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RESEARCH ARTICLE:

Primary Headaches among Students in a South African University

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Abstract

Headaches are recognised as a common health-related complaint, impacting student attendance and overall productivity. This study determined the prevalence of headaches within a selected group of students and its effects on their health. A questionnaire was administered to undergraduate allied health science students in three selected departments at a university in South Africa. A total of 420 students were invited to participate in the study, of which 314 participated (75% response rate) – 311 students completed the questionnaire. Of these, 27.0% (n=84) did not experience headaches over the previous three months; the remaining 73.0% (n=227) were classified as having had migraine-type headaches (31.2%; n=97), tension-type headache (30.2%; n=94) or cluster-type headache (1.3%; n=04). Students suffering with migraine-type headaches indicated a decrease in capacity and missed classes more frequently compared to students who experienced tension-type headaches and cluster-type headaches respectively. Some of the respondents with migraine-type headaches (53.4%; n=31) did not continue with classes in order to rest. Migraine-type headache sufferers were more likely to take medication than those with other types of headaches (p=0.014). The findings of the study highlight the influence of headaches on students. Health knowledge and access to treatment is highlighted as a simple contributor to reducing headache prevalence and attaining overall health and well-being.

Keywords*: undergraduate students; headache; health; well-being*

Introduction

Although the factors contributing to student academic success may be complex, mental health is evidently a critical area of well-being that cannot be compromised in the student population and is impacted by a multi-dimensional array of contributors (Smitherman *et al.*, 2011). Consequently, the promotion of student success in higher education has evolved from focusing primarily on academic support to integrating academic support with factors that embrace the social, environmental and health determinants of academic success (Ngalo-Morrison, 2017; Matingwina, 2018). In South Africa, significant strides have been made to improve multi-faceted student support through programmes and interventions such as the Quality Enhancement Project (QEP) (Council of Higher Education, 2019), annual Teaching Development Grants (TDG) (Department of Higher Education and Training, 2014) as well as increased funding allocations towards ancillary student support in many institutions. Amongst students, headaches are recognised as a factor which may negatively impact on their lecture attendance, academic performance, and general quality of life and well-being (Osman Ali *et al.*, 2022; Basdav *et al.*, 2016; Al-Hashel *et al.*, 2020). Evidently, headaches, in being a common occurrence, challenges both mental and physical health (Kalaydjian and Merikangas, 2008; Larsson and Fichtel, 2014; Jensen and Stovner, 2008).

A headache is defined as an acute or chronic pain in the head (Baraness and Baker, 2022; Curry and Green, 2007) and is one of the most common health-related complaints in daily life, occurring across all ethnicities and genders (World Health Organisation, 2016). Headaches can be classified into three major categories according to

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the International Headache Society (IHS) (Olesen and Steiner, 2004): primary headaches (PHs), which can be further divided into sub-types - migraine, tension, and cluster-types, and secondary headaches, which occur secondarily to disease or clinical condition (Olesen and Steiner, 2004). A third category of headache includes cranial neuralgias, facial headaches and "other" headaches, however, not in the categorisation system (Olesen and Steiner, 2004). Studies reveal that PHs are the most widely experienced headache type (Olesen and Steiner, 2004a; Ahmed, 2012). Within this category, tension-type headaches (TTHs) are the most frequently occurring, followed by migraine-type headache (MTHs) and cluster-type headaches (CTHs) as the least common type of headache (Ahmed, 2012). The aim of this study was to determine the prevalence of the different types of headaches experienced by students and to establish the impact of headaches on daily life activities and productivity among a selected group of university undergraduate students.

Methodology

A cross-sectional, descriptive study design was applied using a closed-ended questionnaire. This was a cross-sectional study conducted by the Health Science Faculty at the Durban University of Technology. The study population comprised of all the undergraduate allied health sciences students in selected departments at the Durban University of Technology in South Africa. Using a simple random sampling technique, 420 undergraduate students, from three departments in the Health Sciences Faculty, i.e. Homeopathy, Chiropractic and Somatology programmes, were included in the study. The questionnaire initially developed was formulated using a similar study questionnaire on headache prevalence in sport performance (Williams and Nukada, 1994). It was then modified, based on the recommendations of an expert focus group, into the final questionnaire. The focus group, comprising two qualified practitioners, a senior student who has experience with questionnaire-based research, two senior academics with expertise in questionnaire design and development, the research supervisors and the researcher, was tasked to review the content of the questionnaire which had been developed. This enabled the focus group to assess the questionnaire presented to them, to clarify and modify the instrument based on the group discussion and reach consensus in producing a final questionnaire that adequately addresses the aims and objectives of the study.

A self-selection, voluntary process (non-probability sampling) was adopted, based on the participants' willingness to complete the questionnaire. An information letter was provided to each participant, detailing the nature of the study and the process involved, so that the participants understood the context of the study and what was expected of them. During the period of data collection, all students were on campus and a total of 314 questionnaires were administered, of which 311 were completed. The questionnaire consisted of three sections. Section A included information on the demographics, social history (smoking, alcohol consumption, social drugs, caffeinated drinks consumption, exercise, sleeping habits and stress) and medical history of the participant. Section B sought information on the history and nature of headaches experienced by the participant. This information was used purely for diagnostic purposes according to IHS criteria (Olesen and Steiner, 2004), the prevalence of which is reported. Section C recorded the participants' perception of how the headache influenced their productivity. The data was analysed using the Statistical Package for Social Sciences (SPSS), version 25. Most of the analyses were descriptive, using frequency tables and bar charts for categorical variables. To determine the factors associated with headaches, cross-tabulations and chi-squared tests were used for categorical risk factors, while t-tests were to determine quantitative risk factors. A p-value <0.05 was considered as statistically significant.

Ethical clearance was obtained from the Faculty of Health Science Research Ethics Committee, Durban University of Technology (FHSEC 031/07). Informed consent was obtained from all participants prior to their completion of a questionnaire on their demographics, social history and headache patterns (if any). To ensure confidentiality, the questionnaire was anonymous - it required no details that could be associated with any one participant - and was collected by the researcher soon after completion for immediate data entry and statistical analyses.

Results

The total study population was approximately 420 (200 chiropractic students, 150 somatology students and 70 homeopathy students), of which 314 questionnaires were returned (response rate 74.8%). Of the 314 questionnaires that were returned, 311 were completed and subsequently analysed. The results indicated that 83 (26.7%) male and 228 (73.3%) female respondents were analysed, respectively.

Table 1: Classification of headaches

Experiencing headaches	Frequency (n)	Percentage (%)

Yes	227	73.0
No	84	27.0
Gender		
Male	83	26.7
Female	228	73.3
Classifications of headaches		
MTH	97	31.2
TTH	94	30.2
CTH	4	1.3
No headaches	84	27.0
Non-primary headaches	32	10.3

Of the 311 of respondents, 27%, (n=84) had not experienced any form of headaches while 73.0% (n=227) had experienced headaches over the previous three months. Among those identified as PHs, MTH and TTH accounted for most of these – MTH (31.2%, n=97), TTHs (30.2%, n=94) – and CTHs only a small contributor (1.3%; n=04). Gender was also significantly related to the type of headache ($p<0.001$) with males encountering fewer headache experiences compared with females (Table 1).

Students who smoke or were former smokers were more likely to experience headaches than those who are non-smokers or have never smoked ($p=0.004$ and $p=0.003$, respectively). The number of cigarettes smoked per day was, however, not significantly associated with headaches ($p=0.679$) nor were any significant associations identified between alcohol consumption and headaches ($p=0.064$) or social drug use and PHs ($p=0.058$). The consumption of coffee proved to be a significant risk factor for headaches ($p<0.001$). Within the group of coffee drinkers, the amount of coffee and other caffeinated liquids (viz. soft drinks and energy drinks) consumed did not appear to have a significant effect on the number or severity of PHs ($p=0.12$)

Students that did not participate in sport or exercise experienced more PHs than those that did, although not statistically significant ($p=0.08$). Similarly, maintaining a regular exercise program seemed to lower the chances of an individual suffering from PHs, although not statistically significant ($p=0.1$). Having difficulty in maintaining a regular sleep pattern was significantly associated with PHs ($p=0.017$). Being under stress or a perceived stressful lifestyle was also significantly associated with PHs ($p=0.006$). Clinical depression appeared to be a medical risk factor significantly associated with headaches ($p=0.041$)

Table 2: Management of headaches and influence on class attendance/productivity by headache type

		Primary Headaches			***Non-primary headaches***
		Migraine % (n)	**Tension**	**Cluster**	
On campus	*Put up with headache and continue as normal* (n=174)	37.1 (66)	43.3 (77)	1,7 (3)	15.6 (28)
	Take headache medication and continue as normal (n=72)	56.7 (38)	28.9 (19)	0 (0)	14.9 (10.0)
	Stop whatever you are doing and rest (n=14)	35.7 (5)	28.6 (4)	7.1 (1)	28.6 (4)
	Leave campus head home to rest (n=39)	56.4 (22)	28.2 (11)	2.6 (1)	12.8 (5)
At home	*Put up with headache* (n=49)	36.7 (18)	49.0 (24)	0 (0)	14.3 (7)
	Take headache medication and continue as normal (n=140)	37.1 (52)	41.1 (58)	2.9 (4)	18.9 (26)
	Stop whatever you are doing (n=91)	47.3 (43)	34.1 (31)	2.2 (2)	16.4 (15)

In general, most students managed the headache and continued as normal. However, MTH sufferers were more likely to take headache medication than those with any other type of headache and students suffering from MTH were also more likely than other headache types to stop whatever they were doing and rest, i.e. not attend lectures. Students suffering from TTH and CTH were more likely to take headache medication and continue as normal when at home, whereas students suffering from MTH were most likely to stop what they were doing and rest when at home.

Discussion

Our findings show that females were significantly more affected by headaches than males. Halay *et al.* (2021) and Osman Ali *et al.* (2022) similarly reported that females were more affected by MTH than males and that the most common triggering factors for this were lack of sleep, stress, noise and fatigue, which accounted for 91.0%, 88.0%, 85.7%, and 84.6% of the population with MTH, respectively (Osman Ali *et al.*, 2022). It was also found from our study that females and males reported similar symptoms of MTH and TTH, however female students' experience of MTH were far more intense than male students. The disparity observed in the gender could be due to hormonal changes in female and social reaction to pain according to (Lynch *et al.*, 2007). In contrast to their findings, Waldie *et al.* (2014) and Vannatta *et al.* (2008) reported that the symptoms of MTH and TTH are not related to sex and that both sexes are likely to report almost equally.

The burden of headaches among teenagers and students in our study is consistent with similar studies conducted among university students in Sudan and Australia (Wöber-Bingöl, 2013; Albers *et al.*, 2015). For example, Halay et al. (2021), reported that among students who had at least two headache episodes, the prevalence of migraine was 40% and females were significantly more affected by migraine than males (Halay *et al.*, 2021). Whereas Osman Ali *et al.* (2022) reported that a large portion of the students continued attending classes while experiencing headaches (74.3%), even though headaches affected the majority of the students in many ways, especially for tests and/or examinations (92.7%). Furthermore, it was reported that experiencing a headache does not only affect class attendance, but also affect students' concentration at lectures if they managed to attend lectures, due to the tiredness brought on by the headache (Osman Ali *et al.*, 2022). Similarly, our findings revealed that the more severe the headache was, the greater it affected them and usually caused them to miss lectures as well as impacting the ability to perform normal activities of daily life, even missing family and social or leisure commitments.

In our study, the impact of PH, especially MTH among students was found to be significant: approximately two-thirds (73 %; (n=227) of the respondents with any PH and 37.1% (n=52) with MTH had to use self-prescribed analgetic medication to get relief from the severe headache. This is consistent with the findings of Osman Ali *et al.* (2022) who also reported that more than a third of the students (57.8, %) experienced headaches and used medication to get relief before they could continue with their studies. Similarly, a majority of the students felt too tired to continue and consequently had to pause and rest ((98.2%; $p < .001$) due to the headache whilst some continued to study using medication (57.8%). Other studies argued that the burden of MTH can totally disable students, at home or at school, from performing their usual activities, depending on the severity (D'amico *et al.*, 2003; Albers *et al.*, 2015). Be that as it may, some students still cope with their daily activities despite suffering from any type of PH (Basdav *et al.*, 2016), as was evident in our findings. Our findings revealed that drinking coffee is a significant risk factor for a headache ($p<0.001$), although the amount of coffee consumed did not have an increased effect. Drinking other caffeinated drinks such as soft drinks and energy drinks was not associated with primary headaches, hence a weak risk factor. However, other studies have linked the consumption of caffeinated drinks such as coffee, long periods of studying without taking a break and altered sleeping patterns, with neurological disorders (Osman Ali *et al.*, 2022; O'Callaghan *et al.*, 2018; Jee *et al.*, 2020). The amount of energy drinks consumed by students during study periods was not tracked in our study. However, students should be made aware of the risks associated with consuming large amounts of these drinks, as the majority of these respondents had experienced PH, which similarly have been shown in other studies (Osman Ali *et al.*, 2022; Mohamedosman *et al.*, 2021; Matingwina, 2018).

Conclusion

This survey reflects most previous research reports on the prevalence of headaches in the student population which could be a cause for concern. Consequently, the influence of headaches on student productivity and attendance at university - in order to evaluate the overall effect on the quality of student life — should be a subject that can be strengthened by further research. The reduced prevalence rate we observed, compared with other studies of this nature, may imply an association between headache prevalence and knowledge of, and access to treatment of allied health students. Consequently, further investigation should be undertaken to work toward enhancing student well-being through a strategy of health education and access as its focus.

To the knowledge of the authors, this is amongst the first studies to research prevalence of headaches, based on a fixed period of occurrence which would provide information based on consistent and repeated experiences over

that a period of time. Notwithstanding this, the classification of headache prevalence – based on a minimum of one headache experience per week over the past 6 weeks – may be considered a limitation as some participants may not have met this criterion for classification even though they may have experienced headaches during this period. A further strength of this study relates to the specificity of the selected group of participants (allied health science students) whose health behaviour may be different from other students. One of the limitations we identified is that the sample studied was reasonably limited in terms of its size and the indicators measured by the survey – thus the modest findings have been inclined to restrict us in our conclusions relating to the impact on mental health. Future research studies should be aimed at a greater sample size and a greater diversity of universities, if possible. Whilst such research should also be directed towards prevalence and risk factors, further exploration into the impact of headaches on student attendance, performance, overall productivity and quality of life, is recommended, as there are only a few studies in this area.

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