Prevalence of Primary Headache Disease and Associated Factors with it among Rift Valley University Adama Campus Students, 2019

Daniel Gebretsadik Woldegiorgis (✉ danielt@arsiun.edu.et)

Arsi University <https://orcid.org/0000-0002-8549-3961>

Tadesse Seda Bedasa

None

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Abstract

Background: Headache is a highly prevalent condition among University students than among other population groups but usually under-diagnosed and under-treated. Headache attacks lead to the loss of days of study and poor academic performance. However, the situation in Ethiopia is not well documented. Therefore, this research aimed to assess the prevalence of primary headache and associated factors among Rift Valley University Adama Campus Students.

Methodology: Participants were selected using stratified random sampling from three faculties of Rift Valley University, Adama. An interviewer-administered questionnaire developed by reviewing related literature and headache-attributed restriction, disability, social handicap, and impaired participation (HARDSHIP) questionnaire and used to collect the data. STATA 12 was employed for data cleaning and analysis. Variables with a P-value of 0.25 and below on the bivariate logistic regression were considered for Multivariate analysis. Finally, a P-value of < 0.05 was considered as statistically significant.

Results: A total of 240 students participated in this research. The mean age of the students was 23.5 ± 2.4 years, 57.5% of them were female, 85.4 single, and 67.50% of them were urban dwellers. Almost all (97.9%) of the respondents experienced a headache in their lifetime and 61.3% within the last 30 days. Among those who experienced headache 69 (28.75%) had a primary type of headache. Forty-one (17.1%) of the respondent's fulfilled the criteria for tension-type headache, 28 (11.7%) migraine, and 155 (64.58) had an unclassified type of headache. After controlling possible confounding effects of other covariates, age 23-28 year [AOR: 3.52, 95% CI= 1.69, 7.23], students from business faculty [AOR: 0.30, 95% CI= 0.11, 0.79], being from urban areas [AOR: 2.13, 95% CI=1.04, 4.35], had history of nausea and vomiting [AOR: 8.49, 95% CI= 3.12, 23.15] and bothered by bright light [AOR: 2.15, 95% CI=1.30,3.57] had a significant association with primary headache.

Conclusion: Headache is a common complaint among Rift Valley University Adama Campus students and it limits the daily activity of the majority of the sufferers. Students need proper education about treatment to ease their suffering and forestall complications.

Background

Headache is one of the most common neurological complaints encountered in clinical practice; most especially among the young population (1). It is one of the leading complaints seen in medical outpatient clinics and it is responsible for several visitations to the neurologist and general medical practitioners (2). It is one of the most common neurological disorders (2) and accounts for multiple visits to the general physician and neurologist. Its lifetime prevalence is quite high (82.7–93%) in the general population (3). Primary headache disorders, including migraine, tension-type, and cluster, are considered as major global health problems due to their high prevalence, chronicness and their substantial disability burden upon the sufferers (4, 5).

Migraine and tension-type headache (TTH) are the two most common types of headaches. Various studies have shown the prevalence of migraines to be 2.4%- 6% in males and 3.6%-15% in females and that of a tension-type headache the corresponding figures were 11.1%- 63% in males and 11.8%- 86% in females (3, 6). Mostly migraine and tension-type headache (TTH), have emerged as major global public health concerns, lead to widespread health loss, impaired quality of life, and much loss of productivity (5, 7, 8). They often begin in adolescence and have a high risk of developing into a chronic condition and persisting into adulthood (9, 10). Few studies have been done on specific groups of the population like nurses and medical and university students which have found the prevalence of TTH to be between 12.2% and 22.64% and of migraine to be between 2.4% and 33.8% (11–14).

Headache disorders, especially in student populations are usually under-diagnosed and under-treated conditions, and thus the headache attacks lead to losing days of study and worse academic performance (15). Absenteeism from school due to headaches has affected students and their academic performance. A global study indicates that within 4 weeks, a fifth of pupils with headaches, lose at least one complete day from school; another fifth leave school early at least once, implying the loss of part of a day and almost half miss out on other school activities (16). Furthermore, students have difficulty in maintaining attention during lessons and completing homework (11, 17, 18).

Several studies suggested different factors contributing to primary headaches. Among these sex being women to be significantly affected by headaches than men (14, 19–21), family history of headache was also found to be a common factor for headache in a study conducted among undergraduate Nigerian students (14), Brazilian undergraduate students (22) and study in Oman (11), consumptions of alcohol and smoking (23), stress and irregular sleep (24–26), sunshine and loud noise (27), lack of adequate vacation (28), low physical activity, and history of head trauma (29). In a study conducted in Northern India, Nausea/vomiting and scalp tenderness were the most common associated symptoms observed in students with recurrent headaches whereas migraineurs complained of photophobia/phonophobia along with nausea/vomiting, which is already documented associated symptoms confirming the diagnosis of migraine (30).

There is a scanty data on the prevalence of primary headaches in sub-Saharan Africa in general and Ethiopia in particular including in this study area. Therefore, this study is conducted to assess the prevalence of primary headache and associated factors among RVU Adama Campus students.

Methodology

Study area

Rift Valley University is a private higher learning institution that was established in October 2000 in Adama Town. It began to operate with 5 diploma programs of study, and about 154 evening students and five part-time academic staff. The first batch of students was graduated in August 2002. At present RVU

Adama campus enrolled more than three thousand students in different fields both in Degree and Masters programs both in regular and extension.

Study design and period

An institution-based cross-sectional study was used to determine the prevalence of headache and associated factors among RVU Adama Campus students from October 7 to 14, 2019.

Sample size determination

The sample size calculation was done using single population proportion formula with the following assumption: 81.1% prevalence of headache in the last 12 months among Godar University Health Science students (28), a 5% precision, 95% level of confidence, and 10% non-response rate. Samples of 258 students were required for this study

Sampling procedure

In this study, by considering faculty of study and year of enrolment stratified random sampling was used. After obtaining the verbal informed consent each of the students was randomly selected when they were attending class.

Data collection

The data collecting tool was checked and evaluated for its appropriateness by doing a pre-test on 20 extension students of RVU. A half-day training given for data collectors, the objectives of the study and the diagnostic criteria of the International Headache Society (IHS) (31) data was collected from the randomly selected students under the supervision of the principal investigators using English version structured questionnaire. The first part contains the sociodemographic characteristics of students. The second part of the questionnaire was about the presence of headaches, followed by questions specific for headache sufferers like the number of headache episodes per time and the impact of headache on the daily activity of students. The third parts of the questionnaire were about triggering factors of headache.

Data processing and analysis

After proper cleaning, cross-checking, and coding of data descriptive as well as inferential statistics of the study were analyzed by using STATA 12. Bivariate and multivariate logistic regression was used to identify factors associated with the prevalence of headache among students. The variables with a p-value of less than 0.25 in the bivariate analysis were entered into the multivariate model using the enter regression method. Model fitness was checked using Hosmer and Lemeshow goodness of a fit test.

Data quality control

Beyond Pretesting the questionnaire and training of the data collectors, the data collection process was closely monitored and supervised by the principal investigators. The collected data were reviewed and checked for completeness before data entry and incomplete data were discarded.

Result

Socio-demographic characteristics

A total of 240 students from the RVU Adama Campus participated in this study. The majority of the patients 57.5% were females, 50.4% of them were in the age group between 17 to 22 years with the mean (SD) 23.51 ± 4.20 years. More than two-thirds of the participants, 67.5%% were from urban dwellers, 63.3% were from the Business and Social Science Department, the majority (85.4%) of them were single or never married and 65.8% of them were attended for less than two years in the University (Table 1)

Table 1
Socio-demographic characteristics of RVU
Adama Campus students, 2019

Variable	Frequency	%
Sex		
Male	102	42.5
Female	138	57.5
Age		
17–22	121	50.4
23–28	97	40.2
29–34	15	6.5
≥ 35	7	2.9
Place of birth		
Urban	162	67.5
Rural	78	32.5
Marital status		
Married	35	14.6
Single	205	85.4
Your faculty		
Health	32	14.2
Business	152	63.3
Technology	54	22.5
Year of education		
First	44	18.3
Second	114	47.5
Third	60	25.0
Fourth	18	7.5
Fifth	4	1.7

Headache characteristics

Among respondents who had experienced headache about half 52.3% of them had unilateral, throbbing/pulsating, headache persists for hours (50.6%), the headache was quite bad for them when occurs (53.6%) and sometimes impaired their routine activities (53.2%) (Table 2).

Table 2
Characteristics of Headache among RVU Adama Campus
Students, 2019 (n = 235)

Variable	Frequency	%
Headache side		
Unilateral	123	52.3
Top of head	14	5.9
Around the eyes	27	11.6
Front of head	50	21.3
Back of head/neck	21	8.9
How long this headache usually last		
For a few minutes	63	26.8
Stayed for hours	119	50.6
Stayed for days	50	21.3
Never goes away	3	1.3
How bad this headache for you?		
Not much bad	82	34.9
Quite bad	126	53.6
Very bad	27	11.5
Nature of headache		
Throbbing/Pulsing	123	52.3
Achy	21	8.9
Tight	50	21.3
Stabbing	37	15.7
Shooting	4	1.7
Impairment of routine activities		
No impairment	77	32.8
Sometimes impaired	125	53.2
Complete impairment	33	14.0

Associated symptoms and triggering factors

Among 235 respondents who experienced headaches only 12.8% had nausea and/or vomiting and only 27.3% of them received treatment for their headache. Concerning the triggering factors for their headache about half (48.9%) of them reported exercise, 3.8% flashing light, and 2.9% due to noise. A family history of similar headaches was present in 32.9% of students (Table 3).

Table 3
commonly associated symptoms and triggering factors for
headache RVU Adama Campus, 2019 (n = 235)

Variable	Frequency	%
Presence of nausea/ vomiting		
No	205	87.2
Yes	30	12.8
Ever take a drug to treat their headache		
No	171	72.8
Yes	64	27.2
Exercise Triggering your headache		
No	120	51.1
Yes	115	48.9
Flashlight as trigger		
No	113	48.1
Not sure	113	48.1
Yes	9	3.8
Noise as trigger		
No	77	32.8
Not sure	151	64.3
Yes	7	2.9
Family History		
Yes	79	32.9
No	161	67.1

Almost all (97.9%) of the respondents reported ever had any type of headache. The 1-year headache prevalence was 84.2% (n = 240) and 61.3% of them had a headache in the last 30 days. Among those who experienced headache 69 (28.8%) had a primary type of headache. Forty-one (17.5%) of the respondent's fulfilled the criteria for tension-type headache, 28 (11.9%) migraine, and 155 (65.9) had an unclassified type of headache.

Factors associated with headache

In bivariate analysis Age, place of birth, faculty in which they belong, respondents who had impaired daily activities, bothered by flashlight/daylight, noise, and reported nausea and or vomiting had a significant association with a primary headache at a P. value of 0.05. After controlling possible confounding effects of other covariates four factors remained as significant independent predictors of primary headache in multiple logistic regression adjustment: Age, faculty in which they belong, their place of birth, had nausea or vomiting, and bothered by flashlight had a significant association with primary headache (Table 4).

After controlling possible confounding effects of other covariates, respondents with the age group of 23–28 year 3.5 times more likely to have primary headache compared with the age group of 17–22 years [AOR: 3.52, 95% CI = 1.69, 7.23], students from business faculty were 70% less likely to develop primary headache compared with health faculty respondents [AOR: 0.30, 95% CI = 0.11, 0.79], respondents from urban areas were 2 times more likely to develop primary headache compared with rural dwellers [AOR: 2.13, 95% CI = 1.04, 4.35], respondents who had a history of nausea and vomiting 8.5 times more likely to have primary headache compared with no nausea and vomiting [AOR: 8.49, 95% CI = 3.12, 23.15] and respondents who were bothered by flashlight 11.4 times more likely to have primary headache compared with who do not bother by flashlight [AOR: 11.4, 95% CI = 1.72, 75.9] had a significant association with primary headache (Table 4).

Table 4
Factors associated with primary headache RVU Adama Campus students, 2019

Variable	Headache		COR (95%CI)	AOR (95%CI)	P. Value
	Yes	No			
Age					
17–22	23	98	1	1	0.001
23–28	10	57	2.99 (1.62, 5.49)	3.52 (1.69, 7.29) *	
29–34	4	11	1.55 (0.45, 5.31)	0.67 (0.13, 3.39)	
≥ 35	2	5	1.07 (0.31, 9.34)	2.26 (0.32, 16.16)	
Any treatment					
Yes	27	37	1	1	0.233
No	42	129	2.24 (1.22, 4.11)	1.59 (0.74, 3.45)	
Place of birth					
Rural	28	50	1	1	0.039
Urban	41	121	1.65 (0.92, 2.95)	2.13 (1.04, 4.36) *	
Faculty					
Health	18	16	1	1	0.015
Business & Econ.	39	113	0.31 (0.14, 0.66)	0.30 (0.11, 0.79) *	
Technology	12	42	0.25 (0.10, 0.64)	0.41 (0.14, 1.26)	
Family History					
No	40	121	1	1	0.122
Yes	29	50	1.75 (0.98, 3.14)	1.78 (0.86, 3.72)	
Nausea/Vomiting					
Yes	5	25	6.36 (2.79, 14.51)	8.49 (3.12, 23.15) *	0.0001
No	36	169	1	1	
Effects on daily activity					
No	15	62	1	1	0.182
Not sure	40	85	1.71 (0.95, 3.10)	0.51 (0.82, 2.37)	
Yes	14	19	12.3 (2.41, 63.07)	3.14 (.99, 9.99)	0.050

Variable	Headache		COR (95%CI)	AOR (95%CI)	P. Value
	Yes	No			
Affected by flashlight					
Yes	7	2	12.32 (2.41, 63.1)	11.4 (1.72, 75.9) *	0.012
Not sure	37	76	1.71 (0.95, 3.10)	2.00 (0.97, 4.14)	0.062
No	25	88	1	1	

Discussion

Our study results showed the prevalence of lifetime headache and headache in the last 12 months was 97.9% 84.2%, respectively. Which is higher than a study conducted among University of Gondar students, 81.11 and 67.22% respectively (32), in dental students of a tertiary care teaching dental hospital in Northern India, 63.9% (30) and Pharmacy Students, Al Ain University, Abu Dhabi which was 82.6% (33).

Among those experienced headaches in the last 12 months, only 28.8% (95% CI: 22.9, 34.6) fulfilled the criteria of primary headache. This finding is similar to previously done researches in Addis Ababa among the Local community (34). However, this value is much lower than to the current global prevalence of 47% (35), Ojini et al. (14) reported 46% at a teaching hospital, Tertiary Health Facility in Lagos, Nigeria 39.3% (36), and a much higher prevalence of 74.5% had been documented among Brazilian undergraduates (22). While our finding was higher than a study conducted by Takele et. Al. (37) reported 16.4% among textile workers. The possible difference could be due to the study design and small population sizes in this study and cultural and environmental differences with the present study

The prevalence of the subtypes of headache was also noted and 17.1% with 95% CI (12.5, 22.1), of them had TTH and 11.9% with 95% CI (7.5, 15.8) of them had a migraine. This finding is similar to a study conducted in Addis Ababa by Mihila et. Al. 17.7% and 20.6% for migraine and THA respectively (38). But lower compared with a study conducted in Egypt 24.5% of them had TTH and 17.3% migraine (39), In Euro-light Project (40, 41), the mean prevalence of migraine in Europe was 14.7%, while the overall prevalence of TTH was 62.6%. In Georgia, the prevalence was 37.3% for TTH and 15.6% for migraine (42). This could be attributed to different methodologies and cultural diversity.

Our study documented a prevalence rate of migraines was 11.9% which is similar to a study in Benin among University students 11.3% (43), 12.4% among Turkey students (44), and 12.2% among students in Oman (11). But a considerably high compared to 'Ojini' 6.4% (14) and previous community-based studies in Ethiopia, 3–10% (25, 34). However, the findings of this study were very low compared with a study among Kuwaitis medical students 27.9% (45) and the study of Florianopolis in Brazil, which was 22.1% (46). The difference in the prevalence can be attributed to the racial, environmental, nutritional, psychological, and social factors of a particular population contributing to the headache. The other

explanation could be due to the rigorous and strenuous medical program could account for the higher prevalence of headaches among medical students.

The prevalence rate of TTH in our study was 17.1%. This finding is much lower than the 47.7% documented in Zimbabwe (47), 25.5% by Quesada-Vázquez et al. in Cuba (48), and Russell reported 86% (49). There has been wide variations and differences in the epidemiology of TTH across different cultures (35). These variations may result from differences in study design, study population, inclusion or exclusion of cases of infrequent episodic TTH, and overlap with probable migraine, cultural and environmental differences, or even genetic factors (50).

Although, sex has no significant association with primary headache in this research the prevalence of primary headache was a little bit higher in women compared with men as has been previously reported (19–21). This has been attributed to the effect of female sex hormones specifically estrogen, genetics, and differences in response to stress and pain perception or psychological burden on females.

The majority of respondents with primary headache in this study was with the age group of 23 and 28 years. This age group has a significant association with primary headaches. It is consistent with the findings in the literature that locate the maximum of the migraine prevalence is at a younger age (23). This may be explained by the fact that 90.8% of surveyed students are 16 to 29 years old.

The finding of this research the prevalence of primary headache was high among urban dwellers compared with rural and showed a significant association between respondents from urban and primary headaches. This is supported by a study conducted in Ethiopia in 2003 & 2008 (25, 37). This might be due to the magico-religious perception of diseases and opting for traditional healing in rural communities may hinder the reporting of headaches. It is also the rural people who have a greater tolerance for pain.

The most common trigger factor for headache in this study was the presence of nausea and vomiting and sunshine or flashlight but different kinds of the literature indicated stress and lack of sleep in nonmedical students were stress and loud noise (24–27, 30).

Limitation of the study

The limitations of this study included sample size, in terms of both the students who were participated and the facilities that were used, which thereby limited the general applicability of the results. All data is based on self-reporting hence the study might be affected by reporting bias. Also, the study is prone to recall bias since most of the questions require recalling past experiences.

Conclusion

Headache is a common complaint among Rift Valley University Adama Campus students. The lifetime prevalence of any headache was 97.9% and 28.8% of them fulfilled the criteria of primary headache. Age, faculty in which they belong, their place of birth, had nausea or vomiting, and bothered by flashlight had a

significant association with primary headache. Students need proper education and support about treatment to ease their suffering and forestall complications.

Abbreviations

HARDSHIP: Headache-Attributed Restriction, Disability, Social Handicap, and Impaired Participation; HIS: International Headache Society; IRB: Institute Review Board; RVU: Rift Valley University; SD: Standard Deviation; TTH: Tension-Type Headache

Declarations

Availability of supporting data

The datasets generated and/or analyzed during the current study are not publicly available due to some privacy reasons, but part of the raw data set will be available from the corresponding author upon reasonable request.

Ethical Approval

An ethical approval letter was obtained from the institutional review board (IRB) of RVU. Each study participant was adequately informed about the purpose, method, anticipated benefit, and risk of the study by the data collectors. Verbal informed consent was obtained from study participants and anonymity was maintained to ensure confidentiality. The respondents' right to refuse or withdraw from participating in the interview was fully maintained and the information provided by each respondent kept strictly confidential.

Consent

The data collectors read and explain the consent form until the respondents understood all and once willing to participate the data collector sing for reading and asking consent before an interview

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Conflicts of Interest

The authors declare that they have no conflicts of interest.

Author Contributions

Daniel G/Tsadik were responsible for review of the literature, conceptualization, methodology, investigation, supervision for project administration, data management, formal analysis, original draft preparation and for writing.

Tadesse Seda contributed to review, validation of the questionnaire, assisting in data analysis, revising the article and gave final approval of the version to be published, and also agree to be accountable for all aspects of the work

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Figures

Figure 1

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