1296 focused on alcohol consumption showed an increase of headaches and hangovers due to alcohol consumption as alcohol intake is recognized as part of the “college experience” (Black *et al.* 2004). In high school students, overall 22.3% consumed less than one litre of alcoholic drinks per day. Beer (38.5%) followed by cocktails (25%) and then wine (18.6%) was the amount consumed within a one week duration (Milde-Busch *et al.* 2010).

### 2.6.3 Cell Phone Usage

In Korea, a study conducted on first – third year medical students on headaches with associated cell phone usage, 47.4% developed a headache during cell phone usage; 23.7% developed either during or after cell phone usage and 52.6% developed a headache every time they used a cell phone. Some of the symptoms experienced when a headache occurs due to cell phone usage are: burning sensation every time one used a cell phone (71.1%), dizziness (39.5%) and orbital or periorbital pain (31.6%) (Chu *et al.* 2011).

### 2.6.4 Computer Usage

Headaches are one of the symptoms experienced when using a computer either for work, education or leisure (Mashige 2014). These types of headaches occur towards the middle of the day or at the end of the day, usually unilateral in location (Mashige 2014).

### 2.6.5 Family History

In a study conducted on medical students in the Middle East 57.6% had a positive family history of headaches (Deleu *et al.* 2001). In Benin, a cross sectional study on the Faculty of Health Sciences focusing on migraine headaches only indicated 14.6% had a family history of headaches, 5.3% did not have a family history and 11.3% were unknown (Adoukonou *et al.* 2009). In the United States of America, 17% had positive family history of cluster headaches, a paternal history of 6% and maternal history of 3%. Family history of migraine accounted for 52% (Rozen and Fishman 2012).

In Turkey, a study indicated 46.2% of females have a family history of migraine headaches and 36% of males also have a family history (Özdemir *et al.* 2014). Within the rural and urban areas in America, 67% indicated a positive family history of headaches (Holroyd *et al.* 2000). Iranian medical students also had a positive family history of headaches (10%) (Ghorbani *et al.* 2013).

### 2.6.6 Concomitant Medical Conditions

In the United States of America, concomitant medical conditions associated with cluster headache ranged from depression (24%), history of sleep apnoea (14%), restless leg syndrome (11%), asthma (9%), cardiovascular disease (0.3 - 1%), strokes (0.2%), chronic obstructive pulmonary disease (COPD) or/ emphysema (2%), lung cancer (0.3%), peptic/duodenal ulcer (5%), diabetes (3%) to epilepsy (1%) and 5% of cluster headaches are associated with Parkinson's disease (Rozen and Fishman 2012).

### 2.6.7 Medication Usage

In a university population in Turkey 81.3% used non prescribed medication during headache attacks and 18.8% used medication under physician supervision (Demirkirkan, Ellidokuz and Boluk 2006). In the Middle East, a study conducted on medical students indicated 80.3% used medication in order to provide relief to their headaches, 24.6% used prescribed medication, 72.9% used non-prescribed medication and 2.5% used traditional medication (Deleu *et al.* 2001).

### 2.6.8 Sleep

Adolescents suffer more from migraine headaches (35.7%) when compared to tension-type headaches (13.4%). Factors affecting sleeping patterns included nocturnal wakening, abnormal movements and breathing problems during sleep, however, migraine sufferers experience more trouble with sleep than tension-type headache sufferers (Gupta *et al.* 2008).

The common aggravating factors for migraine headaches were physical activity and sleep patterns. There is a scarcity of data concerning aggravating factors for tension type headaches. Family history of headaches are very common among headache sufferers. This could possibly be a risk factor or linked to genetics due to a higher prevalence of maternal history of headaches.

## 2.7 RELIEVING FACTORS

In an Italian survey of high school students in their last two years indicated that 56% of headaches sufferers used over-the-counter (OTC) analgesics to relieve their headaches (Tonini and Frediani 2012). Within the Jordanian adult population, 15.2% - 24.8% require analgesic usage to relieve a headache depending on the affect it has on the individual (Alzoubi *et al.* 2009). In medical and non-medical staff in Nigeria indicated that rest (57.4%) and over-the-counter analgesics (31.3%) provides relief for headaches (Oshinaike *et al.* 2014). In medical students in the Middle East, medication (39.4%); sleep (28.2%) and rest (19.7%) provided relief for their headaches (Deleu *et al.* 2001).

At a university in Brazil, social communication students used analgesic medication to provide relief for headaches. Analgesic usage was at 75.6% and analgesic overuse at 1.5% (Souza-e-Silva and Rocha-Filho 2011). In Turkey, 74.4% of migraine sufferers used analgesic medication during headache attacks which provided necessary relief (Özdemir *et al.* 2014).

### 2.7.1. Medical Consultation

In UK, 45% of undergraduates previously consulted a doctor regarding their headaches (Kernick and Reinhold 2002). In medical students at a university in the Middle East 23.3% sought medical assistance for their headache attacks (Deleu *et al.* 2001). A Brazilian university indicated that 8.7% of students suffering with headaches seek emergency medical care and 3.5% visit the emergency room twice or more (Souza-e-Silva and Rocha-Filho 2011). In the American population, individuals suffering with cluster headaches visited the emergency room twice or less accounted for 95% (Rozen and Fishman 2012).

### 2.7.2 Treatment

The treatment for migraine prophylaxis is beta-adrenergic receptor blockers and antidepressants. Anticonvulsant, anti-epileptic, calcium channel blockers, angiotensin-converting enzyme inhibitors and angiotensin – II receptor blocker medication is used in migraine prevention and triptans in acute migraine treatment (Schellack and Schellack 2013).

The most common relieving factor identified across various population was the use of over the counter analgesic medication.

## 2.8 CONCLUSION

From the above literature review, it is evident that the prevalence of headaches differs in different parts of the world. The study conducted amongst South African University students was limited to Health Science students only (Prangley 2010). It is unknown if the prevalence of headaches varies amongst students from different faculties. It is also unknown whether the type of headaches that students suffer from differs across faculties. There has thus far also been no investigations on the impact that headaches have on university students in terms of their academic, social and personal life. Risk and relieving factors also differ across the globe but these also require investigation in the South African context.

# CHAPTER 3: METHODOLOGY

This chapter outlines the research methodology which includes a description of the study design, population and sample selection, questionnaire development, data collection procedure and data analysis.

## 3.1 STUDY DESIGN

This study was a quantitative descriptive cross sectional survey. This type of research design was used in order to investigate the prevalence and impact of primary headaches of the students at the Durban University of Technology (DUT). The quantitative design was most suited to this study as it specified the manner in which the researcher would recruit participants, collect, interpret and analyse the data collected (Polit and Beck 2010). Descriptive studies explain concepts and their relationships. This leads to further investigation for new research (Burns and Grove 2009).

## 3.2 STUDY POPULATION

The study population consisted of students recruited from the Durban based campuses of the Durban University of Technology (DUT). This university has campuses in Durban and Pietermartizburg, for convenience the Durban based campuses were used in the study. These comprised of three campuses: Steve Biko, ML Sultan and Ritson. The following faculties: Applied Science, Management Science, Engineering and The Built Environment, Accounting and Informatics, Arts and Design and Health Sciences are on these campuses. Majority of the students are Black/African followed by Indians, Whites and Coloureds. Students who met the following inclusion and exclusion criteria were invited to participate in the study.

## 3.3 INCLUSION/EXCLUSION CRITERIA

### 3.3.1 Inclusion Criteria

- All participants over the age of 18 years.
- All participants were registered students at the Durban University of Technology (DUT).
- Students were from the following Durban campuses: Steve Biko, Ritson, ML Sultan, City and Brickfield campus
- As DUT conducts lectures in English, English competence was required because the questionnaire was provided in English.

### 3.3.2 Exclusion Criteria

- Students who were absent on the day the questionnaires were handed out.
- DUT staff that were registered as students at the time of recruitment.
- DUT students that participated in the focus/expert group and pilot group for this study.
- Senior and junior (sixth and fifth year) Chiropractic students.

Multistage sampling allowed sampling from different strata. Students from the six faculties that are based on the ML Sultan, Ritson, Steve Biko, City and Brickfield campuses were invited to participate in the study. Two programme departments in each faculty were randomly chosen using a ballot method. Thereafter, a further ballot method was used to select the level of study from which to draw the participants.

## 3.4 SAMPLE SIZE

The total DUT student population in the Durban campuses is 22303. Using a confidence level of 95% and a confidence interval of five percent, a minimum required sample size of 384 was calculated. Students were drawn from each of the faculties in the following ratios: 25% from Management Sciences, 24% from Engineering and the Built Environment, 23% from Accounting and Informatics, 11% from Health Sciences, 10% from Arts and Design and eight percent from Applied Sciences. The percentage of the participants chosen from

each Faculty was proportional to enrolments in that faculty. The programmes and levels chosen per faculty using a multi-stage sampling were as follows:

- Faculty of Accounting and Informatics: Information Bachelor of Technology and Financial Accounting first year.
- Faculty of Applied Sciences: Analytical Chemistry second year and Maritime Studies second year.
- Faculty of Art and Design: Photography first year and Translation and Interpreting Practice third year.
- Faculty of Engineering and The Built Environment: Civil Engineering second year and Town and Regional Planning third year.
- Faculty of Health Sciences: Emergency Medical Care and Rescue first year and Environmental Health second year.
- Faculty of Management Sciences: Marketing first year and Public Relations and Management first year.

## 3.5 THE STUDY INSTRUMENT

The study questionnaire was adapted from the one used by Prangley (2010) (Appendix 1) and modified to suit the study requirements. Permission was obtained from Prangley (Appendix 2) to use and modify the questionnaire previously used in this study. The questionnaire comprised of 118 questions which focused on primary headaches and the impact these headaches have on academic, social and family lives of the students at the Durban University of Technology (DUT). As we expected an approximate return of 70%, 500 questionnaires were printed.

## 3.6 VALIDATION OF THE INSTRUMENT

### 3.6.1 Focus/Expert Group

A focus/expert group discussion comprising of seven people was conducted. This determined the validity of the questionnaire (Fowler 1995). The focus group comprised of four headache sufferers from different faculties at DUT, one practicing chiropractor, one practicing homeopath and one person with research experience. All focus group participants signed an informed consent form prior to participating in the focus group

discussion (Appendix 3A and 3B). A questionnaire was handed out to each participant (Appendix 4). The focus group discussions were audio-recorded and all information discussed kept confidential. Post focus group discussions, recommended changes were made to the questionnaire (Appendix 5).

The changes made to the questionnaire included the following:

- Layout changes were made in order for the questionnaire to be more user-friendly.
- Questions were reworded and changed from multiple options to 'yes or no' type questions.
- Some questions were excluded whilst others were narrowed down to make them more specific.
- The questionnaire increased from 97 questions to 118 questions.

### 3.6.2 Pilot Group

A group comprising of six people were invited to participate in a pilot study to validate the questionnaire (Schreiber 2008). Chiropractic students were chosen to form the pilot group as they were excluded from the selection process of the main study. A letter of information, consent form and questionnaire was handed out to each pilot group participant (Appendix 5, 6A and 6B). Minor changes such as grammatical changes were made to the questionnaire (Appendix 7). This final questionnaire was used for the sample population (Appendix 7).

## 3.7 PROCEDURE

The research study was approved by the Institutional Research Ethics Committee (IREC) (IREC 002/15; Appendix 8). Gatekeeper permission to interview DUT students was obtained from the Director of Research at DUT (Appendix 9). Permission was also obtained from the Head of Department of the students who were chosen, by the ballot method, to participate in the study. Following this, permission from the lecturer concerned was obtained (Appendix 10). The questionnaires did not request any identifying information such as names or student numbers. The signed letter of consent was collected separately from the questionnaires as this ensured anonymity of the participant.

Students were not coerced to participate in the study, students who did not wish to participate were allowed to leave the lecture theatre or sit in without been given a questionnaire and were not penalized in any way for not participating.

A brief discussion with the participants was held to explain the study. Thereafter the questionnaire, letter of information and consent forms were handed out (Appendix 7, 11A and 11B). Any student that declined to participate in the research study was excluded and allowed to leave the class if they wished to do so. The researcher was present in the venue during the time that the questionnaires were completed in the event that any queries that were raised by any of the participants could be answered.

## 3.8 DATA ANALYSIS

### 3.8.1 Classification of Headaches

The criteria set out by The International Classification of Headache Society was used to classify the headaches (Appendix 12). If the headache was caused by any musculoskeletal disorder, influenza or any other disease, it was classified as a secondary headache and excluded from further analysis. All other headaches were classified as primary with a further subdivision into migraine, tension type or cluster headache.

If the headache had a unilateral location with a pulsating type pain that was aggravated by physical activity it was classified as migraine. This was further classified as migraine with aura if there was any change in vision, speech and sensation prior to the headache. Migraine without aura was accompanied by nausea, vomiting, photophobia or phonophobia.

Headaches were classified as tension type if these had a bilateral location with a pressing, tightening or non-pulsating quality that was mild or moderate in intensity. This was further classified as frequent tension type headache if there were at least 10 headache episodes on an average of 14 days per month for more than three months. The headaches were classified as infrequent tension type if there were less than twelve episodes per year and not more than one per month. Cluster type headaches were unilateral with nasal

congestion, sweating, flushing, eyelid oedema and lacrimation which occurred ipsilateral to the headache.

### 3.8.2 Statistical Analysis

Data was captured on an Excel spreadsheet and subsequently analysed using IBM SPSS version 23.0. Frequencies, means and standard deviations, were calculated where appropriate. Chi-square tests were used to determine relationships between selected variables. Odds ratios (OR) were calculated to determine the likelihood of certain occurrences. A *p*-value of less than 0.05 was considered statistically significant.

# CHAPTER 4: RESULTS

This chapter presents the results which includes the prevalence of headaches, types of headaches experienced and the impact of these headaches on various aspects of students' lives such as academic, family and social lives.

## 4.1 DEMOGRAPHIC PROFILE OF PARTICIPANTS

Of the 500 questionnaires that were distributed to the participants, 471 were completed and returned. The response rate was 94.2%. The mean age of the participants was 21 ± 3.08 years. The majority of participants were female (54.4%). The majority of the participants were Black (80.8%), followed by Indian (11.8%), White (3.3%), Coloured (3.1%) and other (1%). Most of the participants were single (75.2%), however, a minority were in a relationship (20.8%), married (2.8%), divorced (0.2%) and 0.9% did not specify. Participants were from all faculties at DUT and the programmes of study for which they were registered is indicated in Table 4.1.

**Table 4.1 The programmes within each faculty from which participants were drawn and percentage of students drawn from each Faculty**

| Faculty and Course programme | Percentage (*n*) |
|---|---|
| **Applied Science** | |
| Maritime Studies | 19.3% (91) |
| Analytical Chemistry | 1.9% (9) |
| **Management Sciences** | |
| Marketing, Retail and Public Relations | 10% (47) |
| Public Relations and Management | 9.3% (44) |
| **Engineering and The Built Environment** | |
| Civil Engineering | 12.1% (57) |
| Town and Regional Planning | 7% (33) |
| **Accounting and Informatics** | |
| Financial Accounting | 17% (80) |
| Information Technology | 1.1% (5) |
| **Arts and Design** | |
| Translation and Interpreting Practice | 7.2% (34) |
| Photography | 4.5% (21) |
| **Health Sciences** | |
| Emergency Medical Care and Rescue | 5.5% (26) |
| Environmental Health | 5.1% (24) |

The majority of the participants were undergraduate students (98.1%). All of the respondents were full time students.

## 4.2 HEADACHE PREVALENCE

Almost all the participants (91.9%, *n* = 433) previously experienced a headache. A third (33.1%) indicated that they currently had a headache and 73% indicated that they recently experienced a headache. As shown in Figure 4.1, the frequency at which participants experienced differed significantly ($p < 0.001$). The majority of respondents reported that they suffered from headaches weekly.

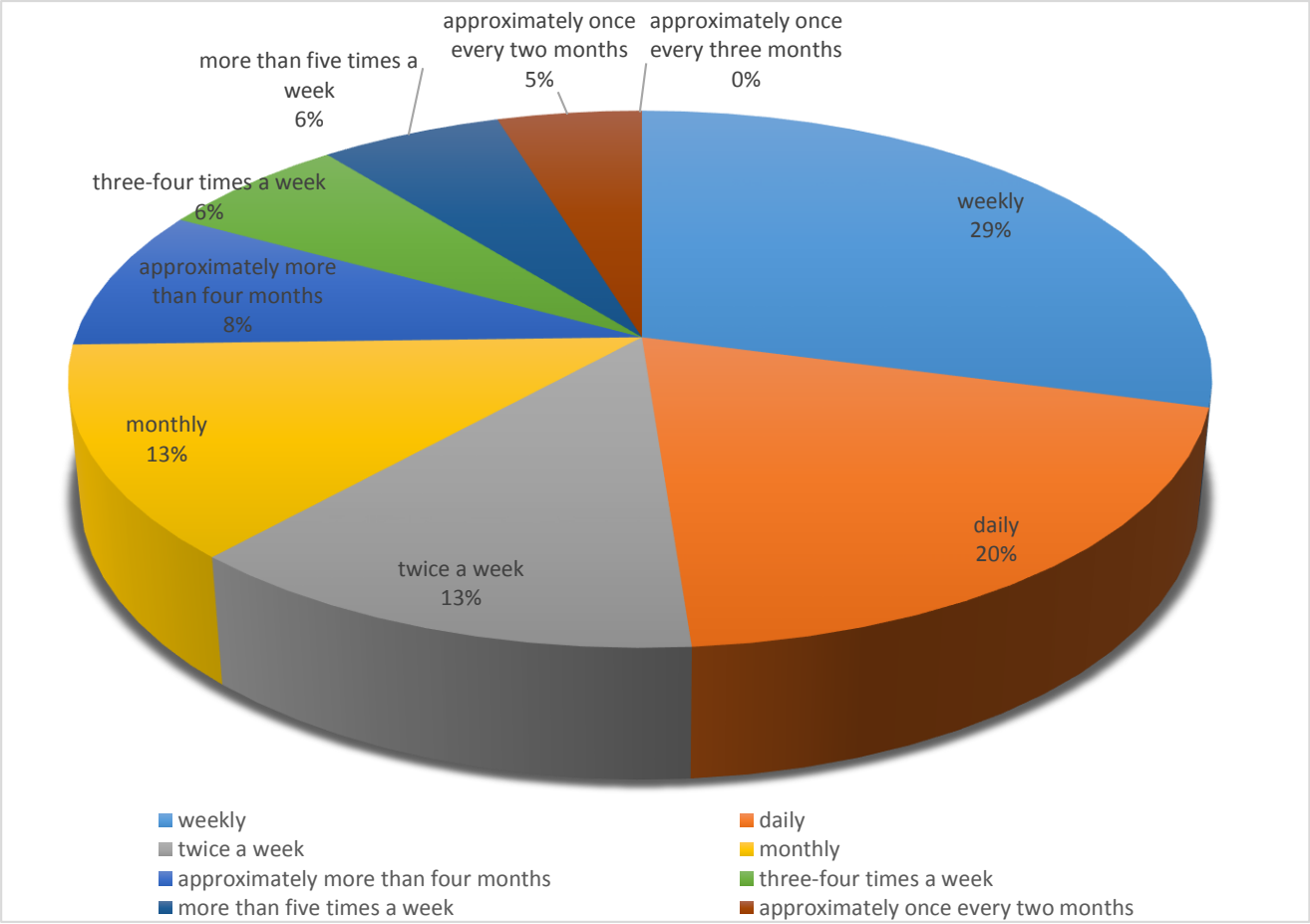


**Figure 4.1 Frequency of headaches experienced by participants**

The majority of participants (79%; *n* = 335) indicated that they suffered from headaches at varying times of the day compared to specific times ($p < 0.001$). Of those who suffered from headaches at specific times of the day only, about a third suffered from the headache in the afternoon (36.3%), followed by a quarter (27.5%) at midday and morning (26.3%). Only a small proportion suffered from headaches in the evening (3.7%) and at night (6.2%; $p < 0.001$). There was no relationship between getting a headache during the day and skipping either breakfast ($p = 0.82$) or lunch ($p = 0.88$).

Most of the participants indicated that the intensity of the headaches was moderate (47.5%), while others indicated either mild (39.6%) or severe (12.9%) headaches. The participants noticed that the headaches currently lasted longer than when compared to the initial onset of the headaches (Figure 4.2).

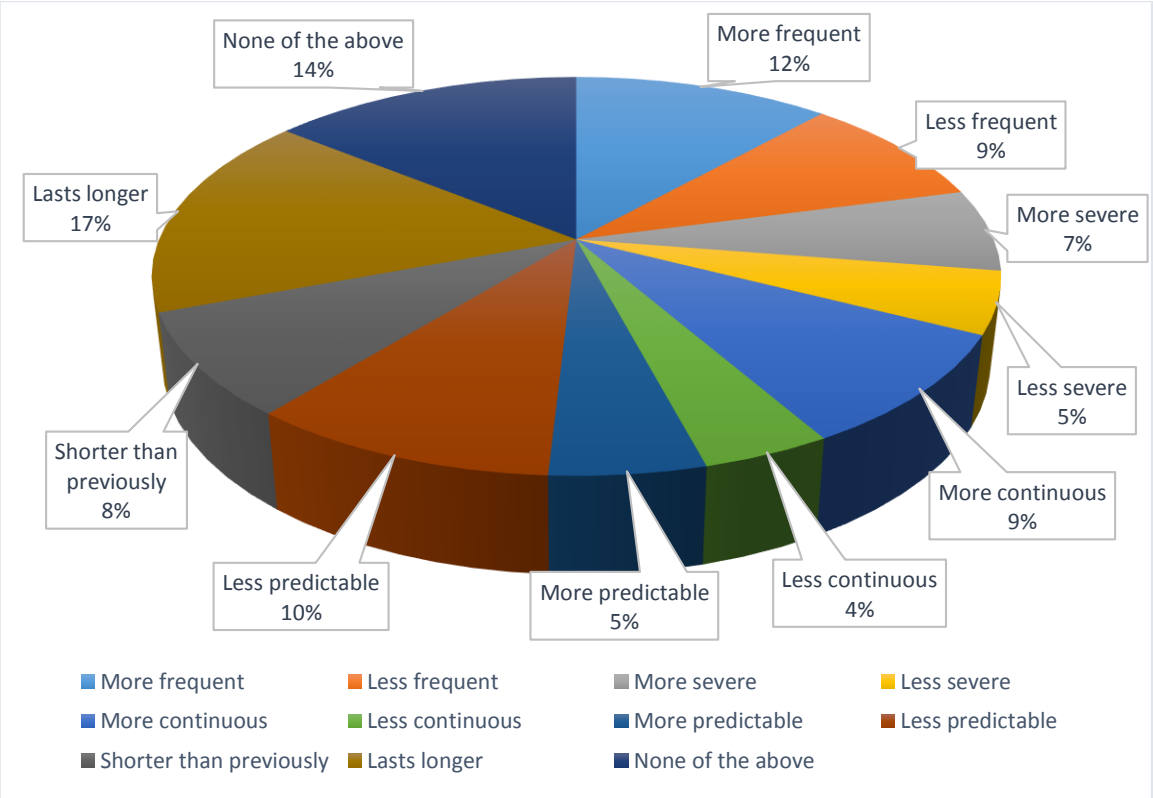


**Figure 4.2 Frequency of responses to change in headache pattern since initial onset of headache attacks**

The most common location of a headache was behind the eye (30.3%), followed by over the forehead (25.4%) and at the top of the head (16.2%; Figure 4.3). The frequency with which pain was experienced in other areas is shown in Figure 4.3.

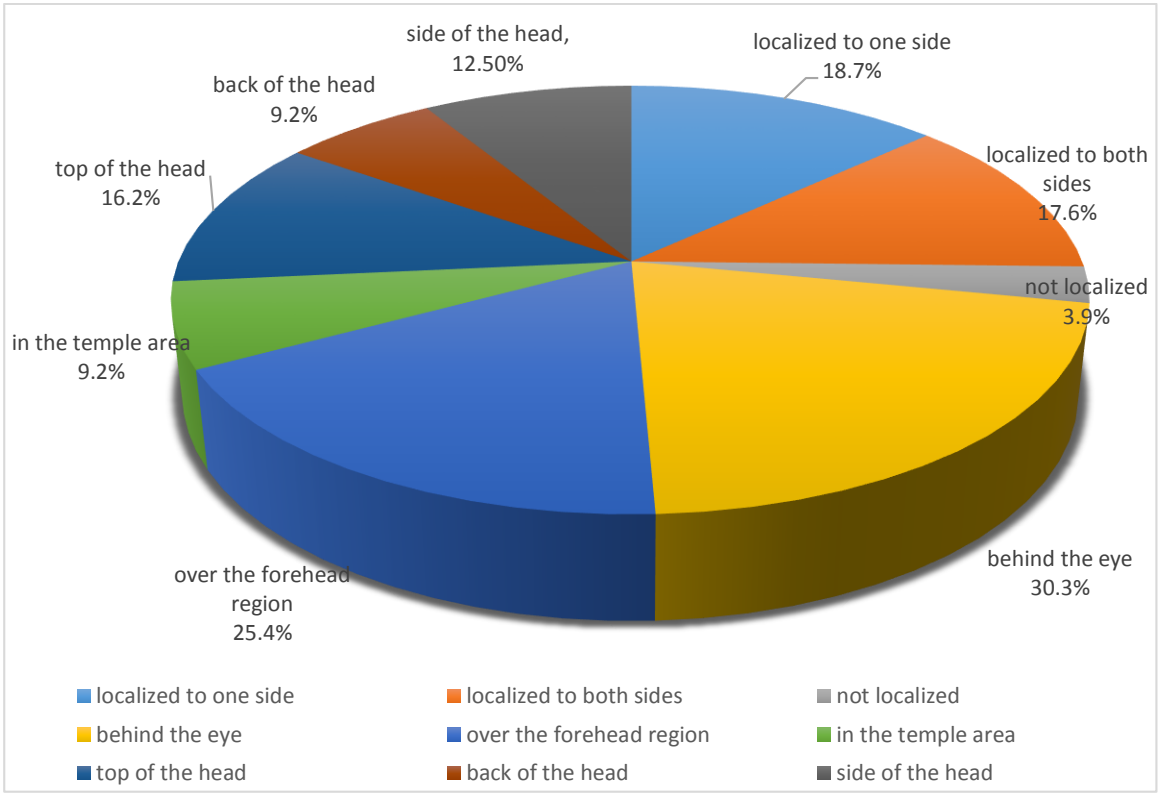


**Figure 4.3 Frequency of responses to specific location of headaches experienced by participants**

A large proportion of the participants (74%) indicated that they did not have any warning symptoms prior to getting a headache. Of those who received warning symptoms, eye sight changes (8.4%; *n* = 32) and dizziness (5.3%; *n* = 23) were the most common. The characteristics of the headache pain most commonly described was pounding (32%), pressure (13%), sharp (12%) and pulsating (10%). The other pain characteristics are shown in Figure 4.4.

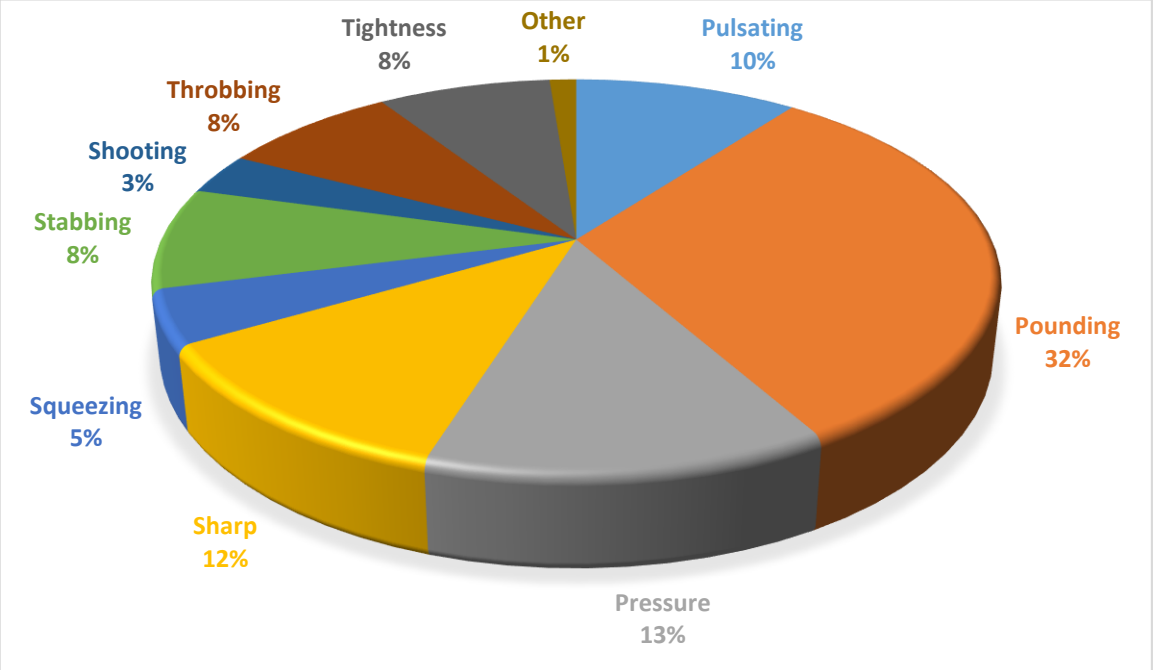


**Figure 4.4 Characters of headache pain experienced by the participants**

## 4.3. TYPES OF HEADACHES

Amongst the headache sufferers, there was an almost equal distribution of primary (50.2%; *n* = 222) and secondary headaches (49.8%; *n* = 220; *p* = 0.92). Of those that suffered from primary headaches, significantly more participants suffered from tension type headaches (68.5%; *n* = 152) compared to migraines (16.2%; *n* = 36) or mixed migraine and tension type headaches (15.3%; *n* = 34; *p* < 0.001). The number of respondents with migraines who reported an aura (61.8%; *n* = 21) was not significantly different from those who did not have an aura (38.2%; *n* = 13; *p* = 0.17). Significantly more participants suffered from frequent tension type headaches (68%; *n* = 85) compared to infrequent tension type headaches (32%; *n* = 40; *p* < 0.001).

The prevalence of primary headaches was highest in the Faculty of Applied Science (24.3%). Table 4.2 shows the prevalence of headaches among students from different faculties. However, the prevalence was not significantly different across the different faculties ($p$ = 0.65).

**Table 4.2 Frequency of primary headache sufferers in various faculties**

| **Faculties** | **Frequency of primary headache sufferers (%) (*n*)** |
|---|---|
| Applied Science | 24.3% (54) |
| Management Science | 19.9% (44) |
| Engineering and The Built Environment | 18.5% (41) |
| Accounting and Informatics | 16.2% (36) |
| Art and Design | 12.6% (28) |
| Health Science | 8.6% (19) |

The year of study ($p$ = 0.98); age of participant ($p$ = 0.77); ethnicity ($p$ = 0.40) or marital status ($p$ =0.84) in relation to headaches were statistically insignificant. However, more females (57.4%; $n$ = 245) suffered from headaches than males (42.6%; $n$ = 182; $p$ = 0.002). Nevertheless, there was no difference in the types of headaches suffered between the genders ($p$ = 0.35).

## 4.4 TRIGGERING AND AGGRAVATING FACTORS

### 4.4.1 Triggering Factors

The common factors that triggered the headaches were lack of sleep, stress and hunger. Frequency of responses on the headache triggers is shown in Table 4.3.

**Table 4.3 Responses on triggering factors for headaches**

| Types of triggering factors | Frequency of triggering factors (%) (*n*) |
|---|---|
| Lack of sleep | 36.3% (157) |
| Stress | 35.9% (155) |
| Hunger | 35.2% (152) |
| Skipping meals | 28.5% (123) |
| Assignments | 27.3% (118) |
| Tests | 27.1% (117) |
| Extreme heat | 19.2% (83) |
| Sinus problems | 18.5% (80) |
| Fatigue | 15.5% (67) |
| Smells | 14.6% (63) |
| Alcohol | 13.2% (57) |
| Oversleeping | 12.5% (54) |
| Menstrual cycle | 11.6% (50) |
| The lecturer | 11.1% (48) |
| Chewing/Clenching teeth | 10.2% (44) |

NB: Percentages do not total 100 as some participants had more than one trigger

More than a third of the participants indicated that family related stress such as a fight with parent/s and/or sibling/s contributed to their headaches (39.2%; $p < 0.001$).

### 4.4.2 Aggravating Factors

The most common aggravators for headaches were loud noises and stress. Other factors that increased the severity of the headaches are indicated in Table 4.4.

**Table 4.4 Frequency of responses to aggravating factors of headaches**

| Types of aggravating factors | Frequency of aggravating factors % |
|---|---|
| Loud noise | 6.6% |
| Stress | 4.2% |
| Loud noises and stress/tension | 3.8% |
| Lack of sleep | 3.2% |
| Sneezing/coughing | 2.8% |
| Sneezing/coughing and loud noises | 2.8% |
| Bending over | 2.1% |

NB: Percentages do not total 100 as some participants had more than one aggravator

## 4.5 RISK FACTORS

### 4.5.1 Vision

Almost half the participants had their eyes examined by an optometrist (50.6%), but of these only 17.5% wore prescribed spectacles ($p < 0.001$). Less than a quarter of the participants (20.4%) stated that they could not see the board clearly during the lecture. Approximately one third (32.5%) of participants experienced eye symptoms such as pain, redness, itchiness, tired eyes or dry eyes. Visual problems increased the risk of getting a headache (Odds Ratio (OR) = 3.3; $p = 0.01$).

### 4.5.2 Stress

More than half (58.6%) of the participants indicated that they were under significant mental and/or physical stress in the preceding three months. Of those who indicated that they suffered from stress, 46.1% sought formal treatment such as counselling and/or medication. Stress was a high risk factor in causing headaches (OR = 2.03; $p = 0.05$).

### 4.5.3 Sleep

Participants slept for an average of 6.5 ± 1.6 hours per night. Only 5.1% reported a regular sleeping pattern and 14.3% (*n* = 66) reported having a constant number of hours of sleep per night (Figure 4.5). Sleep difficulties that were identified included disrupted sleep (20%; *n* = 94), always sleepy (20%; *n* = 94), insomnia (8.7%; *n* = 41) and grinding teeth at night (6.8%; *n* = 32). There was no difference between sleep patterns and experiencing a headache (*p* = 0.085).

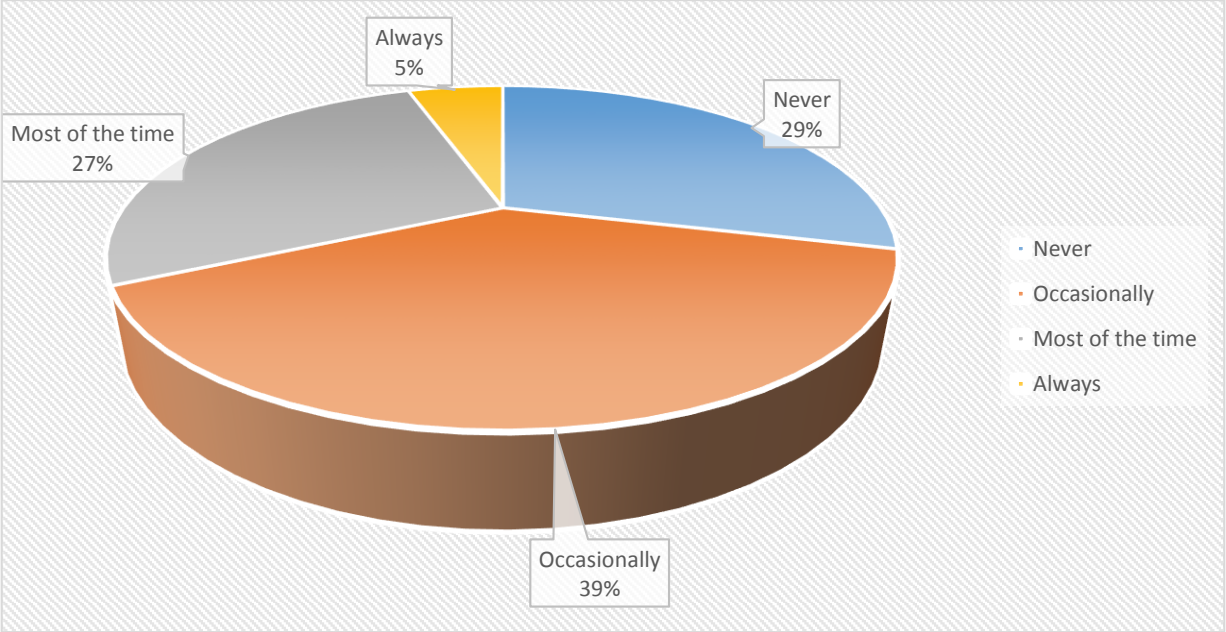


**Figure 4.5 Responses to sleep patterns of respondents**

### 4.5.4 Use of Electronic Devices

The most common type of electronic device used was a cell phone (57%). Figure 4.6 shows the responses to the use of different electronic devices.

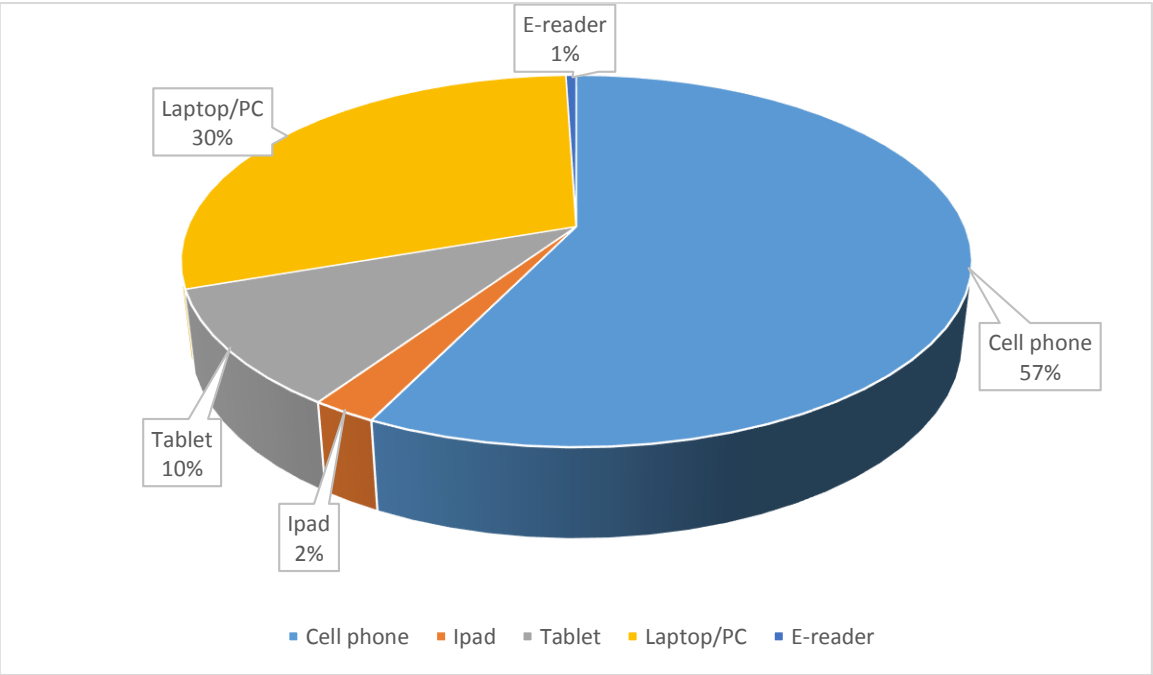


**Figure 4.6 Responses to electronic devices used by participants**

Two thirds (66.8%) of the participants indicated that they used cell phones and electronic devices more than five times a day (66.8%; $n = 308$). Only 18% indicated that the use of electronic devices caused their headaches ($p < 0.001$), however, 69.6% disclosed that usage of electronic devices made their headaches worse ($p < 0.001$).

### 4.5.5 Television (TV)

Almost a third (31.3%) of the participants watched TV every day ($p < 0.001$), 136 of whom suffered from headaches. There was no correlation between getting a headache and watching TV everyday ($p = 0.1$). However, a significant proportion of the participants (65.9%) said that watching TV made their headaches worse ($p < 0.001$). Yet, those that experienced headaches indicated that they sometimes continued watching TV (48%).

### 4.5.6 Employment

Majority of the participants (90.6%; $p < 0.001$) said they did not have a part time job. The participants that were employed part time ($n = 43$; 9.4%) work an average of 20.5 ± 15.9 hours per week. These participants indicated that they attended their lectures on the days that they worked. They, however, skipped work when they wrote tests and examinations (60.4%). Participants that were studying and working part time were not at a higher risk of getting headaches (OR= 0.51; $p < 0.16$).

### 4.5.7 Transport

Most of the participants walked to university (29.5%), others travelled by bus (24%), taxi (23.1%), car (15.5%) and the remainder (7.9%) travelled either by motorbike or train. Mode of transport did not correlate with the occurrence of a headache *(*$p = 0.88$).

### 4.5.8 Support Systems

The majority of the participants (77.2%) indicated that they have someone to talk to regarding their personal and/or campus problems. A small percentage (25.5%) stated that they cannot cope with personal and/or campus problems by themselves. However, there was no relationship between having someone to talk to and experiencing a headache ($p = 0.34$). A minority of the participants (17.5%) reported that they live alone. Others lived either with family (34.6%), at student residence (30.4%), shared a flat/house (11.7%), with extended family (5.3%), at a boarding house (1.5%) or with a family friend (0.2%). Living alone did not pose a risk to getting a headache (OR = 0.66, $p = 0.29$).

### 4.5.9 Medical History of Participants

The majority of the participants (71.5%) did not report any aliments such as anaemia, high blood pressure, thyroid disease, depression, seizures, diabetes or low blood pressure. There was no correlation between any of these ailments and experiencing a headache ($p = 0.1$). A small percentage (4%) of participants experienced head injuries in the past 3 months and 42.9% of these received medical treatment. Some participants (15.3%) used medication including birth control pills, supplements, multivitamins and flu tablets. There

was, however, no correlation between the use of these medications and experiencing a headache ($p$ = 0.943).

### 4.5.10 Family History of Headaches

Almost two thirds of the participants (59.9%) reported that other family members suffer from headaches. The family members most commonly affected by headaches were either the mother or a sibling. The proportion of family members suffering from headaches are shown in Table 4.5.

**Table 4.5 Family members suffering from headaches**

| Family member | Frequency of headaches % ($n$ = 222) |
|---|---|
| Mother | 20.6% (89) |
| Sister | 11.8% (51) |
| Brother | 4.6% (20) |
| Father | 3.5% (15) |
| Mother and sister | 3.5% (15) |
| Mother and father | 2.3% (10) |
| Mother, father, sister and brother | 2.3 % (10) |
| Sister and brother | 1.4% (6) |

NB: Percentages do not total 100 as some participants had more than one family member suffering from headaches

### 4.5.11 Pregnancy

Few participants reported they had been pregnant at some time (13.9%). Almost half of these participants indicated that pregnancy had no effect on experiencing headaches (44.8%) and only a few participants reported that it either made the headaches worse (8.6%) or better (10.3%). Pregnancy had no effect headaches ($p$ = 0.35). A small percentage of participants (10.1%) used oral contraceptives or oestrogen replacement therapy. Some participants' indicated that this medication made the headaches worse (18.2%) while 34.1% could not recall the effect it had on their headaches.

### 4.5.12 Exercise

Almost two thirds of the participants exercised (62.13%) but significantly fewer participants (34.6%) adhered to a routine exercise program compared to those who did not ($p < 0.001$). Exercise decreased the odds of getting a headache, however, this was not statistically significant (OR= 0.65; $p = 0.24$).

## 4.6 HEADACHE RELIEVING FACTORS

### 4.6.1 Consultation

Most of the participants did not consult a doctor for their headaches (81.4%). Those participants who consulted a doctor for their headaches were mostly diagnosed with migraine or tension-type headaches. Some participants consulted medical professionals such as pharmacists (19.4%), nurses (14.6%), neurologist (2.1%), chiropractors (1.4%) and homeopaths (0.5%) for their headaches. Few also consulted other alternate practitioners (Figure 4.9) whilst 2.5% did not seek any medical help.

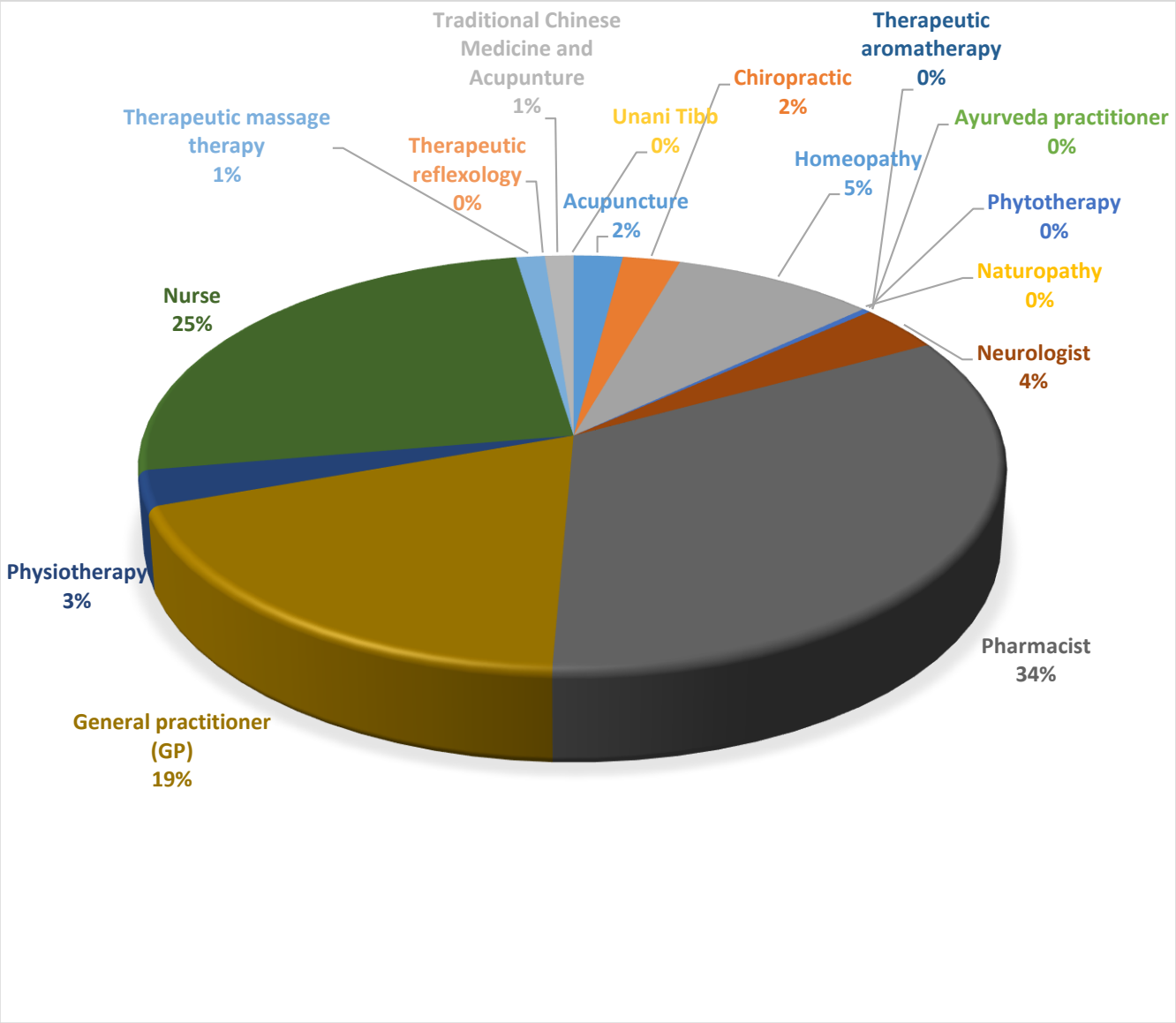


**Figure 4.9 Frequency of consultation for headaches with various medical professionals**

### 4.6.2 Medication

The most common types of medication used for headaches were Grand-pa®, Paracetamol or a combination of different medications as shown in Table 4.6.

**Table 4.6 Frequency responses to the use of different types of medication for headaches**

| **Types of medication** | **Frequency of medication Percentage (*n* = 222)** |
|---|---|
| Grand-pa® (combination of Paracetamol, Aspirin and caffeine) | 37.2% (161) |
| Paracetamol | 13.6% (59) |
| Myprodol® | 4.1% (18) |
| Disprin® | 3.1% (16) |
| Nurofen® | 2.6% (11) |
| **Combination of two or more medication** | |
| Paracetamol and Grand-pa® | 7.9% (35) |
| Grand-pa® and Nurofen® | 1.7% (7) |
| Paracetamol, Grand-pa®, Nurofen® and Myprodol® | 1.6% (7) |
| Grand-pa® and Disprin® | 1.3% (6) |
| Paracetamol and Nurofen® | 1.2% (5) |
| Paracetamol, Grand-pa® and Nurofen® | 1% (4) |
| Nurofen® and Myprodol® | 0.9% (4) |
| Grand-pa® and Myprodol® | 0.7% (3) |
| Paracetamol, Grand-pa® and Myprodol® | 0.7% (3) |
| **Other** | 22.1% (93) |

NB: Percentages do not total 100 as some participants used more than one type of medication

Almost three quarters of the population took medication once a day (71.9%) when experiencing a headache. Some required the medication twice a day (17.4%), three times a day (9.1%) or four times a day (1.6%). Most of the participants found that the medication made their headaches better (73.9%) whilst 13.7% could not recall the effect the medication had on their headaches.

### 4.6.3 Other Pain Relieving Strategies

Two thirds of the participants (66.7%) reported that they treat their headaches by themselves. The main methods used were sleep (58%; *n*= 251), medication (37.6%; *n* =163) and relaxation (30.5%; *n* =132). Table 4.7 indicates other factors used to relieve headaches. With the exception of stretching, all were shown to significantly provide relief ($p < 0.001$).

**Table 4.7 Frequency of other pain relieving factors identified by the participants**

| **Type of relieving factors** | **Percentage (*n*)** |
|---|---|
| Sleep | 58% (251) |
| Medication | 37.6% (163) |
| Relaxation | 30.5% (132) |
| Lying down | 27% (117) |
| Eating | 25.2% (109) |
| Massage | 18.9% (82) |
| Ice/cold application | 9.9% (43) |
| Exercise | 7.9% (34) |
| Vomiting | 6% (26) |
| Sitting | 4.4% (19) |
| Stretching | 3.7% (16) |
| Moving around/walking | 3.2% (14) |
| Compression | 2.3% (10) |
| Standing | 0.7% (3) |

NB: Percentages do not total 100 as some participants used more than one relieving factor

## 4.7 IMPACT OF HEADACHES

### 4.7.1 Impact of Headaches on Academic Life

The majority of participants (73.4%) continued attending lectures while experiencing a headache. A large portion of the participants stated that headaches affected studying for tests and/or examinations (54%). Majority reported that experiencing a headache limited their concentration (82.8%; $p < 0.001$) and felt too tired to continue working (79.8%; $p < 0.001$). Half (50%) of the headache sufferers experienced more headaches than usual when preparing for tests and/or examinations. Almost half of the participants (47.2%) indicated that the headache was more intense than usual when studying for tests and exams *(*$p < 0.001$). Almost a third of participants that experienced a headache when studying, would continue with the use of medication (31.4%), some (18%) would continue without the use of medication. However, the majority (44.8%) stopped studying due to the headache ($p < 0.001$).

A reduction in sleeping patterns during tests and/or examination periods were reported (67.6%; $p < 0.001$). More than a third of the participants studied for long periods without taking regular breaks in between (39.6%). A large number of participants consumed items such as caffeinated energy drinks, chocolate or coffee (63.1%) to help sustain their concentration for a longer period of time. It was reported that consuming these items when experiencing a headache made studying less effective ($p < 0.001$). Most participants stated that lighting in the study area was adequate (91.2%; $p < 0.001$).

### 4.7.2. Impact of Headaches on Daily Activities

Majority of the participants mentioned decreased productivity with regard to daily tasks in the event of experiencing a headache (71.3%; $p < 0.001$) as it affected their energy levels (68.3%; $p < 0.001$). Almost half (49.7%; $p = 0.92$) required assistance in completing daily tasks such as household chores because they had to stop their work to deal with the headache (46.9%; $p = 0.21$). Most of the respondents felt frustrated when experiencing a headache (64.2%; $p < 0.001$) and felt that they were a burden on others at that point in time (36%; $p < 0.001$). They also indicated that they were afraid of letting others down when experiencing a headache (44.1%; $p = 0.02$).

The headaches significantly affected the participants' mood (82.8%; $p < 0.001$), personal care (38.2%; $p < 0.001$), lifting of objects (44.6%; $p = 0.04$), reading (81.8%; $p < 0.001$), concentration (88.9%; $p < 0.001$) and performance in studies (65.1%; $p < 0.001$).

### 4.7.3. Impact of Social Aspects of Life on Headaches and Vice Versa

Almost a third of the participants (30.7%) neglected family, social or leisure activities due to their headaches. Almost half of the respondents (43.8%) indicated that a headache sometimes stopped them from going out with family and/or friends. If a headache started during a social event, some participants either left early, requested medication, drank water or kept to themselves.

## 4.8 CONCLUSION

The first null hypothesis states the prevalence of primary headaches is not significantly associated with risk factors such as vision, stress, sleep and family history. This is rejected. The second null hypothesis states the quality of life is not influenced by the primary headaches experienced by the participants. The second null hypothesis is true as participants reported a negative impact on their quality of life. This is also rejected.

The alternate hypothesis which states that the prevalence of primary headaches is significantly associated with risk factors such as vision, stress, sleep and family history is accepted.

# CHAPTER 5 : DISCUSSION

In this chapter the results will be discussed in relation to other studies. This will include the demographic profile of participants, headache history, types of headaches, risk, triggering and aggravating factors. The chapter will also discuss the medical and non-medical relieving factors and the effect that headaches have on the quality of life.

## 5.1 DEMOGRAPHIC PROFILE OF PARTICIPANTS

The response rate (94.2%) was similar to other studies (Lopez-Mesonero *et al.* 2009; Smitherman, McDermott and Buchanan 2011; Ghorbani *et al.* 2013). Majority of the participants were female and this was similar to other studies (Lopez-Mesonero *et al.* 2009; Al-Hashel *et al.* 2014).

## 5.2 PREVALENCE OF HEADACHES

This study indicates that the majority (92%) of the student population at this tertiary intuition suffer from headaches. This finding is similar to other studies on university students in Oman, Brazil, and Italy where the prevalence was 98%, 87.2%, and 84% respectively (Deleu *et al.* 2001; Souza-e-Silva and Rocha-Filho 2011; Tonini and Frediani 2012). The findings of the present study indicate that the most common type of headache experienced by students is the tension-type (68.5%) followed by migraine headaches (16.2%). Similarly, a study amongst Turkish university students showed tension type headaches to be more common than migraine headaches (23% versus 18%) (Kurt and Kaplan 2008). However, contrasting reports were obtained in other studies where a higher migraine headache prevalence compared to tension-type headaches was noted (Gupta *et al.* 2008; Tonini and Frediani 2012). These differences may possibly be due to factors such as age, gender, ethnicity, genetics and geography. In the present study there were no cluster type headaches. This is supported by Finkel (2003) who reported that cluster type headaches are rare and difficult to define.

The prevalence of 68.5% for tension type headaches amongst the student population in the current study is higher than that of students in other parts of the world: in Brazil 40.7%,

in the Middle East 12.2% and Ethiopia 8.2% (Deleu *et al.* 2001; Souza-e-Silva and Rocha-Filho 2011; Mengistu and Alemayehu 2013). However, the worldwide variation amongst the general population is considerable: in Europe 80%, in Nigeria 72.8%, and in Tanzania, it is a low of 5% (Katsarava *et al.* 2009; Ojini, Okubadejo and Danesi 2009; Winkler *et al.* 2009). The high prevalence amongst the student population in this study could possibly be attributed to high levels of stress faced by these students. Stress was also shown to be a high risk factor in causing headaches in this population. The majority of the students in the present study suffered from headaches during the afternoon and at midday and this may be attributed to them being tired after having attended a large number of lectures. A study on high school scholars reported that most of them suffered from headaches during the morning lessons with stress and tiredness being the frequent stressors for tension type headaches during school hours (Tonini and Frediani 2012).

A small proportion of students in our study suffered from migraine headaches (16.2%). Other studies on university students showed similar results. At a university in Turkey, the prevalence of migraine headaches is 18%, in Oman it is 12% and in France 11% (Deleu *et al.* 2001; Kurt and Kaplan 2008; Adoukonou *et al.* 2009) . The latter was attributed to a lack of sleep, stress and noise as triggering factors for these headaches. These factors are also reported as general triggering factors in the current study. However, the specific triggers for migraines headache were not specified.

The headache intensity most commonly reported was moderate in nature (47.5%). This is supported by other studies (Bruni *et al.* 2008; Adoukonou *et al.* 2009).

The most frequently reported location of headaches was over the forehead region in a band-like sensation. Prior to experiencing a headache, some of the participants experienced warning signs such as eye sight changes and dizziness. Pounding was the most commonly reported type of headache pain. This differed from the study conducted on university students, where throbbing was the most commonly reported type of headache pain (Kinart, Cuppett and Berg 2000; Kurt and Kaplan 2008).

## 5.3. RISK FACTORS

The main risk factors identified in this study were poor eyesight and stress. A burning sensation in the eyes, dry, tired or sore eyes were some of the problems correlated to headaches. Visual symptoms were more common if one did not take regular breaks or used a computer in either a very bright or very dark room and students who utilized a computer with the screen distance 50-100 cm away were less likely to experience a headache (Shantakumari *et al.* 2014). The presence of psychological disorders increased the risk of headache frequency (Ghorbani *et al.* 2013).

Some studies have also identified sleep as a risk factor for headaches. Daytime sleepiness, restless leg syndrome and difficulty initiating sleep were greater in migraine sufferers. Tension type headache sufferers had a higher prevalence of insomnia and difficulty maintaining sleep. With a high prevalence of sleep disturbances, there is an increasing frequency of headaches (Ødega°rd *et al.* 2010). In children, initiating and maintaining sleep were related to migraine without aura and chronic tension type headache respectively (Carotenuto *et al.* 2005). However, disorders of excessive somnolence was cumulative with headache disorders (Carotenuto *et al.* 2005). The current study identified lack of sleep as a trigger in headache causation. Unforeseen circumstances also contributed to a headache such as a fight with siblings or parents. This is keeping with another study (Smitherman, McDermott and Buchanan 2011).

Other triggering factors identified in this study include stress, hunger, assignments and studying for tests. Similarly, other studies also reported sleep disturbances, studying for exams and hunger as triggers for headaches (Adoukonou *et al.* 2009; Menon and Kinnera 2013; Al-Hashel *et al.* 2014). With a high prevalence of sleep disturbances, there is an increasing frequency of headaches (Ødega°rd *et al.* 2010). In addition, other factors that were also identified as triggers, but to a lesser extent were extreme heat, sinusitis, fatigue, smells, alcohol, oversleeping, menstrual period and clenching teeth. This is keeping with similar studies conducted in other areas of the world (Kurt and Kaplan 2008; Adoukonou *et al.* 2009; Menon and Kinnera 2013; Al-Hashel *et al.* 2014). However, factors that were identified as triggers in some studies but not the current one were noise, intense light, travelling, smoking, tea/coffee consumption, prolonged usage of cell phone, sexual activity and physical activity (Kelman 2007; Kurt and Kaplan 2008; Adoukonou *et al.* 2009; Chu *et al.* 2011; Menon and Kinnera 2013; Al-Hashel *et al.* 2014).

Triggering factors differed in the children and adolescent population. In these populations hours in front of the PC, TV or video games, changes in weather, problems with parents and/or friends, strenuous physical activity, feeling sad or worried were identified as triggers (Bruni *et al.* 2008; Connelly *et al.* 2010; Tonini and Frediani 2012). This could possibly be due to a large number of factors that can possibly cause headaches and the major triggering factors are identified differently among various populations globally. The age difference of the participants may have also played a role since the present study participants were young adult university students compared to younger school children in the previous study.

Aggravating factors, which intensify a headache, were identified as loud noise, stress, lack of sleep, sneezing, coughing and bending over. Similarly, Deleu *et al.* (2001) also recognised lack of sleep as an aggravating factor. Other aggravating factors identified in other studies included long hours of work, lack of rest, sunlight exposure, working on a computer, watching TV, menstrual period, head motion, exercise, missing a meal and smoking (Vlajinac *et al.* 2003; Tonini and Frediani 2012; Oshinaike *et al.* 2014).

Thus sleep disturbances and stress have been identified as risk, trigger, as well as aggravating factors in headache causation. It is plausible that these could be linked to hypothalamic control since the sleep-wake cycle and stress are linked to hypothalamic disturbances. The suprachiasmatic nucleus of the hypothalamus receives signalling regarding the light-dark cycle and sleep disturbances will affect this circadian rhythm (Ganong 2010). Other cyclic changes which involve the hypothalamus are mood variation and restricted food tolerance (Blau 1982). The posterior hypothalamus is also responsible for pain control (Montagna 2006). Thus the pain threshold may be altered during disturbances of the normal cyclic rhythm. In addition, emotions such as anxiety, worry and fatigue can cause an increase in muscle tension and dilatation of blood vessels which intensify the severity of a migraine headache (Cleveland Clinic 2012). Furthermore, there is an increased level of cortisol, released during stress, which can cause one to stop eating (Widmaier, Raff and Strang 2011). Through hunger or skipping a meal, glucose levels decrease resulting in muscle tension build up and vasodilation of blood vessel (Orange County Headache Clinic 2015).

Visual disorders as risk factors in headache causation may be linked to the transmission of pain from the eye via visceral afferent fibres in the trigeminal nerve (Ganong 2010). Any irritation to the eye results in pain, redness, dry eyes and light sensitivity (Friedman 2011). When the eyes are strained, ciliary muscle contraction can cause a retro-orbital headache (Guyton and Hall 2006) which most of the participants in the current study reported.

Over half of the current student population that suffered from headaches also had other family members with the same condition. This finding is corroborated by other studies with similar findings (Holroyd *et al.* 2000; Deleu *et al.* 2001; Tonini and Frediani 2012; Ghorbani *et al.* 2013; Özdemir *et al.* 2014). There is a possibility that hereditary factors may play a role in headache causation (Deleu *et al.* 2001).

## 5.4. RELIEVING FACTORS

Although the frequency of headaches was high amongst the students, less than half of them approached health services for treatment. A previous study on medical students also demonstrated that very few students sought medical assistance. A small percentage of university students visited the emergency room for their headaches whilst a larger proportion of the general American population visited an emergency room either once or twice a year (Souza-e-Silva and Rocha-Filho 2011; Rozen and Fishman 2012).

Relieving factors, which alleviate headaches, were identified as sleep, medication, relaxation, lying down, eating, massage, ice/cold application, exercise and vomiting. Other studies also reported medication, sleep and rest as the major relieving factors (Deleu *et al.* 2001; Oshinaike *et al.* 2014).

The most common type of medication used to relieve headaches were simple analgesics such as Grand-pa® and Paracetamol. This was similar to that reported in other studies (Ojini, Okubadejo and Danesi 2009). However, other studies also reported the use of antidepressants, triptans and calcium channel blockers as medication used in the treatment of migraine headaches (Schellack and Schellack 2013). The use of the over-

counter drug, Grand-pa®, which has been used by a large proportion of headache sufferers, raises concerns due to the possibility of this drug being addictive. Grand-pa® contains Paracetamol, aspirin and caffeine; the latter could possibly be addictive whilst the combination of Paracetamol and aspirin provide the relief.

Despite a chiropractic clinic being available on campus, none of the participants used chiropractic treatment to manage their headaches. A randomized controlled clinical trial utilizing spinal manipulative therapy in the treatment of migraine headaches showed a reduction in frequency of migraine episodes, duration, associated disability and medication usage resulting in an improvement with spinal manipulative therapy over a six month period (Tuchin, Pollard and Bonello 2000). Since such therapy would treat the cause and not just the symptoms, the services of the clinic should be made more widely known to the student body. Educational programmes to raise awareness of headache treatment offered by chiropractors can reduce the use of drugs particularly, over the counter medication for headaches and as a result minimize the risk of drug overdose. Chiropractic therapy, in treating the cause will also help to prevent further headache attacks.

## 5.5 THE EFFECT OF HEADACHES ON THE QUALITY OF LIFE

This study indicates that headaches negatively influence normal daily living, studies as well as the social lives of students.

The majority of respondents continued attending lectures despite experiencing a headache. This is contradictory to other studies that reported large numbers of absenteeism from school and college due to headaches (Smitherman, McDermott and Buchanan 2011; Menon and Kinnera 2013). The current study has shown that headaches adversely affected studying for both tests and examinations. This is due to the decreased ability to concentrate and many were unable to continue studying. Although many continued studying with the use of medication, the majority stopped studying. Depending on the amount of time lost, this could have an adverse effect on test scores and pass rates particularly since they reported a greater intensity of pain while studying. Furthermore, the number of headaches increased during the test and examination period. This could be linked to the stress that students experience during this time, as this was

reported as a major trigger for headaches. It also explains the high prevalence of tension type headaches in this population.

Due to the link between headaches and lack of sleep as well as tiredness, students are able to concentrate less on the studies when a headache is experienced. Despite many continuing to attend their lectures and attempting to continue learning, these activities will be negatively affected if the concentration has been lost. In the current study, students have reported an increased frequency and intensity of headache attacks during study periods. Sleeping patterns were also reduced during studying periods which could possibly lead to a negative effect towards studying. This is corroborated by a study conducted on children indicating that sleep disturbances influence the frequency and duration of migraine headaches (Miller *et al.* 2003).

During a stressful time period in a students' academic life such as tests and/or examinations; this makes the student more vulnerable to headache attacks during this period. Stress has also been identified as a risk factor for headaches within the current student population. This is supported by a study conducted in New Zealand indicating the higher the rate of stress, the greater the likelihood of migraine and tension type headache diagnosis in the adolescence population. The frequency of stress reported by headache sufferers are greater than non-headache sufferers (Waldie 2001). Majority of the participants' in the current study were tension type headache sufferers and stress was a contributing factor. Ultimately, there will be bouts of stress experienced at various intervals of a students' life which could possibly affect their quality of life; not only will headaches be a factor but other aspects of life could be affected.

In the current study, during study periods consuming items such as energy drinks, coffee or chocolate participants indicated that studying periods were less effective due to the consumption of these items. A previous study indicated that 22% of undergraduates experience headaches as a side effect to energy drink consumption during study periods (Malinauskas *et al.* 2007). If a student consumes three or more energy drinks this results in headache attacks (Malinauskas *et al.* 2007). However, in the current study: the frequency of energy drinks consumption during study periods was not identified. The need of energy drink consumption could possibly be linked with personal academic achievement levels and as a result this can be a contributing factor to headaches.

In addition to limiting study time, there was also a decrease in other daily activities while experiencing a headache. There was a reduction in the ability to do household work and chores, and headaches adversely affect productivity. This was further proved by some stating that they required assistance for the completion of daily tasks. This corroborates with other reports that suggested a reduction in activities due to headaches (Lipton *et al.* 2001; Amayo, Jowi and Njeru 2002; Kernick and Reinhold 2002; Radtke 2009; Menon and Kinnera 2013).

From an emotional and psychological aspect; frustration, mood, feeling like a burden and afraid of letting others down while experiencing a headache was reported in the current study. A previous report supports the findings of the current study indicating premonitory symptoms were intensified during a migraine headache episode. The premonitory symptoms identified were tiredness, difficulty in concentration, irritability and been emotional (Giffin *et al.* 2003). However, a more suitable study conducted in Britain reported that moods greatly affected the headache intensity during an attack (Martin *et al.* 1988). These studies indicated that moods were affected by headaches and support the findings of the present study.

Family, social and leisure activities are also affected by headaches as many respondents avoided going out with family or friends when experiencing a headache. Family and social activities are also often cancelled resulting in further emotional strain between family and friends. In the event of a headache starting while at a social event, it negatively affected interaction with others. These findings are similar to those reported previously (D'Amico *et al.* 2003; Lipton *et al.* 2003; Smitherman, McDermott and Buchanan 2011; Menon and Kinnera 2013). Interference with communication, decreased quality time spent with spouse and an increased number of arguments during a headache attack have also been previously reported (Lipton *et al.* 2003).

Headaches affected the participants' moods, personal care, lifting objects, reading, concentration and performance in studies. This finding is consistent with that of other studies (Tonini and Frediani 2012). Furthermore, another study reported that the spouses of headache sufferers indicated that their relationship could be better if the partner did not experience a headache (Lipton *et al.* 2003). The latter is confirmed in the current study where the headache sufferers indicated the fear of letting people down whilst experiencing

a headache. There is also an added feeling of being a burden on others which led to feeling frustrated.

# CHAPTER 6 : CONCLUSION AND RECOMMENDATIONS

## 6.1 Conclusion

The study reports a high prevalence of primary headaches (50.2%) in university students across all faculties. Tension-type headaches (68.5%) had a higher prevalence than migraine headaches (16.2%). None of the participants suffered from cluster type headaches. More females (57.4%) suffered from headaches compared to their male counterparts (42.6%; $p = 0.002$). There was no difference in headache prevalence among the different race groups, faculties and across different student ages. The main risk factors identified were poor eye sight and stress. The main triggering factors were lack of sleep, stress and hunger. Loud noise and stress aggravated the headaches. Sleep, medication and relaxation relieved the headaches in this population.

The intensity of headaches increased during tests and/or examination periods. Headaches affected studying times. This limited the ability to concentrate during study sessions and made it difficult to continue with work due to the tiredness it caused. However, many continued studying without the use of medication. A reduction in sleep patterns and absence of study breaks occurred when experiencing a headache. Headaches resulted in decreased productivity, frustration, mood changes, decreased personal care and a sense of being a burden on others. Studying during a headache attack impacted on academic performance. Some of the participants neglected family, social or leisure activities. If a headache occurred during a social event, the participant would either leave early, request medication, drink water or become isolated.

Vision, stress and family history were significantly associated with headache prevalence. However, sleeping patterns were not significantly associated. This study adds to the current literature on headache prevalence in the student population. It also highlights that chiropractors are not consulted for headaches by students in South African context. The chiropractic profession can benefit by tapping into this population.

## 6.2 Recommendations

The type of headaches was determined via a self-administered questionnaire and not determined clinically therefore future studies can address this. The psychological effect of headaches can also be addressed in future studies. A very small number of headache sufferers sought medical and chiropractic treatment. University clinics could provide information about the treatment options that they offer, so that students can in the future make use of these. Future studies should focus on health care providers addressing patient education in the student population and an attempt should be made to assist students in properly managing their headaches.

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# APPENDIX 1

## Questionnaire previously used by Prangley (2010)

**SECTION A:**

***(Researcher only)*** Diagnosis:

No Headache

Non-Primary Headache

Migraine

Tension

Cluster

Demographics: *(**Student**: Please fill in or tick where relevant)*

1a. Date of Birth:

b. What is your age?

years old

c. Gender:

Male

Female

d. Race:

White

Black

Indian

Coloured

Other:_____

e. Marital Status:

Single

Married

Divorced/Separated

Other:_____

Social history

***Smoking**:*

2a. What is your smoking status?

Current-smoker

Ex-smoker

Non-smoker

b. Have you ever/do you smoke cigarettes, cigars or pipes?

Yes

No

c. If yes, how many per day?

0

1-5

6-10

11-15

16-20

>20

***Alcohol consumption**:*

3a. Do you drink alcohol?

Yes

No

b. If yes, how much of the following do you drink?

1. Litres of beer per week?

L/week

2. Litres of wine per week?

L/week

3. Tots of spirits per week?

Tots/week

***Social Drugs:***

4a. Do you use any social drugs?

Yes

No

***Caffeinated drinks:***

5a. Do you drink?

1. Coffee

Yes

No

2. Tea

Yes

No

3. Soft Drinks (Coke)

Yes

No

4. Other caffeinated drinks

Yes

No

5b. If yes, how many cups/glasses (250ml) per day?

1. Coffee

No. of Cups

2. Tea

No. of Cups

3. Soft Drinks (Coke)

No. of Cups

4. Other caffeinated drinks

No. of Cups

***Exercise****:*

6a. What sport do you do?

1.

2.

3.

4.

5.

6.

6b.Do you adhere to a regular exercise program?

Yes

No

6c.If yes, how many days per week do you train?

days/week

***Sleeping habits:***

7a. How many hours do you sleep per day?

hours/day

7b. Do you have a routine sleeping pattern?

Yes

No

7c. Are you currently having difficulties with your sleeping habits (“always sleepy”, insomnia, early morning awakening, etc.)?

Yes

No

7d. Do you grind your teeth at night?

Yes

No

Unknown

***Stress****:*

8a. Do you consider yourself being under a significant amount of stress (mental and/or physical) in the last 3 months?

Yes

No

8b. Are you currently receiving formal treatment (counseling and/or medication) for anxiety, stress or depression?

Yes

No

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Medical history :

Please tick the appropriate boxes if you have a history of the following:

9a. Aneamia

Yes

No

9b. High Blood Pressure

Yes

No

9c. Thyroid disease

Yes

No

9d. Depression

Yes

No

9e.Seizures

Yes

No

9f. Diabetes

Yes

No

9g. Any head injuries (< 6months)?

Yes

No

9h. If yes, did you receive any medical help?

Yes

No

9i. Any other significant medical or psychiatric conditions for which you are under medical care. Please state condition:

1.

2.

3.

4.

9j. What medications are you currently taking?

(Please include over-the-counter medications, herbs and birth control pills)

1.

2.

3.

4.

5.

6.

9k. Have you had a CAT scan of your head and neck and/or a brain MRI scan in the past?

Yes

No

**SECTION B:**

Headache history :

10a. Have you experienced a headache in the last 3 months?

Yes

No

***If yes**, please answer the rest of the questionnaire.*

***If no**, you may hand in your questionnaire.*

Headache history :

11a. At what age did you start to experience headaches?

years of age

11b. Since experiencing these headaches, have their patterns changed?

Yes

No

11c. If yes, my headaches are:

*(Please answer no.1-10)*

1. More frequent

Yes

No

2. Less frequent

Yes

No

3. More severe

Yes

No

4. Less severe

Yes

No

5. More continuous

Yes

No

6. Less continuous

Yes

No

7. More predictable

Yes

No

8. Less predictable

Yes

No

9. Last longer

Yes

No

10.Shorter than previously

Yes

No

11d. Is your headache ever localized to one side?

Never

Occasionally

Most of the time

Always

11e.Is your headache ever localized to both sides?

Never

Occasionally

Most of the time

Always

11f.Does your headache typically occur at a certain time of the day?

Yes

No

11g. If yes, please state the time of day.

11h. Do you have warning symptoms which alert you that you are going to experience a headache attack?

Yes

No

11i. If yes, what type of warning symptoms do you experience before your headache?

1.

2.

3.

4.

5.

6.

11j. Do you have other family members who suffer from headaches?

Yes

No

11k. If yes:

1.

Male relatives?

Yes

No

2.

Female relatives?

Yes

No

11l. Have you consulted a doctor in the past for your headaches?

Yes

No

11m. If yes, please state the diagnosis (if known):

1.

2.

3. 81

Headache history : 11n. What medication have you used in the past for your headaches?

1.

2.

3.

4.

5.

6.

11o. What effect did it have on your headache? Better Worse No change Cannot recall

11p. Have you used oral contraceptives or estrogen

replacement therapy in the past?

Yes No

11q. If yes, what effect did it have on your headache? Better Worse No change Cannot recall

11r. Have you ever been pregnant? Yes No

11s. If yes, what effect did it have on your headache? Better Worse No change Cannot recall

Headache Characteristics:

***Location****:* 12.

(Shade in the area on the diagram of where your headache is felt)

***Pain****:* 13a. Do you have a

headache at this

moment?

**0 1 2 3 4 5 6 7 8 9 10**

Please rate your pain according to the scale: (0= no pain and 10= worst pain possible)

b. Your typical

headache? **0 1 2 3 4 5 6 7 8 9 10**

Please rate your pain according to the scale: (0= no pain and 10= worst pain possible)

***Character of***

***pain****:*

***(Please tick where applicable)***

Description Never Occasionally Frequently Always Only when severe

14a. Pulsating

b. Pounding

c. Pressure

d. Sharp

e. Shooting

f. Squeezing

g. Stabbing

h. Throbbing

i. Tightness

j. Other

(List)

1.

2.

3.

***Triggering***

***factors:***

***(Please tick next to the factor that mostly applies to you and/or fill in where applicable)***

Which of the following seem to trigger/bring about your headache?

15a. Fatigue/Exertion b. Lack of sleep c. Bending over d. Alcohol

e. Smells (Pleasant and/or

unpleasant)

f. Change in weather/Seasons g. Menstrual cycle h. Caffeine containing

drinks

i. Oversleeping j. Chewing/Clenching teeth k. Time of day l. Exercise

m. Stress/Tension n. Sinus Problems o. Medications

p. Skipping meals q. Hunger

r. Certain foods: 1. s. Other: 1.

2. 2.

3. 3.

4. 4.

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***Aggravating factors:***

***(Please tick next to the factor that mostly applies to you and/or fill in where applicable)***

Is your headache aggravated / made worse by any of the following?

16a. Weather Changes

b. Sneezing/Coughing

c. Walking

d. Loud noises

e. Lying down

f. Reaching overhead

g. Lack of sleep

h. Sharp light

i. Sitting

j. Stress/Tension

k. Sexual activity

l. Bending over

m. Standing

n. Other

1.

2.

3.

4.

***Relieving factors:***

Is your headache relieved/ made better by any of the following?

17a. Vomiting

b. Eating

c. Massage

d. Standing

e. Cold/Ice application

f. Moving around/Walking

g. Compression

h. Exercise

i. Relaxation

j. Lying down

k. Heat

l. Stretching

m. Medication

n. Sitting

o. Sleep

p. Other:

1.

2.

3.

4.

***Associated signs and symptoms:***

***(Please tick the following symptoms you experience and their relationship to your headache.)***

Have symptom

Before my headache

During my headache

When headache is severe

18a. Anxiety

b. Balance Problems

c. Dizziness

d. Jaw pain

e. Nausea

f. Neck/Back pain

g. Neck/Back stiffness

h. Numbness of face/head/neck

i. Sensitivity to light

j. Sensitivity to smell

k. Sensitivity to sound

l. Sweating

m. Tiredness

n. Visual changes

o. Vomiting

p. Weakness

q. Other:

r. Other:

***Frequency:***

19a. How many times per day/week/month does your headache occur? (eg. 3 times/week)

times/day

times/week

times/month

b. How many mild/moderate headaches do you have per

Day?

/day

Week?

/week

Month?

/month

Year?

/year

c. How many severe headaches do you have per

Day?

/day

Week?

/week

Month?

/month

Year?

/year

***Duration:***

20. How long does your usual headache last (without medication)?

1. 0-15min

7. 24-48hrs

2. 15-30min

8. 48-72hrs/2-3days

3. 30min-1hour

9. greater than 72hrs/3days

4. 1-6hrs

10. constant

5. 6-12hrs

11. too variable

6. 12-24hrs

12. unknown 83

**Section C:**

**The burden of headaches:**

***(Where applicable please fill in or tick the relevant boxes)***

21a. On how many occasions/days in the last 3 months have you missed lectures at DUT because of your headaches?

days.

b. On how many occasions/days in the last 3 months have you gone to lectures at DUT despite having had a headache?

days.

c. On how many occasions/days in the last 3 months has your ability to do activities of daily life been reduced by half or more because of your headaches?

days.

d. On how many occasions/days in the last 3 months have you missed family, social or leisure activities because of your headaches?

days.

e. If you are currently in a lecture and you experience a headache what do you usually do?

1. Put up with the headache and continue as normal

2. Take a headache/pain killer medicine and continue as normal.

3. Stop what you are doing and rest.

4. Other:_____

f. When you have a headache at home what do you usually do?

1. Put up with the headache and continue as normal

2. Take a headache/pain killer medicine and continue as normal.

3. Stop what you are doing and rest.

4. Other:_____

g. Are your headaches ever so severe that you have to leave DUT and go home and rest?

Yes

No

h. If yes, how many times in the last 3 months has this occurred?

times/3months

i. When I experience a headache my productivity is decreased by:

1. 0%

2. 1-10%

3. 11-20%

4. 21-30%

5. 31-40%

6. 41-50%

7. 51-60%

8. 61-70%

9. 71-80%

10. 81-90%

11. 91-100%

j. On average in the last 3 months my headaches decreased my overall productivity by:

1. 0%

2. 1-10%

3. 11-20%

4. 21-30%

5. 31-40%

6. 41-50%

7. 51-60%

8. 61-70%

9. 71-80%

10. 81-90%

11. 91-100%

# APPENDIX 2

## Permission obtained from Prangley

On Wednesday, December 11, 2013 5:32 PM, jprangley <jprangley@gmail.com> wrote:

That's fine you can go ahead and use my questionnaire.

Regards

Johan Prangley

Sent from Samsung Mobile

-------- Original message --------
From: Jyotika Basdav <jbasdav@yahoo.com>
Date: 11/12/2013 16:50 (GMT+02:00)
To: jprangley@gmail.com
Subject: Research

Hi Dr Prangley

I hope you are well. Thank you for letting me have access to your personal email address.

This email is with regards to your research. I am currently a 4th year chiropractic student. I would like to seek permission from you to use your questionnaire which you have used in your research at DUT. My research topic is similar to the one you have done. The research topic is looking at prevalence and effects of headaches in the students at DUT. Your questionnaire will be adapted and modified to suit my research study.

Kind regards

Jyotika Basdav

# APPENDIX 3A AND 3B

## Appendix 3A: Focus/Expert Group Letter of Information

### CONFIDENTIALITY STATEMENT – EXPERT GROUP

**IMPORTANT NOTICE:**

**THIS FORM IS TO BE READ AND FILLED IN BY EVERY MEMBER PARTICIPATING IN THE EXPERT GROUP, BEFORE THE EXPERT GROUP MEETING CONVENES.**

**DECLARATION**

1. All information contained in the research documents and any information discussed during the expert group meeting will be kept private and confidential. This is especially binding to any information that may identify any of the participants in the research process.
2. The returned questionnaires will be coded and kept anonymous in the research process.
3. None of the information shall be communicated to any other individual or organization outside of this specific focus group as to the decisions of this focus group.
4. The information from this expert group will be made public in terms of a journal publication, which will in no way identify any participants of this research.

Once this form has been read and agreed to, please fill in the appropriate information below and sign to acknowledge agreement.

**Please print in block letters:**

Expert Group Member: _____

Signature: _____

Witness Name: _____

Signature: _____

Researcher's Name: _____

Signature: _____

Supervisor's Name: _____

Signature: _____

## Appendix 3B: Focus/Expert Group Consent Form

**LETTER OF INFORMATION AND INFORMATED CONSENT – EXPERT GROUP**

**Dear participant**

Welcome to my research project. Thank you for taking the time to consider participating in my study.

**Title of the Research Study:** The prevalence and effects of headaches in students at the Durban University of Technology (DUT)

**Principal Investigator/s/researcher:** Ms. J Basdav (B.Tech) Currently registered for M Tech (Chiropractic)

**Co-Investigator/s/supervisor/s:** Professor T Puckree (PhD)

Dr F Haffejee (PhD)

**Brief Introduction and Purpose of the Study:**

Headaches affect almost half of the population and the effects that these headaches have on the individual in terms of the academic and the social aspects of ones' life has not been investigated previously. This study is a quantitative descriptive cross sectional survey which will provide information on prevalence of headaches within the student population at the Durban University of Technology (DUT) by means of a questionnaire. The effects that headaches have on academic performance, family lives and social aspects will also be investigated. In addition, this study will investigate whether headaches occur more frequently around the time of tests and exams and if so the cause and type of those headaches will also be identified. As a member of the expert group, you are asked to participate during the meeting by discussing the questionnaire with the rest of the members in order to finalize the questionnaire.

Inclusion Criteria;

- At least four headache sufferers representing various faculties at DUT
- At least one qualified practicing chiropractor
- At least one qualified practicing homeopath
- At least one person with research experience

Exclusion Criteria:

- Any person invited that declines the invitation to participate.
- Any person who does not voluntarily sign the letter of information and informed consent form (Appendix 1A) to participate in the expert group.

After a verbal conversion with the researcher, an email will be sent out to respective participates in order to confirm attendance. On arrival on the meeting day this letter of information and consent form will be handed out to read and understand. Should you agree to participate in this study you will be required to sign this letter of information and consent form. The procedure of the meeting will be explained by the researcher

**Risks or/ Discomfort and Benefits:** None to be expected from study.

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

**Costs of the Study:** You will not be expected to pay towards any costs of the study.

**Confidentiality:** All information gathered by this study is confidential. Data is being collected only for research purposes. Your data will be identified by a study number, not names, and stored in a locked research area. Your participation in this study is voluntarily and you may feel free to withdraw from this study at any time without any adverse consequences. Access to all data will be limited to study personnel. What we find from this study may be presented at meetings or published in papers, but your name will never be used in these presentations or papers.

**Research-related Injury:** The research will not cause any injury to you.

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

Please contact the researcher, Jyotika Basdav (031 3732205), my supervisors, Professor T Puckree (031 3732967) or Dr F Haffejee (031 373 2395) if you have any queries

You may also contact the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvctip@dut.ac.za.

**Statement of Agreement to Participate in the Research Study:**

I, _____Subject's full name

_____ (ID number) have read this document in it is entirely and understand its contents. Where I have had any questions or queries, these have been explained to me by Jyotika Basdav to my satisfaction. Furthermore, I fully understand that I may withdraw from this study at any stage without any adverse consequences and my future health care will not be compromised. I, therefore, voluntarily agree to participate in this study.

Subject's name (print) _____

Subject's signature _____

Date _____

Researcher's name (print) _____

Researcher's signature _____

Date _____

Witness name (print) _____

Witness signature _____

Date _____

# Appendix 4

## Pre Focus/Expert Group Questionnaire

***Section A: Headaches***

**Faculty:**

**Course Programme:**

**Year of study:**

**Part time/ Full time student:**

**Demographics:**

**Age:**

**Gender:**

**Race:**

**Marital status:**

| | | | |
|---|---|---|---|
| Social History: | | | |
| | Do you smoke? | Yes | No |
| | If yes to 1, how many do you smoke per day? And for how long have you been smoking for? | | |
| | Are you an ex-smoker? | | |
| | If yes to 3, how long ago did you stop smoking? | | |
| | Do you drink alcohol? | Yes | No |
| | If yes to 5, how many glasses of beer or wine or tots of spirit per week? (Please state individually the limits eg. 4 glasses of beer and 2 glasses of wine) | | |
| | Do you use any social drugs? | Yes | No |
| | Do you consume any caffeinated drinks? If yes, please state the number of cups. | | |
| Exercise: | Do you exercise? | Yes | No |
| | What sport do you participate in? | | |

| | | | |
|---|---|---|---|
| | Do you adhere to a regular exercise program? If yes, how many times per week do you train? | | |
| Sleeping habits: | How many hours do you sleep for? | | |
| | Do you have a routine sleeping pattern? | | |
| | Are you currently having any of the following difficulties? | Always sleepy | Insomnia |
| | | Early morning waker | Grind teeth at night |

| | | | |
|---|---|---|---|
| Stress: | 15. Do you consider yourself being under significant amount of stress (mental and/or physical) in the last 3 months? | Yes | No |
| | | | |
| | 16. Are you currently receiving formal treatment (counselling and/or medication) for anxiety, stress or depression? | | |

17. Do you have any of the following ailments? Please tick where appropriate.

| | | | | | |
|---|---|---|---|---|---|
| Anaemia | | High blood pressure | | Thyroid disease | |
| Depression | | Seizures | | Diabetes | |
| Any head injuries (< 6 months)? If yes, did you receive any medical treatment? | | | | | |
| Other: Please state. | | | | | |

18. What medication are you currently taking? (Please include over-the-counter medications, herbs, birth control pills and homeopathy medication).

***Headache History:***

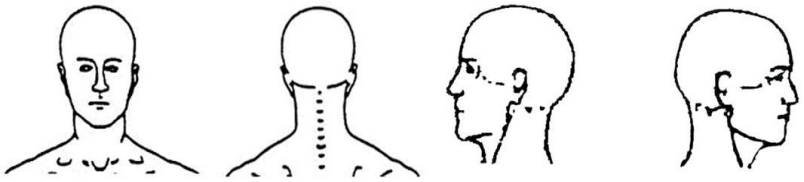
| | | |
|---|---|---|
| 19. Have you experienced a headache in the past 3 months?<br><br>If yes, how many headaches have you experienced?<br><br>How severe were the headaches?<br><br>What were the headaches related to? | Yes | No |
| 20. If you have not experienced any headache in the last 3 months. When last did you experience a headache? | | |
| 21. At what age did you start experiencing headaches? | | |
| 22. Since experiencing these headaches, have their patterns changed? | Yes | No |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 23. If your headache patterns have changed since experiencing these headaches. Are they: | More frequent | Less frequent | More severe | Less severe | More continuous | Less continuous | More predictable | Less predictable | Lasts longer | Shorter than previously |

**Where is the headache?**

| | | | | |
|---|---|---|---|---|
| 24. Is your headache ever localized to one side? | Never | Occasionally | Most of the time | Always |
| 25. Is your headache ever localized to both sides | Never | Occasionally | Most of the time | Always |
| 26. Does your headache typically occur at a certain time of day?<br>If yes, please state the time. | | | Yes | No |

| | | | | |
|---|---|---|---|---|
| 27. Do you have warning symptoms which alert you that you are going to experience a headache attack?<br>If yes, please state what type of warning symptoms you experience. | | | Yes | No |
| 28. Do you have other family members that suffer from headaches?<br>If yes, please state if they are male or female relatives or both. | | | Yes | No |
| 29. Have you consulted a doctor in the past for your headaches?<br>If yes, please state the diagnosis. | | | Yes | No |
| 30. What medication have you used in the past for your headaches? eg.) <u>Panado ®</u><br>How many tablets do you take each time when you have a headache? | | | | |
| 31. What effect did this medication have to your headache? | Better | Worse | No change | Cannot recall |
| 32. Have you used oral contraceptives or oestrogen replacement therapy in the past? | | | Yes | No |
| 33. If yes to 32, what effect did it have on your headache? | Better | Worse | No change | Cannot recall |
| 34. Have you ever been pregnant? | | | Yes | No |
| 35. If yes to 34, what effect did it have on your headache? | Better | Worse | No change | Cannot recall |
| 36. Have you visited a chiropractic and/or physiotherapist for treatment? If yes, please explain. | | | | |

| 37. Headache characteristics: | | |
|---|---|---|
| Location | Shade in the area on the diagram of where your headache is felt |  |

**Pain:**

| 38. Do you have a headache at this moment?<br><br>If yes, rate your pain on a scale of 0-10 with 0 been no pain and 10 been the worse pain. | | | | Yes | No |
|---|---|---|---|---|---|
| 39. I have: Tick only one statement. | I have no pain | There is mild pain not needing medication | I have moderate pain – requires regular medication (codeine or non-narcotic) | I have severe pain controlled only by narcotics | I have severe pain, not controlled by narcotics. |

**40. Character of pain: Please tick and/or fill in where relevant**

| Description | Never | Occasionally | Frequently | Always | Only when severe |
|---|---|---|---|---|---|
| Pulsating | | | | | |
| Pounding | | | | | |
| Pressure | | | | | |
| Sharp | | | | | |
| Shooting | | | | | |
| Squeezing | | | | | |
| Stabbing | | | | | |
| Throbbing | | | | | |
| Tightness | | | | | |
| Other (list) | | | | | |

**41. Triggering Factors: Do any of the following trigger your headache?**

| | | | | | |
|---|---|---|---|---|---|
| Fatigue/Exertion | | Oversleeping | | Hunger | |
| Lack of sleep | | Chewing/Clenching teeth | | Certain foods | |
| Bending over | | Time of day | | | |
| Alcohol | | Exercise | | | |
| Smells (Pleasant and/or unpleasant) | | Stress/Tension | | Other | |
| Change in weather and/or seasons | | Sinus problems | | | |
| Menstrual cycle | | Medications | | | |
| Caffeine containing drinks | | Skipping meals | | | |

**Aggravating Factors: Please tick and/or fill in where relevant.**

42. Is your headache aggravated/ made worse by any of the following:

| | | | |
|---|---|---|---|
| Weather changes | | Sharp light | |
| Sneezing/Coughing | | Sitting | |
| Walking | | Stress/Tension | |
| Loud noises | | Sexual activity | |
| Lying down | | Bending over | |
| Reaching over head | | Other | |
| Lack of sleep | | | |

**Relieving Factors:**

43. Is your headache made better by any of the following?

| | | | |
|---|---|---|---|
| Vomiting | | Relaxation | |
| Eating | | Lying down | |
| Massage | | Heat | |
| Standing | | Stretching | |
| Ice/Cold application | | Medication | |
| Moving around/ Walking | | Sitting | |
| Compression | | Sleep | |
| Exercise | | Other | |

**Associated Signs and Symptoms:**

44. Please tick any of the following symptoms you may experience and their relationship to your headache.

| | Have symptom | Before my headache | During my headache | When my headache is severe |
|---|---|---|---|---|
| Anxiety | | | | |
| Balance problems | | | | |
| Dizziness | | | | |
| Jaw pain | | | | |
| Nausea | | | | |
| Neck/Back pain | | | | |
| Numbness of face/head/neck | | | | |
| Sensitivity to light | | | | |
| Sensitivity to smell | | | | |
| Sensitivity to sound | | | | |
| Sweating | | | | |
| Tiredness | | | | |

| | | | | |
|---|---|---|---|---|
| Visual changes | | | | |
| Vomiting | | | | |
| Weakness | | | | |
| Other | | | | |

**45. Frequency:**

| | Times/day | Times/week | Times/month | Times/year |
|---|---|---|---|---|
| How often does your headache occur? | | | | |
| How many mild/moderate headaches do you have? | | | | |
| How many severe headaches do you have? | | | | |

**Duration:**

46. If you had to take no medication how long will the headache last? Please tick which applies most to your headache.

| | | | |
|---|---|---|---|
| 0 – 15 min | | 24 – 48 hrs | |
| 15 – 30 min | | 48 – 72 hrs/ 2 – 3 days | |
| 30 min – 1 hr | | Greater than 72 hrs/ 3 days | |
| 1 – 6 hrs | | Constant | |
| 6 – 12 hrs | | Too variable | |
| 12 – 24 hrs | | Unknown | |

**The burden of headaches:**

| | |
|---|---|
| 47. On how many occasions/ days in the last 3 months have you missed lectures at DUT because of your headaches? | |
| 48. On how many occasions/ days in the last 3 months have you gone to lectures at DUT despite having had a headache? | |

| | |
|---|---|
| 49. On how many occasions/ days in the last 3 months have you missed family, social or leisure activities because of your headache? | |
| 50. On how many occasions/ days in the last 3 months has your ability to do activities of daily life been reduced by half or more because of your headache? | |
| 51. Has your headaches affected studying for tests/ exams/ assignments?<br>If yes, please explain the symptoms eg.) tiredness, irritability | |

| | | | | |
|---|---|---|---|---|
| 52. How do you normally deal with your headache? Please tick where relevant. | Put up with the headache and continue as normal | Take a headache/ pain killer medicine and continue as normal | Stop what you are doing and rest | Other |
| 53. If you are currently in a lecture and you experience a headache what do you usually do? | | | | |
| 54. When you have a headache at home what do you usually do? | | | | |
| 55. Are your headaches ever so severe that you have to leave DUT and go home? | | | Yes | No |
| 56. If yes to 55, how many times in the last 3 months has this occurred? | | | | |

| | Never | Sometimes | Always |
|---|---|---|---|
| 57. When I experience my headache, my productivity is decreased. | | | |
| 58. On average in the last 3 months my headaches decreased overall productivity. | | | |

***Section B: Quality of Life***

| Tick where relevant | Never | A little bit | Some times | Often | Almost always | Always |
|---|---|---|---|---|---|---|
| 59. In the past 4 weeks, how often have the headaches interfered with how well you dealt with your family, friends and others close to you? | | | | | | |
| 60. In the past 4 weeks, how often did the headaches limit your ability to concentrate on work or daily activities? | | | | | | |
| 61. In the past 4 weeks, how often have the headaches left you too tired to do work or daily activities? | | | | | | |
| 62. In the past 4 weeks, how often have the headaches limited the number of days you have felt energetic? | | | | | | |
| 63. In the past 4 weeks, how often did you need help in handling routine tasks such as everyday household chores, doing necessary business, shopping or caring for others when you had a headache? | | | | | | |
| 64. In the past 4 weeks, how often have you had to stop work or daily activities to deal with headache symptoms? | | | | | | |
| 65. In the past 4 weeks, how often were you not able to go to social activities such as parties, dinner with friends because you had a headache? | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 66. In the past 4 weeks, how often have you felt fed up or frustrated because of your headache? | | | | | | |
| 67. In the past 4 weeks, how often have you felt like you were a burden on others because of your headaches? | | | | | | |
| 68. In the past 4 weeks, how often have you been afraid of letting others down because of your headaches? | | | | | | |

| 69. Mood<br>Tick the appropriate statement | | 70. Anxiety<br>Tick the appropriate statement | |
|---|---|---|---|
| My mood is excellent and unaffected by my headaches. | | I am not anxious about my headache. | |
| My mood is generally good and occasionally affected by my headache. | | I am a little anxious about my headache. | |
| I am neither in a good mood nor depressed about my headache. | | I am anxious about my headache. | |
| I am somewhat depressed about my headache. | | I am very anxious about my headache. | |
| I am extremely depressed by my headache. | | | |
| 71. Personal Care<br>Please tick where relevant. | | 72. Lifting<br>Please tick where relevant. | |
| I can look after myself normally without causing pain. | | I can lift heavy weights without causing extra pain. | |
| I can look after myself normally but it causes extra pain. | | I can lift heavy weights but it gives extra pain. | |
| I need some help but manage most of my personal care. | | Pain prevents me from lifting heavy weights off the floor but I can manage if they are conveniently positioned, for example – on a table. | |

| | | | |
|---|---|---|---|
| I need help every day in most aspects of self-care. | | Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned. | |
| I do not get dressed; I wash with difficulty and stay in bed. | | I can lift very heavy weights. | |
| | | I cannot lift anything at all. | |

| 73. Reading<br>Please tick where relevant. | | 74. Concentration<br>Please tick where relevant. | |
|---|---|---|---|
| I can read as much as I want to with no headaches. | | I can concentrate fully when I want to with no difficulty. | |
| I can read as much as I want to with a slight headache. | | I can concentrate fully with slight difficulty. | |
| I can read as much as I want to with a moderate headache. | | I have a fair degree of difficulty concentrating when I want to. | |
| I cannot read as much as I want to because of a moderate headache. | | I have a lot of difficulty in concentrating when I want to. | |
| I cannot read as much as I want to because of a severe headache. | | I have a great deal of difficulty in concentrating when I want to. | |
| I cannot read at all due to my headache. | | I cannot concentrate at all. | |

| 75. Work<br>Please tick where relevant. | | 76. Driving<br>Please tick where relevant. | |
|---|---|---|---|
| I can do as much work as I want to. | | I can drive my own car without any headache. | |
| I can only do my usual work but no more. | | I can drive my own car as long as I want to with a slight headache. | |
| I cannot do my usual work. | | I can drive my own car as long as I want to with a moderate headache. | |
| I cannot do any work at all. | | I cannot drive my own car as long as I want to because of a moderate headache. | |

| | | | |
|---|---|---|---|
| | | I can hardly drive at all because of a severe headache. | |
| | | I cannot drive at all due to my headache. | |

| 77. Recreation<br>Please tick where relevant. | |
|---|---|
| I am able to engage in all my recreational activities with no headache. | |
| I am able to engage in all of my recreational activities with a slight headache. | |
| I am able to engage in a few of my recreational activities because of a headache. | |
| I can hardly do any recreational activities due to the severity of my headache. | |
| I cannot do any recreational activities due to my headache. | |

**Tests and Exam Schedule:**

| | | |
|---|---|---|
| 78. When preparing for an exam and/or test, do you experience a headache more often than usual? | Yes | No |
| 79. If yes to 78, does the headache pattern change or remain the same? | | |
| 80. Does the frequency and intensity of the headache increase, decrease or remain the same? | | |
| 81. During exams and/or tests, if you have less than 6-8 hours of sleep per night do you experience a headache upon waking the following day?<br><br>If yes, does this occur immediately when you wake up or during the course of the day? | | |
| 82. If you have regular naps during the day/ afternoon / evenings does this prevent the headaches from occurring? | | |
| 83. Do you study for a long period of time without taking regular breaks in between? | | |

| | | | |
|---|---|---|---|
| 84. When studying do you indulge in items that help you sustain extra energy and/or keeps you awake for longer periods of time? (Redbull, Bioplus, Power play, Monster drinks etc.)<br><br>If yes, do you experience a headache after taking the energy drink? | | | |
| 85. If yes to 84, what effect does this have on your headache? | Makes it worse | Better | Stays the same |
| 86. Do you study in a brightly lit area which contributes or/ causes a headache to develop? | | | |
| 87. Do you use a computer for a prolonged time during tests and/or exams to prepare or access notes? | Yes | No | |
| 88. If yes to 87, does this cause a headache to develop? Or if you currently have a headache does this make it worse? | | | |
| 89. If adequately prepared for tests and/or exams, does this help with the headaches? (Your headaches occur less than usual) | | | |
| 90. When inadequately prepared for test and/or exam, do you experience a headache more than usual? | | | |

**Study patterns:**

Tick where relevant:

| 91. When you experience a headache whilst studying, do you: | | 92. When you have a headache and you have to study, do you: | |
|---|---|---|---|
| Carry on studying as usual without the use of medication. | | Start studying as usual without the use of medication. | |
| Carry on studying with the use of medication. | | Start studying with the use of medication. | |
| Study as long as you can manage and thereafter rest for a while. | | Study for as long as you can manage with the headache and thereafter rest for a while. | |

| | | | |
|---|---|---|---|
| Stop studying and then take medication and rest thereafter resume with studying. | | Rest first and then begin studying. | |

**Family and Social concerns:**

| | | |
|---|---|---|
| 93. If you have a headache, does this prevent you going out with family?<br>If yes, how often has this happened in the past year? | Yes | No |
| 94. When you are out with family and a headache suddenly occur what do you do? | | |
| 95. Does any unforeseen circumstance that happens at home contribute to a headache? (Eg. A fight with parents, sibling/s and/or other members of the family, any illness of a relative etc.) | | |
| 96. If you have a date with your friends or significant other (girlfriend/boyfriend/fiancé/wife/husband) and a headache occurs before the outing, what do you do? | | |
| 97. Whilst out with friends or significant other (girlfriend/boyfriend/fiancé/wife/husband) and a headache suddenly occurs, what do you do? | | |

Thank you for answering the questionnaire.

# Appendix 5

## Post Focus/Expert group questionnaire

***SECTION A: HEADACHES***

**Faculty:**

**Campus:**

**Course Programme:**

**Year of study:**

**Part time/ Full time:**

**Demographics:** *please tick or make a cross in the blocks provided*

**Age:** _____ year

**Gender:** Female ☐ Male ☐

**Race:** Coloured ☐ Indian ☐ White ☐ Black ☐ Other ☐

**Marital status:** Single ☐ Married ☐ Divorced ☐ In a relationship☐ Other ☐

**Social History:**

1. Do you currently smoke? Yes ☐ No ☐

2. 2.1 If yes to 1, how many do you smoke per day? _____
   2.2 How long have you been smoking for? _____

3. Are you an ex-smoker? Yes ☐ No ☐

4. If yes to 3, how long ago did you stop? _____

5. Do you drink alcohol? Yes ☐ No ☐

6. If yes to 5, how many glasses of beer or wine or tots per week? (Please state individually the limits e.g. 4 bottles of beer and 2 glasses of wine)

   _____

7. Do you use any drugs (e.g. Marijuana, cocaine etc)? Yes ☐ No ☐

8. How many cups of caffeinated drinks (tea, coffee, Redbull etc) do you consume per day?

0 cups ☐ 1-2 cups ☐ 3-4 cups ☐ 4-5 cups ☐ more than 5 cups ☐

Please indicate which caffeine drink you consume

_____

**Exercise:**

9. Do you exercise? Yes ☐ No ☐

10. What type of exercise do you participate in?

_____

11. 11.1 Do you adhere to a regular exercise programme? Yes ☐ No ☐

11.2 If yes to 11.1, how many times per week do you exercise?

_____

**Sleep:**

12. How many hours of sleep do you generally get a night?

_____

13. 13.1 Do you have a regular sleeping pattern?

Never ☐ Occasionally ☐ Most of the time ☐ Always ☐

13.2 Do the hours of sleep vary per night?

Never ☐ Occasionally ☐ Most of the time ☐ Always ☐

14. Are you currently having any of the following difficulties?

Disrupted sleep ☐ Always sleepy ☐ Insomnia ☐ Early morning waker ☐

Grind teeth at night ☐

**Meal times:**

15. Do you have breakfast? Yes ☐ No ☐

16. Do you eat lunch on campus? Yes ☐ No ☐

17. Do you generally skip your lunch time? Yes ☐ No ☐

**Cell phone /Electronic devices:**

18. Tick the following devices that you use.
    Cell phone ☐ Ipad ☐ Tablet ☐ Laptop/PC ☐ Ereader ☐

19. How often do you use your electronic devices?
    0nce a day ☐ Twice a day ☐ Three times a day ☐ Four times a day ☐
    More than five times a day ☐ Specify_____

20. Do you get a headache from using your cell phone and/or electronic devices?
    Yes ☐ No ☐ I don't know ☐ Not applicable ☐

21. When you have a headache, does the usage of your cell phone and/or electronic devices affect your headache? Yes ☐ No ☐ I don't know ☐

22. If yes to 21, what effect does it have on your headache?
    Better ☐ Worse ☐ No change ☐

**Television (TV):**

23. Do you watch television every day? Yes ☐ No ☐ Sometimes ☐

24. How many hours do you watch TV for? One hour ☐ Two hours ☐ Three hours ☐ Four hours ☐ More than five hours ☐ Specify:
    _____

25. When you have a headache, does watching TV affect your headache? Yes ☐
    No ☐ I don't know ☐ Not applicable ☐

26. If yes to 25, what effect does the TV have on your headache?
    Better ☐ Worse ☐ No change ☐

27. When you have a headache, do you continue watching TV? Yes ☐ No ☐
    Sometimes ☐

**Eyesight / Vision:**

28. Have you had your eyes tested by an optometrist? Yes ☐ No ☐

29. Do you wear glasses? Yes ☐ No ☐

30. If yes to 29, how often do you have your eyes checked? _____

31. Can you see the board clearly during lectures? Yes ☐ No ☐

32. Do you have any eye symptoms? Yes ☐ No ☐

33. If yes to 32, what eye symptoms do you experience?

Pain ☐ Redness ☐ Itchiness ☐ Tired eyes ☐

Dry eyes ☐ Specify:

_____

34. Do you wear contact lenses? Yes ☐ No ☐

35. If yes to 34, how often do you wear your contact lenses? _____

36. Are your contact lenses: Tested ☐ Not tested ☐

**Work:**

37. Do you have a part time job? Yes ☐ No ☐
38. If yes to 37, how many days per week do you work? _____
39. How many hours per week do you work? _____
40. Do you still attend full time lectures on your working day? Yes ☐ No ☐
41. During tests and exams, do you still work? Yes ☐ No ☐

**Transport:**

42. How do you travel to campus?

Car ☐ Taxi ☐ Lift club ☐ Bus ☐ Motor bike ☐ Bicycle ☐ Walking ☐

43. How long does it take you to get to campus? _____

**Finances:**

44. Do you pay for your own tuition fees? Yes ☐ No ☐

44.1 If yes to 44, how do you pay your tuition fees?

Part time job ☐ Full bursary ☐ Partial bursary ☐ Other ☐

44.2 If no to 44, who pays for your tuition fees?

Parent/s ☐ Spouse ☐ Student loan ☐ Personal loan ☐ Other ☐

**Support systems:**

45. Do you have someone that you can talk too? Yes ☐ No ☐
46. Do you cope with personal and/or campus problems by yourself? Yes ☐ No ☐
47. Do you live by yourself? Yes ☐ No ☐
48. If no to 47, who do you live with?

Family ☐ Extended family ☐ Student residence ☐ Boarding house ☐ Share a flat/house ☐

**Stress:**

49. In the last 3 months have you been under significant amount of stress/anxiety (mental and/or physical)? If no, move on to 52. Yes ☐ No ☐

50. Are you receiving any formal treatment (counselling and/or medication) for your stress/anxiety?

_____

51. Are you receiving any informal treatment (eg. Over-the-counter rescue drops or/ tablets) for your stress/anxiety?

_____

52. Have you been diagnosed with any of the following aliments? Please tick where appropriate.

Anaemia ☐ High blood pressure ☐ Thyroid disease ☐
Depression ☐ Seizures ☐ Sugar ☐ Low blood pressure ☐

53. 53.1 Have you had any head injuries in the past 3 months? Yes ☐ No ☐

53.2 If yes to 53.1, did you receive any medical treatment?

_____

54. Are you taking medication currently taking? Yes ☐ No ☐

If yes, state what type of medication (Please include over-the-counter medications, herbs, birth control pills, homeopathy medication/remedies, depression etc.)

_____

**Headache History:**

55. Have you ever experienced a headache? Yes ☐ No ☐

***IF NO TO 55, YOU HAVE NOW COMPLETED THE QUESTIONNAIRE.***

56. Do you currently have a headache? Yes ☐ No ☐

57. Have you experienced a headache recently? Yes ☐ No ☐

58. If yes to 57, how often do you usually experience your headache?

| | | | | | |
|---|---|---|---|---|---|
| Daily | ☐ | Weekly | ☐ | 1-2 weekly | ☐ |
| 3-4 weekly | ☐ | more than 5 weekly | ☐ | Monthly | ☐ |
| Every 2 months | ☐ | Every 3 months | ☐ | More than 4 months | ☐ |

59. If no to 57, when last did you experience a headache? _____

60. How severe were the headaches? Mild ☐ Moderate☐ Severe ☐

61. At what age did you start experiencing headaches?

_____

62. Have you noticed any of the following since you first started experiencing your headache?

| | | | | | |
|---|---|---|---|---|---|
| More frequent | ☐ | Less frequent | ☐ | More severe | ☐ |
| Less severe | ☐ | More continuous | ☐ | Less continuous | ☐ |
| More predictable | ☐ | Less predictable | ☐ | Lasts longer | ☐ |
| Shorter than previously ☐ | | | | | |

63. Describe the location of your headache you generally experience:

Localized to one side ☐ Localized to both sides ☐ Not localized☐

Behind the eye ☐ Over the forehead region ☐ In the temple area ☐ Top of the head ☐ Back of the head ☐ Side of the head ☐

64. Does your headache typically occur at a certain time of day? Yes ☐ No ☐
If yes, please state the time

_____

65. Do you have any warning symptoms which alert you that you are going to experience a headache attack? Yes ☐ No ☐
If yes, please state what type of warning symptoms you experience (eg. Dizziness, nausea, eye sight changes etc.)

_____

_____

66. Do you have other family members that suffer from headaches? Yes ☐ No ☐
If yes, please tick appropriate box/es: Mum ☐ Dad ☐Sister ☐ Brother☐

67. Have you consulted a doctor in the past for your headaches? Yes ☐ No ☐
If yes, please state the diagnosis (eg. Tension-type headache, migraine headache etc)

_____

68. What medication have you used in the past for your headaches?
Paracetamol ☐ Grand-pa® ☐ Neurofen® ☐ Myprodol®☐
Other:

_____

69. When you do get a headache how often do you use your pain medication?
Once a day ☐ Twice a day ☐ Three times a day ☐ Four times a day ☐

70. Do you find the medication effective for your headache?
Better ☐ Worse ☐ No change ☐ Cannot recall ☐

71. Have you used oral contraceptives or oestrogen replacement therapy in the past?
Yes ☐ No ☐ Not applicable ☐

72. If yes to 71, what effect did it have on your headache?

Better ☐ Worse ☐ No change ☐ Cannot recall ☐

73. Have you ever been pregnant?

Yes ☐ No ☐ Not applicable ☐

74. If yes to 73, what effect did it have on your headache?

Better ☐ Worse ☐ No change ☐ Cannot recall ☐

75. Have you had treatment for your headaches from any of the following medical professions? If yes, please tick the appropriate box/es.

Acupuncture ☐ Chiropractic ☐ Homeopathy ☐

Naturopathy ☐ Phytotherapy ☐ Ayurveda practitioner ☐

Therapeutic aromatherapy ☐ Neurologist ☐ Pharmacist ☐

General Practitioner (GP) ☐ Physiotherapy ☐ Nurse ☐

Therapeutic massage therapy☐

Therapeutic reflexology ☐

Traditional Chinese Medicine and Acupuncture ☐ Unani Tibb ☐ Other ☐

Specify: _____

76. Do you treat yourself? Yes ☐ No ☐

If yes, what do you use?

_____

77. **Character of headache pain:**

Generally when you get a headache, what type of pain do you experience? Please tick where relevant.

Pulsating ☐ Pounding ☐ Pressure ☐ Sharp ☐

Squeezing ☐ Stabbing ☐ Shooting ☐ Throbbing ☐

Tightness ☐ Other ☐ Please list/ explain

_____

78. **Triggering factors:**

Do any of the following cause your headache?

Fatigue/Exertion ☐ Lack of sleep ☐ Bending over ☐ Alcohol ☐

Exercise ☐ Time of day ☐ Stress/Tension ☐ Extreme heat ☐

Sinus problems ☐ Hunger ☐ Certain foods ☐ Oversleeping ☐

Extreme cold ☐ Smells (Pleasant and/or unpleasant) Tests ☐

Menstrual cycle ☐ Change in weather and/or seasons ☐ Assignments ☐

Skipping meals ☐ Caffeine containing drinks ☐ Aircon ☐

Chewing/Clenching teeth ☐ The lecturer ☐ Humidity ☐

Medication ☐ Specify:

_____

Other ☐ Specify:

_____

79. **Aggravating factors:**

Is your headache made worse by any of the following?

Sneezing/Coughing ☐ Walking ☐ Loud noises ☐

Stress/Tension ☐ Lack of sleep ☐ Sharp light ☐ Sitting ☐

Lying down ☐ Sexual activity ☐ Bending over ☐

Prolonged use of a computer ☐ Weather changes and/or seasonal changes ☐

Other:

_____

80. **Relieving factors**

Do any of the following relieve your headache?

Vomiting ☐ Eating ☐ Massage ☐ Standing ☐

Compression ☐ Exercise ☐ Heat ☐ Relaxation ☐ Lying down ☐

Sitting ☐ Stretching ☐ Sleep ☐ Medication ☐

Ice/Cold application ☐ Moving around/Walking ☐

Other:

_____

**<u>Section B: Quality of Life</u>**

**The burden of headaches**

In the last 3 months have your headaches caused you to:

81. Miss lectures at DUT? Yes ☐ No ☐

82. Attended lectures despite having had a headache? Yes ☐ No ☐

83. Missed family, social or leisure activities because of your headache? Yes☐ No☐

84. If you have a headache, does this prevent you from going out with family and/or friends?

Yes ☐ No ☐ Sometimes ☐ Never ☐

85. When you are out with family, friends and/or your significant other (boyfriend/ girlfriend/ fiancé/wife/husband) and a headache suddenly occurs, what do you do?

_____

86. If you have a date with your friends or your significant other (boyfriend/ girlfriend/ fiancé/ wife/husband) and a headache occurs before the outing, what do you do?

_____

87. Do any unforeseen circumstances that happen at home contribute to a headache (e.g. a fight with parents, sibling/s, any illness of a relative etc.)? Yes ☐ No ☐

88. Reduce your activities of daily living by half or more because of your headache? Yes ☐ No ☐

89. Affected studying for tests and/or exams? Yes ☐ No ☐

If yes, please explain the symptoms you would generally experience.

_____

90. Decrease productivity when experiencing a headache? Yes ☐ No ☐

91. Interfere with how well you dealt with your family, friends and others close to you? Yes ☐ No ☐

92. Limit your ability to concentrate on work or daily activities? Yes ☐ No ☐

93. To feel too tired to do work or daily activities? Yes ☐ No ☐

94. Limit the number of days you have felt energetic? Yes ☐ No ☐

95. To require assistance in handling routine tasks such as everyday household chores, doing necessary business, shopping or caring for others? Yes ☐ No ☐

96. To stop work or daily activities to deal with headache symptoms? Yes ☐ No ☐

97. Not able to attend social activities such as parties, dinner with friends? Yes☐No☐

98. Felt fed up or frustrated? Yes ☐ No ☐

99. Feel like you were a burden on others because of your headaches? Yes ☐ No☐

100. Been afraid of letting others down because of your headache? Yes ☐ No☐

Have your headaches affected the following:

101. Mood? Yes ☐ No ☐
102. Anxiety? Yes ☐ No ☐
103. Personal care? Yes ☐ No ☐
104. Lifting? Yes ☐ No ☐
105. Reading? Yes ☐ No ☐
106. Concentration? Yes ☐ No ☐
107. Work? Yes ☐ No ☐
108. Performance in studies? Yes ☐ No ☐

**Headache and impact of academic life:**

109. When preparing for a test and/or test do you experience a headache more often than usual? Yes ☐ No ☐

110. Do you experience a more intense headache than usual during test and/or exam time? Yes ☐ No ☐

111. During tests and/or exams, how does your sleeping pattern change?
Increase ☐ Decrease ☐ Stay the same ☐

112. If yes to 111, how many hours of sleep do you get?

_____

113. Do you study for a long period of time without taking regular breaks in between? Yes ☐ No ☐

114. When studying do you indulge in items that help you sustain extra energy and/or help you concentrate for a longer period (energy drinks such as Redbull, Bioplus etc., chocolate, chips, coffee, tea etc)? Yes ☐ No ☐

115. If yes to 114, if you experience a headache does it disrupt your studying?
Stop studying ☐ Less effective ☐ Doesn't affect studying ☐

116. When you experience a headache whilst studying, do you?
Carry on studying as usual without the use of medication. ☐
Carry on studying with the use of medication. ☐
Study as long as you manage and thereafter rest for a while. ☐
Stop studying and then take medication and rest thereafter resume with studying.☐

117. When you have a headache and you have to study, do you?
Start studying as usual without the use of medication. ☐
Start studying with the use of medication. ☐
Study for as long as you can manage with the headache and thereafter rest for a while. ☐
Rest first and then begin studying. ☐

118. Describe the lighting of your study area?
Inadequate ☐ Adequate ☐ Bright ☐ Very bright ☐

**Thank you for taking time out and answering the questionnaire.**

# Appendix 6A and 6B

## Appendix 6 A: Letter of Information: Pilot group

**Title of the Research Study:** The prevalence and effects of headaches in students at the Durban University of Technology (DUT)

**Principal Investigator/s/researcher:** Ms. J Basdav (B.Tech) Currently registered for M Tech (Chiropractic)

**Co-Investigator/s/supervisor/s:** Professor T Puckree (PhD)

Dr F Haffejee (PhD)

**Brief Introduction and Purpose of the Study:**

Headaches affect almost half of the population and the effects that these headaches have on the individual in terms of the academic and the social aspects of ones' life has not been investigated previously. This study is a quantitative descriptive cross sectional survey which will provide information on prevalence of headaches within the student population at the Durban University of Technology (DUT). The effects that headaches have on academic performance, family lives and social aspects will also be investigated. In addition, this study will investigate whether headaches occur more frequently around the time of tests and exams and if so the cause and type of those headaches will also be identified

**Outline of the Procedures:** If you participate in this study, you will be asked to discuss your headache history and the effects of these headaches on your daily life. It will take approximately 30 minutes to complete the survey

You will be handed a survey document, which you will fill in in return to the researcher. Your name and other personal identifying information will not be on the survey document. The consent form that you sign will be kept separately from the survey document.

**Risks or Discomforts to the Participant:**

There will be no risks or discomforts if you participate in the study

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

The benefit of participating in this study is that you may find comfort in talking about your headache experiences and that it may contribute to health advancements in South Africa. The researchers will benefit by publishing the data.

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

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

**Remuneration:** There will be no remuneration for participating in the study

**Costs of the Study:** You will not be expected to pay towards any costs of the study

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

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

**Research-related Injury:**

The research will not cause any injury to you.

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

Please contact the researcher, Jyotika Basdav (031 3732205), my supervisors, Prof T Puckree (031 3732967) or Dr F Haffejee (031 373 2395) if you have any queries

You may also contact the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvctip@dut.ac.za.

**General:**

Approximately 384 students will be recruited to participate in this study. Please note that participation is voluntary.

# Appendix 6B

## Consent Form: Pilot Group

**Statement of Agreement to Participate in the Research Study:**

- I hereby confirm that I have been informed by the researcher, _____ (name of researcher), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: IREC 002/15 _____,
- 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 (If applicable)** | **Date** | **Signature** |

| _____ | _____ | _____ |
|---|---|---|
| **Full Name of Legal Guardian (If applicable)** | **Date** | **Signature** |

# Appendix 7

## Final Questionnaire

***SECTION A: HEADACHES***

**Faculty:**
**Campus:**
**Course Programme:**
**Year of study:**
**Part time/ Full time:**

**Demographics:** *please tick or make a cross in the blocks provided*

**Age:** _____

**Gender:** Female ☐ Male ☐

**Race:** Coloured ☐ Indian ☐ White ☐ Black ☐ Other ☐

**Marital status:** Single ☐ Married ☐ Divorced ☐ In a relationship ☐ Other ☐

**Social History:**

1. Do you currently smoke? Yes ☐ No ☐
2. 2.1 If yes to 1, how many cigarettes do you smoke per day? _____
   2.2 How long have you been smoking for? _____
3. Are you an ex-smoker? Yes ☐ No ☐
4. If yes to 3, how long ago did you stop? _____
5. Do you drink alcohol? Yes ☐ No ☐
6. If yes to 5, how many glasses of beer or wine or tots per week? (Please state individually the quantities e.g. 4 bottles of beer and 2 glasses of wine)
   _____
7. Do you use any drugs (e.g. Marijuana, cocaine etc)? Yes ☐ No ☐
8. How many cups of caffeinated drinks (tea, coffee, Redbull etc) do you consume per day?
   0 cups ☐ 1-2 cups ☐ 3-4 cups ☐ 4-5 cups ☐ more than 5 cups ☐
   Please indicate which caffeine drink you consume
   _____

**Exercise:**

9. Do you exercise? Yes ☐ No ☐
10. What type of exercise do you participate in? -
    _____
11. 11.1 Do you adhere to a regular exercise programme? Yes ☐ No ☐
    11.2 If yes to 11.1, how many times per week do you exercise and for how long?
    _____

**Sleep:**

12. How many hours of sleep do you generally get a night?

    _____

13. 13.1 Do you have a regular sleeping pattern?
    Never ☐ Occasionally ☐ Most of the time ☐ Always ☐

    13.2 Do the hours of sleep vary per night?
    Never ☐ Occasionally ☐ Most of the time ☐ Always ☐

14. Are you currently having any of the following difficulties?
    Disrupted sleep ☐ Always sleepy ☐ Insomnia ☐ Early morning waker ☐ Grind teeth at night ☐ None ☐
    Other ☐_____

**Meal times:**

15. Do you have breakfast? Yes ☐ No ☐
16. Do you eat lunch on campus? Yes ☐ No ☐
17. Do you generally skip your lunch time? Yes ☐ No ☐

**Cell phone /Electronic devices:**

18. Tick the following devices that you use.
    Cell phone ☐ Ipad ☐ Tablet ☐ Laptop/PC ☐ Ereader ☐

19. How often do you use your electronic devices?
    0nce a day ☐ Twice a day ☐ Three times a day ☐ Four times a day ☐
    More than five times a day ☐ Specify_____

20. Do you get a headache from using your cell phone and/or electronic devices?
    Yes ☐ No ☐ I don't know ☐ Not applicable ☐

21. When you have a headache, does the usage of your cell phone and/or electronic devices affect your headache? Yes ☐ No ☐ I don't know ☐

22. If yes to 21, what effect does it have on your headache?
    Better ☐ Worse ☐ No change ☐

**Television (TV):**

23. Do you watch television every day? Yes ☐ No ☐ Sometimes ☐ Never ☐

24. How many hours do you watch TV for per day? One hour ☐ Two hours ☐ Three hours ☐ Four hours ☐ More than five hours ☐ Specify:

    _____

25. When you have a headache, does watching TV affect your headache? Yes ☐
    No ☐ I don't know ☐ Not applicable ☐

26. If yes to 25, what effect does the TV have on your headache?
    Better ☐ Worse ☐ No change ☐

27. When you have a headache, do you continue watching TV? Yes ☐ No ☐
Sometimes ☐

**Eyesight / Vision:**

28. Have you had your eyes tested by an optometrist? Yes ☐ No ☐

29. Do you wear glasses? Yes ☐ No ☐

30. If yes to 29, how often do you have your eyes checked? _____

31. Can you see the board clearly during lectures using your glasses? Yes ☐No ☐

32. Do you have any eye symptoms? Yes ☐ No ☐

33. If yes to 32, what eye symptoms do you experience?
Pain ☐ Redness ☐ Itchiness ☐ Tired eyes ☐
Dry eyes ☐ Specify:
_____

34. Do you wear contact lenses? Yes ☐ No ☐

35. If yes to 34, how often do you wear your contact lenses? _____

36. Are your contact lenses: Tested ☐ Not tested ☐

**Work:**

37. Do you have a part time job? Yes ☐ No ☐

38. If yes to 37, how many days per week do you work? _____

39. How many hours per week do you work? _____

40. Do you still attend full time lectures on your working day? Yes ☐ No ☐

41. During tests and exams, do you still work? Yes ☐ No ☐

**Transport:**

42. How do you travel to campus?
Car ☐ Taxi ☐ Lift club ☐ Bus ☐ Motor bike ☐ Bicycle ☐
Walking ☐

43. How long does it take you to get to campus?
_____

**Finances:**

44. Do you pay for your own tuition fees? Yes ☐ No ☐
44.1 If yes to 44, how do you pay your tuition fees?
Part time job ☐ Full bursary ☐ Partial bursary ☐ Other ☐

44.2 If no to 44, who pays for your tuition fees?
Parent/s ☐ Spouse ☐ Student loan ☐ Personal loan ☐
Other ☐

**Support systems:**

45. Do you have someone that you can talk to? Yes ☐ No ☐

46. Do you cope with personal and/or campus problems by yourself? Yes ☐ No ☐

47. Do you live by yourself? Yes ☐ No ☐
48. If no to 47, who do you live with?
Family ☐ Extended family ☐ Student residence ☐ Boarding house ☐
Share a flat/house ☐

**Stress:**

49. In the last 3 months have you been under significant amount of stress/anxiety (mental and/or physical)? If no, move on to 52.
Yes ☐ No ☐

50. Are you receiving any formal treatment (counselling and/or medication) for your stress/anxiety?

_____

51. Are you receiving any informal treatment (eg. Over-the-counter rescue drops or/ tablets) for your stress/anxiety?

_____

52. Have you been diagnosed with any of the following aliments? Please tick where appropriate.
Anaemia ☐ High blood pressure ☐ Thyroid disease ☐
Depression ☐ Seizures ☐ Sugar (Diabetes) ☐ Low blood pressure ☐
None ☐

53. 53.1 Have you had any head injuries in the past 3 months? Yes ☐ No ☐
53.2 If yes to 53.1, did you receive any medical treatment?

_____

54. Are you taking medication currently taking? Yes ☐ No ☐
If yes, state what type of medication (Please include over-the-counter medications, herbs, birth control pills, homeopathy medication/remedies, depression, supplements etc.)

_____
_____
_____

**Headache History:**

55. Have you ever experienced a headache? Yes ☐ No ☐

***IF NO TO 55, YOU HAVE NOW COMPLETED THE QUESTIONNAIRE.***

56. Do you currently have a headache? Yes ☐ No ☐
57. Have you experienced a headache recently? Yes ☐ No ☐

58. If yes to 57, how often do you usually experience your headache?
Daily ☐ Weekly ☐ 1-2 weekly ☐ 3-4 weekly ☐
more than 5 weekly ☐ Monthly ☐ Every 2 months☐ Every 3 months ☐
More than 4 months ☐

59. If no to 57, when last did you experience a headache? _____

60. How severe were the headaches? Mild ☐ Moderate☐ Severe ☐

61. At what age did you start experiencing headaches?
_____

62. Have you noticed any of the following since you first started experiencing your headache? *(Tick more than one, if applicable)*
More frequent ☐ Less frequent ☐ More severe ☐
Less severe ☐ More continuous ☐ Less continuous ☐
More predictable ☐ Less predictable ☐ Lasts longer ☐
Shorter than previously ☐ None of the above ☐

63. Describe the location of your headache you generally experience:
Localized to one side ☐ Localized to both sides☐ Not localized ☐
Behind the eye ☐ Over the forehead region ☐ In the temple area ☐
Top of the head ☐ Back of the head ☐ Side of the head ☐

64. Does your headache typically occur at a certain time of day? Yes ☐ No ☐
If yes, please state the time
_____

65. Do you have any warning symptoms which alert you that you are going to experience a headache attack? Yes ☐ No ☐
If yes, please state what type of warning symptoms you experience (eg. Dizziness, nausea, eye sight changes etc.)
_____
_____

66. Do you have other family members that suffer from headaches? Yes ☐ No ☐
If yes, please tick appropriate box/es: Mum ☐ Dad ☐ Sister ☐ Brother☐

67. Have you consulted a doctor in the past for your headaches? Yes ☐ No ☐
If yes, please state the diagnosis (eg. Tension-type headache, migraine headache etc)
_____

68. What medication have you used in the past for your headaches?
Paracetamol ☐ Grand-pa® ☐ Neurofen® ☐ Myprodol® ☐
Other:
_____

69. When you do get a headache how often do you use your pain medication?
Once a day ☐ Twice a day ☐ Three times a day ☐ Four times a day ☐

70. Do you find the medication effective for your headache?
Better ☐ Worse ☐ No change ☐ Cannot recall ☐

71. Have you used oral contraceptives or oestrogen replacement therapy in the past?
Yes ☐ No ☐ Not applicable ☐

72. If yes to 71, what effect did it have on your headache?
Better ☐ Worse ☐ No change ☐ Cannot recall ☐

73. Have you ever been pregnant?
Yes ☐ No ☐ Not applicable ☐

74. If yes to 73, what effect did it have on your headache?
Better ☐ Worse ☐ No change ☐ Cannot recall ☐

75. Have you had treatment for your headaches from any of the following medical professions? If yes, please tick the appropriate box/es.
Acupuncture ☐ Chiropractic ☐ Homeopathy ☐
Naturopathy ☐ Phytotherapy ☐ Ayurveda practitioner ☐
Therapeutic aromatherapy ☐ Neurologist ☐ Pharmacist ☐
General Practitioner (GP) ☐ Physiotherapy ☐ Nurse ☐
Therapeutic massage therapy ☐
Therapeutic reflexology ☐ Traditional Chinese Medicine and Acupuncture ☐
Unani Tibb ☐ Other ☐ Specify: _____

76. Do you treat yourself? Yes ☐ No ☐
If yes, what do you use?
_____

77. **Character of headache pain:**
Generally when you get a headache, what type of pain do you experience? Please tick where relevant.
Pulsating ☐ Pounding ☐ Pressure ☐ Sharp ☐
Squeezing ☐ Stabbing ☐ Shooting ☐ Throbbing ☐
Tightness ☐
Other ☐ Please list/ explain
_____

78. **Triggering factors:** *(Tick more than one if applicable)*
Do any of the following cause your headache?
Fatigue/Exertion ☐ Lack of sleep ☐ Bending over ☐ Alcohol ☐
Exercise ☐ Time of day ☐ Stress/Tension ☐
Extreme heat ☐ Sinus problems ☐ Hunger ☐ Certain foods ☐
Oversleeping ☐ Extreme cold ☐ Smells (Pleasant and/or unpleasant) ☐
Tests ☐ Menstrual cycle ☐ Change in weather and/or seasons ☐
Assignments ☐ Skipping meals ☐ Caffeine containing drinks ☐
Aircon ☐ Chewing/Clenching teeth ☐ The lecturer ☐ Humidity ☐
Medication ☐ Specify:
_____
Other ☐ Specify:
_____

79. **Aggravating factors:** *(Tick more than one if applicable)*
Is your headache made worse by any of the following?
Sneezing/Coughing ☐ Walking ☐ Loud noises ☐
Stress/Tension ☐ Lack of sleep ☐ Sharp light ☐
Sitting ☐ Lying down ☐ Sexual activity ☐ Bending over ☐
Prolonged use of a computer ☐ Weather changes and/or seasonal changes ☐
Other:

_____

80. **Relieving factors:** *(Tick more than one if applicable)*
Do any of the following relieve your headache?
Vomiting ☐ Eating ☐ Massage ☐ Standing ☐
Compression ☐ Exercise ☐ Heat ☐ Relaxation ☐ Lying down ☐
Sitting ☐ Stretching ☐ Sleep ☐ Medication ☐ Ice/Cold application ☐
Moving around/Walking ☐
Other:

_____

**Section B: Quality of Life**

**The burden of headaches**

Have you had a headache in the past 3 months if yes, has your headaches caused you to:

81. Miss lectures at DUT? Yes ☐ No ☐
82. Attend lectures despite having had a headache? Yes ☐ No ☐
83. Miss family, social or leisure activities because of your headache? Yes ☐ No☐
84. If you have a headache, does this prevent you from going out with family and/or friends?
Yes ☐ No ☐ Sometimes ☐ Never ☐

85. When you are out with family, friends and/or your significant other (boyfriend/ girlfriend/ fiancé/wife/husband) and a headache suddenly occurs, what do you do?

_____

86. If you have a date with your friends or your significant other (boyfriend/ girlfriend/ fiancé/ wife/husband) and a headache occurs before the outing, what do you do?

_____

87. Do any unforeseen circumstances that happen at home contribute to a headache (e.g. a fight with parents, sibling/s, any illness of a relative etc.)? Yes ☐ No ☐

88. Reduce your activities of daily living by half or more because of your headache? Yes ☐ No ☐
89. Affected studying for tests and/or exams? Yes ☐ No ☐
If yes, please explain the symptoms you would generally experience.

_____

90. Decrease productivity when experiencing a headache? Yes ☐ No ☐

91. Interfere with how well you dealt with your family, friends and others close to you? Yes ☐ No ☐
92. Limit your ability to concentrate on work or daily activities? Yes ☐ No ☐

93. To feel too tired to do work or daily activities? Yes ☐ No ☐

94. Limit the number of days you have felt energetic? Yes ☐ No ☐

95. To require assistance in handling routine tasks such as everyday household chores, doing necessary business, shopping or caring for others? Yes ☐ No ☐

96. To stop work or daily activities to deal with headache symptoms? Yes ☐ No ☐

97. Not able to attend social activities such as parties, dinner with friends? Yes☐ No☐

98. Felt fed up or frustrated? Yes ☐ No ☐

99. Feel like you were a burden on others because of your headaches? Yes ☐ No ☐

100. Been afraid of letting others down because of your headache? Yes ☐ No☐

Have your headaches affected the following:

101. Mood? Yes ☐ No ☐
102. Anxiety? Yes ☐ No ☐
103. Personal care? Yes ☐ No ☐
104. Lifting? Yes ☐ No ☐
105. Reading? Yes ☐ No ☐
106. Concentration? Yes ☐ No ☐
107. Work? Yes ☐ No ☐
108. Performance in studies? Yes ☐ No ☐

**Headache and impact of academic life:**

109. When preparing for a test and/or exam do you experience a headache more often than usual? Sometimes ☐ Yes ☐ No ☐

110. Do you experience a more intense headache than usual during test and/or exam time? Yes ☐ No ☐

111. During tests and/or exams, how does your sleeping pattern change? Increase ☐ Decrease ☐ Stay the same ☐

112. If yes to 111, how many hours of sleep do you get?

_____

113. Do you study for a long period of time without taking regular breaks in between? Yes ☐ No ☐

114. When studying do you indulge in items that help you sustain extra energy and/or help you concentrate for a longer period (energy drinks such as Redbull, Bioplus etc., chocolate, chips, coffee, tea etc)? Yes ☐ No ☐

115. If yes to 114, if you experience a headache does it disrupt your studying? Stop studying ☐ Less effective ☐ Doesn't affect studying ☐

116. When you experience a headache whilst studying, do you? *(Tick one box which is most appropriate/ applicable to you)*

Carry on studying as usual without the use of medication. ☐
Carry on studying with the use of medication. ☐
Study as long as you manage and thereafter rest for a while. ☐
Stop studying and then take medication and rest thereafter resume with studying ☐

117. When you have a headache and you have to study, do you? *(Tick one box which is most appropriate/ applicable to you)*

Start studying as usual without the use of medication. ☐
Start studying with the use of medication. ☐
Study for as long as you can manage with the headache and thereafter rest for a while. ☐
Rest first and then begin studying. ☐

118. Describe the lighting of your study area?

Inadequate ☐ Adequate ☐ Bright ☐ Very bright ☐

**Thank you for taking time out and answering the questionnaire.**

# Appendix 8

## Institutional Research Ethics Committee (IREC) Approval

**Institutional Research Ethics Committee**
Faculty of Health Sciences
Room MS 49, Mansfield School Site
Gate 8, Ritson Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2900
Fax: 031 373 2407
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

**www.dut.ac.za**

4 February 2015

IREC Reference Number: **REC 87/14**

Ms J Basdav
75 Bailey Road
Redhill
Durban
4051

Dear Ms Basdav

**The prevalence and impact of primary headaches on students at the Durban based campuses of the Durban University of Technology (DUT)**

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool for review.

We are pleased to inform you that the questionnaire has been APPROVED; you may now proceed with data collection on the proposed project.

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

Yours Sincerely

[redacted]

Professor J K Adam
Chairperson: IREC

# Appendix 9

## Permission from the Director of Research

Dear Firoza,

Greetings to you too! If you have the necessary ethics clearance you will need to send the proposal+ ethics clearance to Vaneshree and we will grant you the permission to do so. Contact Vaneshree tomorrow for any support.

Cheers,

Sibu

**From:** Firoza Haffejee
**Sent:** 14 January 2014 01:45 PM
**To:** Sibusiso Moyo
**Subject:** permission to interview students

Dear Sibu

I trust that you had a good break. I am supervising a Masters student who will be conducting interviews on prevalence of headaches in the DUT student population. Please advise on whom we should contact to obtain permission for interviewing students for research purposes.

With warm wishes for 2014

Firoza

**Dr Firoza Haffejee (PhD)**

Lecturer and Head of Discipline (Physiology)

Department of Basic Medical Sciences

Durban University of Technology

Tel: 031 373 2395

Cell 083 291 8796

Fax: 031 373 2405

Email:firozah@dut.ac.za

# Appendix 10

## Letter of permission from Head of Departments (HOD's)

Dear HOD

I hope that you are well. I am currently a Chiropractic Master's student and conducting a research study on headaches. The study focuses on the prevalence and impact of headaches have on students in terms of academic, social and family life. All faculties have been chosen and only the Durban campuses are included. A random selection of the course and year has been chosen. The (course and year) has been selected and I would like to request permission to utilize the last 15 minutes of the lecture period before the lunch break in order to address the class with as little disruption to the lecture as possible. The research study will be briefly explained to the students thereafter questionnaires and consent forms will be handed out to the students whom wish to participate. The researcher (me) will be present for the duration of answering the questionnaire.

You are more than welcome to accept or decline my request. If you have any further questions, you are more than welcome to email me or contact me at the Chiropractic Clinic on (031) 373 2205 or my supervisors Professor T Puckree (031) 373 2967 or Dr F Haffejee (031) 373 2395.

I look forward to hearing from you.

Kind regards

Jyotika Basdav

# Appendix 11A: Letter of Information (participants)

**LETTER OF INFORMATION**

**Title of the Research Study:** The prevalence and impact of primary headaches on students at the Durban based campuses of Durban University of Technology (DUT)

**Principal Investigator/s/researcher:** Miss J Basdav (B.Tech) currently registered for M Tech (Chiropractic)

**Co-Investigator/s/supervisor/s:** Professor T Puckree (PhD)

Dr F Haffejee (PhD)

**Brief Introduction and Purpose of the Study:**

Headaches affect almost half of the population and the effects that these headaches have on the individual in terms of the academic and the social aspects of ones' life has not been investigated previously. This study is a quantitative descriptive cross sectional survey which will provide information on prevalence of headaches within the student population at the Durban University of Technology (DUT). The effects that headaches have on academic performance, family lives and social aspects will also be investigated. In addition, this study will investigate whether headaches occur more frequently around the time of tests and exams and if so the cause and type of those headaches will also be identified.

**Outline of the Procedures:** If you participate in this study, you will be asked to discuss your headache history and the effects of these headaches on your daily life. It will take approximately 15 minutes to complete the survey.

You will be handed a survey document, which you will fill in and return to the researcher. Your name and other personal identifying information will not be on the survey document. The consent form that you sign will be kept separately from the survey document.

**Risks or Discomforts to the Participant:**

There will be no risks or discomfort if you participate in the study.

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

The benefit of participating in this study is that you may find comfort in talking about your headache experiences and that it may contribute to health advancements in South Africa. The researchers will benefit by publishing the data.

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

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

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

**Costs of the Study:** You will not be expected to pay towards any costs of the study.

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

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

**Research-related Injury:**

The research will not cause any injury to you.

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

Please contact the researcher, Jyotika Basdav (031 3732205), my supervisors, Professor T Puckree (031 3732967) or Dr F Haffejee (031 373 2395) if you have any queries.

You may also contact the Institutional Research Ethics administrator on 031 373 2900. Complaints can be reported to the DVC: TIP, Prof F. Otieno on 031 373 2382 or dvctip@dut.ac.za.

**General:**

Approximately 384 students will be recruited to participate in this study. Please note that participation is voluntary.

# Appendix 11B: Consent forms (participants)


**CONSENT**

**Statement of Agreement to Participate in the Research Study:**

- I hereby confirm that I have been informed by the researcher, Jyotika Basdav (name of researcher), about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: IREC: 002/15
- 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, Jyotika Basdav (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

| | | |
|---|---|---|
| Jyotika Basdav | | |
| **Full Name of Researcher** | **Date** | **Signature** |

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| **Full Name of Legal Guardian (If applicable)** | **Date** | **Signature** |

# Appendix 12

## The International Classification of Headache Disorders Criteria

Adapted from: The International Classification of Headache Disorders (IHC)

Primary headaches

- ***Migraine without aura***

Previously used terms: Common migraine; hemicrania simplex.

Description:

Recurrent headache disorder manifesting in attacks lasting 4-72 hours. Typical characteristics of the headache are unilateral location, pulsating quality, moderate or severe intensity, aggravation by routine physical activity and association with nausea and/or photophobia and phonophobia.

Diagnostic criteria:

A. At least five attacks 1 fulfilling criteria B–D

B. Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated)2,3

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.

Notes:

1. One or a few migraine attacks may be difficult to distinguish from symptomatic migraine-like attacks. Furthermore, the nature of a single or a few attacks may be difficult to understand therefore, at least five attacks are required. Individuals who otherwise meet criteria for 1.1 Migraine without aura but have had fewer than five attacks, should be coded 1.5.1 Probable migraine without aura.

2. When the patient falls asleep during a migraine attack and wakes up without it, duration of the attack is reckoned until the time of awakening.

3. In children and adolescents (aged under 18 years), attacks may last 2-72 hours (the evidence for untreated durations of less than 2 hours in children has not been substantiated). Therefore, at least five attacks are required. Individuals who otherwise meet criteria for 1.1 Migraine without aura but have had fewer than five attacks, should be coded 1.5.1 Probable migraine without aura.

- ***Migraine with aura***

Previously used terms: Classic or classical migraine; ophthalmic, hemiparaesthetic, hemiplegic or aphasic migraine; migraine accompagne´ e; complicated migraine.

Description:

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.

Diagnostic criteria:

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.

Notes:

1. When, for example, three symptoms occur during an aura, the acceptable maximal duration is 3-60 minutes. Motor symptoms may last up to 72 hours.

2. Aphasia is always regarded as a unilateral symptom; dysarthria may or may not be.

- ***Infrequent episodic tension-type headache***

Description:

Infrequent episodes of headache, typically bilateral, pressing or tightening in quality and of mild to moderate intensity, lasting minutes to days. The pain does not worsen with routine physical activity and is not associated with nausea, but photophobia or phonophobia may be present.

Diagnostic criteria:

A. At least 10 episodes of headache occurring on <1 day per month on average (<12 days per year) and fulfilling criteria B-D

B. Lasting from 30 minutes to 7 days

C. At least two of the following four characteristics:

1. bilateral location

2. pressing or tightening (non-pulsating) quality

3. mild or moderate intensity

4. not aggravated by routine physical activity such as walking or climbing stairs

D. Both of the following:

1. no nausea or vomiting

2. no more than one of photophobia or phonophobia

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

- ***Frequent episodic tension-type headache***

Description:

Frequent episodes of headache, typically bilateral, pressing or tightening in quality and of mild to moderate intensity, lasting minutes to days. The pain does not

Worsen with routine physical activity and is not associated with nausea, but photophobia or phonophobia may be present.

Diagnostic criteria:

A. At least 10 episodes of headache occurring on 1-14 days per month on average for >3 months (_12 and <180 days per year) and fulfilling criteria B-D

B. Lasting from 30 minutes to 7 days

C. At least two of the following four characteristics:

1. bilateral location

2. pressing or tightening (non-pulsating) quality

3. mild or moderate intensity

4. not aggravated by routine physical activity such as walking or climbing stairs

D. Both of the following:

1. no nausea or vomiting

2. no more than one of photophobia or phonophobia

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

### ❖ *Cluster headache*

Previously used terms: Ciliary neuralgia; erythro-melalgia of the head; erythroprosopalgia of Bing; hemicrania angioparalytica; hemicranias neuralgiformis chronica; histaminic cephalalgia; Horton's headache; Harris-Horton's disease; migrainous neuralgia (of Harris); petrosal neuralgia (of Gardner); Sluder's neuralgia; spheno-palatine neuralgia; vidian neuralgia.

Coded elsewhere:

Symptomatic cluster headache, secondary to another disorder, is coded as a secondary headache attributed to that disorder.

Description:

Attacks of severe, strictly unilateral pain which is orbital, supraorbital, temporal or in any combination of these sites, lasting 15–180 minutes and occurring from once every other day to eight times a day. The pain is 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.

Diagnostic criteria:

A. At least five attacks fulfilling criteria B–D

B. Severe or very severe unilateral orbital, supraorbital and/or temporal pain lasting 15–180 minutes (when untreated)

C. Either or both of the following:

1. at least one of the following symptoms or signs, ipsilateral to the headache:

a) conjunctival injection and/or lacrimation

b) nasal congestion and/or rhinorrhoea

c) eyelid oedema

d) forehead and facial sweating

e) forehead and facial flushing

f) sensation of fullness in the ear

g) miosis and/or ptosis

2. a sense of restlessness or agitation

D. Attacks have a frequency between one every other day and eight per day for more than half of the time when the disorder is active

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

Note:

1. During part (but less than half) of the time-course of 3.1 Cluster headache, attacks may be less severe and/or of shorter or longer duration