Epidemiological, Clinical, and Pharmacological Aspects of Headache in a University Undergraduate Population in Palestine

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Abstract

Background and Objectives: Headache is one of the most common complaints in clinical practice. Few studies regarding headache in university students have been investigated in the in the Middle East. The objective of this study was to explore the prevalence, clinical characteristics, triggering factors and treatment options of headaches in university undergraduate students in Palestine/ Middle East. **Methodology:** Data were collected by interviewing a sample of 1900 students. The Headache Assessment Quiz was used to measure quality and severity of headache and to collect data on triggering factors and symptom management. **Results:** A total of 1808 (95.2%) reported having at least one headache episode in the previous year. A positive family history of headache was found in 40% of students. The prevalence rate of frequent headache (≥ 2 episodes/ month) was found in 1096 (60.9%) students; 613 females (55.9%). Of those having frequent headaches, 228 (20.8%) experience moderate to severe episodes, 341 (31.2%) have pulsating, throbbing and pounding pain, and 274 (25%) have unilateral pain. The most common triggering factors among students with frequent headaches were: tension/ stress (78.2%) and sleep deprivation (75.4%). Less than 5% of students sought medical assistance during headache episodes. Most of the students (79.1%) reported self- therapy with single analgesic (53.4%), herbs (10.2%) or combination (15.5%) while 20.9% reported using no medication of any type to decrease pain. Acetaminophen (48.5%) followed by ibuprofen (4.9%) were the most commonly used non-prescription analgesic drugs **Conclusion:** Headache is a prevalent symptom in the college age population. Further research is needed to determine the prevalence of specific types of headaches. Health care providers are required to educate this population as well as to assist students in properly diagnosing and treating headache types.

1. Introduction

Headache is a very common symptom reported to medical practitioners. The high frequency and associated morbidity made such symptom an important general health problem [1-3]. Severe and frequent headache episodes constitute a significant burden for both the individual and the community. Headache can cause deterioration in productivity and quality of life [4]. Population-based studies of headache in the general population are numerous [5-10]. However, little is known about its prevalence and characteristics in specific populations, particularly in Palestine/ Middle East, where conflict and instability constitute a major cause of tension and stress.

Several studies have been conducted on headache frequency in young adults. A study conducted in Norway of adolescents between 12 and 19 years old found that 69.4% of boys and 84.2% of girls had experienced headaches within the past year and that over 29% reported recurrent headaches [11]. In a second study, Brazilian college students were surveyed for characteristics of migraine or tension-type headache. Of 1000 participants, 25% experienced migraines and 32.9% reported tension headaches. It was noted that migraine sufferers demonstrated a 62.7% decrease in school productivity, compared with a 24.4% reduction in those with tension headaches [12]. A third study by Linet et al interviewed 10 169 adolescents and young adults aged 12 to 29 years in a defined population sample. Of those who reported one or more episodes of headache in the previous 12 months, approximately 85% of the men and 72% of the women had never seen a doctor because of problems related to headache [13].

Treatment of headache usually includes medication and non-medication approaches like behavioral and diet therapy. The most common medications used for headaches are analgesics. However, overuse of analgesics might be harmful. A study has shown that up to 4% of the population overuses pain medication for headaches [14]. In many situations, patients with headache do not seek medical attention and often seek self-management which is often inappropriate. Göbel and Braun determined why patients with headache do not seek medical attention. They found that 38% of those with headache had never seen a doctor for this complaint. They observed that the older the respondent, the higher the likelihood of seeking medical intervention. Fifty-one percent of the patients did not see a doctor for the complaint because they did not consider the symptoms important, 41% preferred self-medication, 15% did not trust doctors, and 12% had given other reasons such as lack of time and laziness [15].

Because of lack of information regarding headache and its treatment pattern in our community, we undertook this study with the following aims: (1) to explore prevalence and management of headache among undergraduate university students (2) to assess the quality and triggers of headache episodes among this specific population, and (3) to compare our findings with those obtained from communities with lesser political and national conflicts. The ultimate goal of this study was to determine whether the prevalence and quality of headache in this specific population warrants further studies and attention by health policy makers. Furthermore, headache research on specific categories of the population, like university students, might be useful in the identification of factors that influence the frequency and severity of headache.

2. Methodology

2.1 Study population

This is a cross-sectional, questionnaire-based, observational study carried out during the months of January and February 2009 among undergraduate students enrolled at An-Najah National University in Nablus. Approval of research ethics committee was obtained before the initiation of the study. The study area, An-Najah National University, is the largest university in Palestine with approximately 17,000 full-time undergraduate and graduate students. All the students enrolled in the University were of the same ethnic background. The university offers medical and non-medical education through its 16 different colleges.

2.1 Study tool: the questionnaire

A structured questionnaire containing both open-ended and close-ended questions was developed for this study (appendix 1). The questionnaire contained four sections. The first was the demographic section which contained questions regarding age, gender, type of colleges, place of residence, wearing eye glasses and family history of headaches. In this section, there was also a question investigating whether the student has experienced headache episodes in the previous year and the frequency of these episodes. The term headache included all forms of headache and was defined to the participants as any acute or chronic pain experienced within the cranial cavity. The second section of the questionnaire was used to assess the quality and severity of the headache episodes through ten questions. This section was mainly based on the Headache Assessment Quiz (HAQ), a commonly used instrument developed by GlaxoSmithKline (copyright 1197 – 2009) [16]. The questions in this section were presented as a four-point Likert-type scale for eliciting severity and quality of headaches with possible responses including: always, usually, rarely and never. The third section of the questionnaire contained 14 yes – no questions regarding potential headache triggers (See appendix 1). The final section in the questionnaire contained questions related to management and medications consumed by the participants during the episode.

2.3 Collection of data

Data were collected by means of an interview based on the questionnaire described above. The interview was carried out under the supervision of the first author and by previously trained senior pharmacy students. The students were recruited at more than ten various sites in the university campus to assure recruitment of students from both gender and from different colleges. Confidentiality was assured to all students who were asked to volunteer and none were reimbursed. Collection of data continued until 1900 interview were made. Completion time for each interview was approximately ten minutes.

2.4 Statistical analysis

All data were coded, entered, and then analyzed using the Statistical Package for Social Sciences program (SPSS), version 16. Descriptive results were expressed as frequency, percentage, and mean ± S.D. *P*-values < 0.05 were accepted as statistically significant. Students with headaches were classified as having frequent (≥ 2 episodes/ month) or infrequent (≤ 1 episode/ month) headaches. Pearson chi square was used to test for significant relationships between categorical variables.

3. Results

3.1 Demographic characteristics of the participants

In this study, a total of 1900 students agreed to participate and were interviewed, giving a response rate of 99%. The number of participants represents 10% of the total number of students enrolled in the university. The participants were equally distributed among various academic levels. Half of the students were females giving an equal male: female ratio. The average age of the students was 20.4 ± 1.7 years (range, 17 – 32 years). The majority (57%) of the participants came from the suburbs. More than one third of the participants (37%) were living in dormitories and 24.9% were using eye glasses.

3.2 Frequency of headache

It was noted that 92 (4.8%) students reported not having any headache episode in the previous year while 1808 (95.2%) of the students experienced at least one episode of headache in the previous year. When asked about the frequency of their headache episodes, 462 (25.6%) experienced one episode of headache per week, 634 (35%) experienced 2 - 3 episodes of headache per month. In total, 1096 (60.6%) participants reported experiencing frequent headaches (≥ 2 episodes per month). Students with frequent headaches were 613 (55.9%) females and 483 (44.1%) males. A total of 712 (39.4%) students reported that their headache episodes occur infrequently (≤ 1 episode/ month). Data regarding the frequency of headaches is shown in scheme 1.

3.3 Characteristics of headache

We focused our analysis of headache on the 1808 students who reported having headache episodes in the previous year. We further analyzed and compared the severity and quality of headache episodes in the group of students having "frequent" headaches (1071; 56.4%) with those having "infrequent" headaches (712; 37.5%). Students with frequent headaches had episodes with the following characteristics compared to those in students with infrequent headaches: moderate-to-severe pain (20.8% versus 13.8%; P = 0.001), throbbing and/or pulsating pain (31.2% versus 25.1%; P = 0.005), unilateral episodes (25.0% versus 20.9%; P = 0.045), pain worsen upon bending or movement

(34.1% versus 27.8%; P = 0.006), have nausea (11.4% versus 8.7%; P = 0.066), bothered by noise/ sound (47.4% versus 42%; P = 0.025), bothered by light (19.2% versus 15.3%; P = 0.036), need to limit or avoid daily activity (44.7% versus 38.5%, P = 0.009), want to lie down in a quiet, dark room (43.1% versus 40%; P = 0.2) and finally, have blurred vision (16% versus 13.2%; P = 0.11). Comparative results are shown in table 1.

3.4 Headache triggers

All participants reported having headache episodes were inquired about headache triggers. The most commonly reported trigging factors were: Stress or tension (78.2%), sleep deprivation (75.4%), intense or strong light/ noise (59.4%), mood changes (53.5%) and missing meals (47.5%). Comparison of triggering factors among students with frequent headaches and those with infrequent headaches were carried out (Table 2). Results showed that the following triggers were significantly associated with frequent headaches compared to infrequent headaches: strong and intense light/ noise (62% versus 55.3%, P = 0.005), weather changes (51% versus 40.9%; P = 0.001), allergies or sinus pain/ pressure (40.8% versus 36.1%; P = 0.046), stress or tension (80% versus 75.3%; P = 0.017), sleep deprivation (77.6% versus 72.2%; P = 0.01), , missing meals (51.7% versus 41%; P = 0.001), lack of caffeine (25.2% versus 18.4%; P = 0.001), entering certain places (34.2% versus 28.7%; P = 0.013), and finally, changes in mood/ excitement (56.8% versus 48.5%; P = 0.01),

Analysis of results showed that wearing eye glasses is significantly associated with frequent headaches (27.6% versus 22.8%; P = 0.022). A positive family history of headache was present in 40% of the students. Those with frequent headaches had significantly higher family history of headaches than those with infrequent headaches (42.5% versus 34.5%; P = 0.001). Furthermore, those with frequent headaches tend to experience aura more commonly than those with infrequent headaches (31.3% versus 23.6%; P = 0.001). Finally, in females, menstrual cycle was not a significant triggering factor in females with frequent headaches compared tothose with infrequent headaches (38.8% versus 34.1%; P = 0.17).

3.5 Medications used for headache management

When the participants were asked about what they do when they have headache episodes, less than 5% reported that they sought medical assistance during headache episodes and one third (79.1%) reported that they would self treat with an analgesic, herbal remedies or combination. Students were also asked to list the medications that they use for self therapy for headache episode. The most frequently reported over-the-counter (OTC) remedy was acetaminophen, with 48.5% of the students surveyed were using the drug alone while 15.5% were using the drug in combination with other OTC remedies or herbs. Other OTC medications chosen by the participants included various dosage forms and strengths of ibuprofen which was used alone (4.9%) or in combination with others

(14.4%). Herbal and home remedies were chosen by 10.2% as mono therapy and 1.6% with other medications. Surprisingly, 20.9% of the students indicated that they took no medications for headache relief. Those patients reported that they to lie down or isolate themselves from the environment to relive headache. Others stated that they did not do anything at all to relieve pain. Approximately 81% of those with frequent headaches reported that their headache episodes subside within less than four hours even without medication while 19% reported that their episodes will not subside without medications. In contrast, 88% of those with infrequent headaches reported that their episodes subside within four hours without medication and that 13% reported the need for medications to abort the episode.

4. Discussion

This study is the first of its type in Palestine and one of the few studies carried out in the Middle East area. This study showed that 95.2% of the surveyed students had at least one headache episode last year. This study also showed that 20.8% of students with frequent headaches had their episodes as moderate-to severe pain. A study carried out in medical students in Oman in the gulf area has shown that the last year prevalence of headache was 96.8% [17]. This is slightly higher than that reported by Amayo et al and Ojini et al who reported an 88% and 46% respectively for last-half-year prevalence of headache in Nigeria [18, 3]. Other studies carried out using similar methodology yielded similar results. Blau showed that only 2.1% of all pre-clinical medical and dental students had never experienced any headache [19]. A Portuguese and Spanish studies reported 92% last year prevalence of headache [20, 21].

In this study, 60.6% had frequent headaches (≥ 2 episodes/ month). This is higher that that reported by other studies. Curry et al, carried out a questionnaire based study in a university undergraduate population in Tampa Florida showed that approximately 51% of the surveyed students reported more than 2 episodes of headache per month [22]. A study carried out in school children aged 12 – 20 years in Karachi/ Pakistan showed that the prevalence of headache was 85.7% and that nearly half of them had a frequency of 3 or less episodes per month and that the students with frequent headaches had most of the characteristics that accompany migraine type headaches [23].

In this study, the prevalence of frequent headache in females was higher than that in males (55.9% versus 44.1%; $P < 0.001$). This is comparable with other studies [1, 24]. In this study, in both frequent and infrequent headache sufferers, genetic was a strong component. This finding is similar to other studies which have showed positive family history of headaches. In this study, an overall of 40% reported a positive family history of headache. In a study carried out in Oman/ Arabic Gulf, 58% reported a positive family history of headaches [17]. A study carried out in Qassim/ Saudi Arabia among adults showed a 40% positive family history among individuals with primary headaches [25]. Our results showed that stress/ tension followed by sleep deprivation were the most common triggering factors for headache regardless of the frequency of headache. This is expected given the very volatile political situation, occupation, limited freedom of mobility, very harsh economic situation and the violence which all created a lot of pressure and tension.

Our data showed that acetaminophen, which is available in Palestine in at least ten different brand names was the most popular analgesic used by students to self –treat headache episodes. It was surprising that none of the students interviewed reported the use of anti-migraine prescription drugs. It is possible that most of the students with migraine have not been diagnosed before. In fact, a study reported that migraine often goes undiagnosed and that 60% of patients with migraine are deprived of anti-migraine treatment [26]. In this study, very low percentage of students sought medical advice upon headache episodes. In a study carried out by Sanvito et al, only 7.1% of the students with headache sought medical attention upon episodes [2]. Other studies showed similar low percentages. Merikangas et al noted that only 9.1% of those with migraine with aura sought medical attention [27]. The use of herbs reported in this study to self-treat headache episodes was not surprising given the strong religious and cultural beliefs in herbs in Middle East. A study by Sawlaha et al indicated that 33.9% of the university students in Palestine reported using herbal remedies in self-therapy and those most herbal remedies were used primarily for the treatment of headache, [28].

Our study has both strengths and weaknesses. The population studied was large and data were collected by personal interview. However, this study as similar results, relied exclusively on information provided by the respondents about their headache which itself is a subjective and non-measurable complaint. This study should be expanded to include additional screening questions that focus on whether the student has had a headache assessment performed by a medical provider and what specific diagnostic studies, if any, the student has received in the past. In addition, more information is needed to determine the reliability and validity of the HAQ instrument. In conclusion, hheadache is a prevalent symptom in the college age population. Further research is needed to determine the prevalence of specific types of headaches. Health care providers are required to educate this population as well as to assist students in properly diagnosing and treating headache types.

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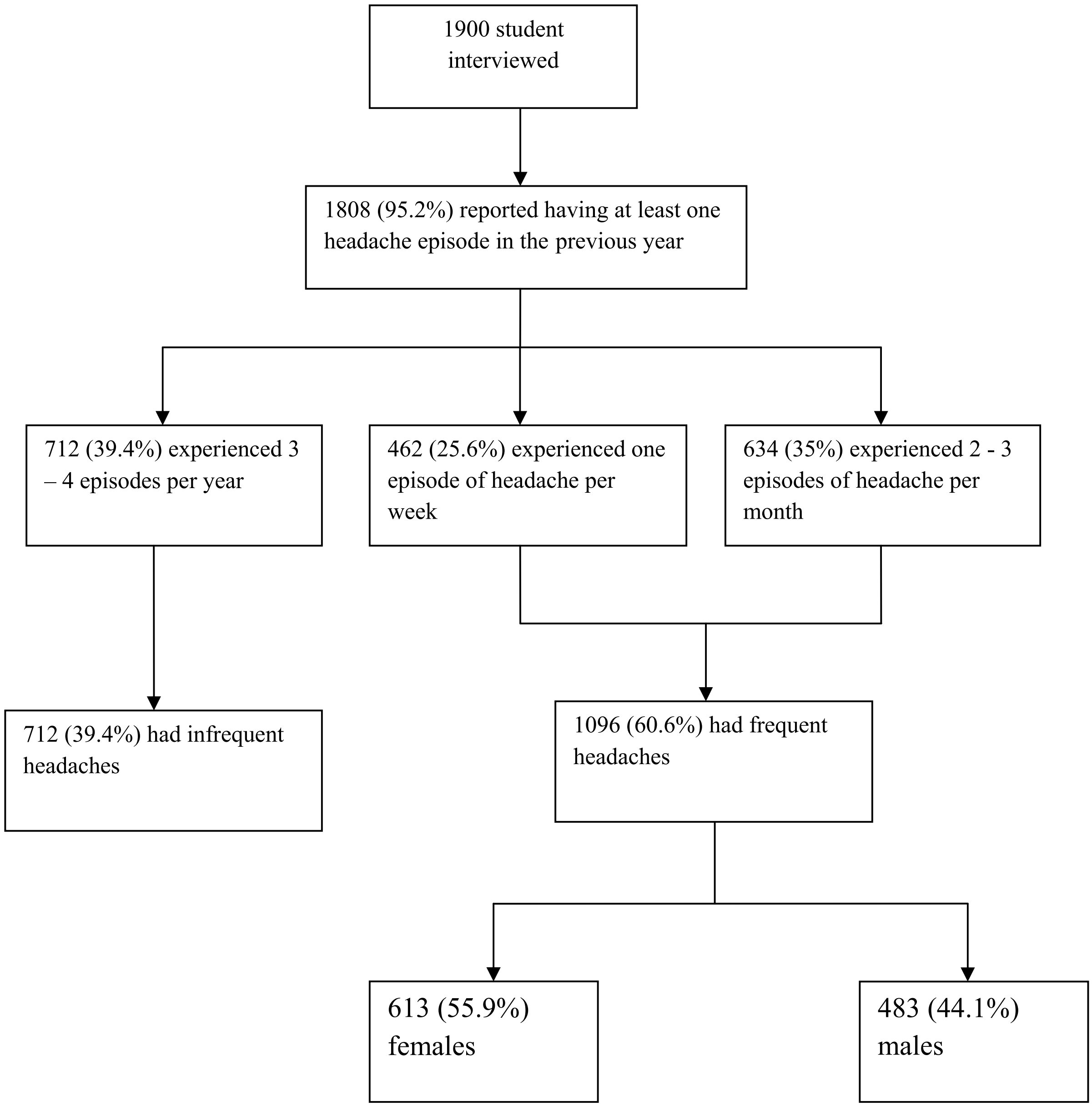

Scheme 1. Frequency of headache.

Table 1. Quality of Headache stratified with frequency.

Characteristics of headache episode	Frequent headache ≥ 2 episodes/ month N = 1096	Infrequent headache ≤ 1 episodes/ month N = 712	P value
Have moderate to severe pain	228 (20.8%)	98 (13.8%)	< 0.001
Have pulsating, pounding or throbbing pain	342 (31.2%)	179 (25.25)	0.005
Have worse pain on one side of your head	274 (25%)	149 (20.9%)	0.045
Have worse pain when you move or bend over	373 (34.1%)	198 (27.8%)	0.006
Have nausea	125 (11.4%)	62 (8.7%)	0.066
Have sensitivity to or bothered by sound/ noise	299 (42%)	519 (47.4%)	0.025
Have sensitivity to or bothered by light	201 (19.2%)	109 (15.3%)	0.036
Need to limit or avoid daily activity	490 (44.7%)	274 (38.5%)	0.009
Want to lie down in a quiet, dark room	472 (43.1%)	285 (40%)	0.2
See visual disturbances, spots or light flashes.	175 (16%)	94 (13.2%)	0.1

Table 2. Common headache triggers stratified by frequency.

Trigger	Frequent headache ≥ 2 episodes/ month N = 1096	Infrequent headache ≤ 1 episodes/ month N = 712	P value
Intense lights, smells, or sounds	680 (62%)	394 (55.3%)	0.005
Weather changes	559 (51%)	291 (40.9%)	< 0.001
Allergies or sinus pain/ pressure	447 (40.8%)	257 (36.1%)	0.046
Stress or tension	877 (80%)	536 (75.3%)	0.017
Too little sleep	850 (77.6%)	514 (72.2%)	0.01
Too much sleep	345 (31.5%)	208 (29.2%)	0.3
Missed meals	567 (51.7%)	292 (41%)	<0.001
Lack of caffeine	276 (25.2%)	131(18.4%)	0.001
Too much caffeine	97 (8.9%)	58 (8.1%)	0.6
Entering certain places	375 (34.2%)	204 (28.7%)	0.013
Lack of cigarette smoking	164 (15%)	109 (15.3%)	0.84
Changes in mood/ excitement	622 (56.8%)	345 (48.5%)	0.001
Certain types of food	119 (10.9%)	69 (9.7%)	0.43
Watching T.V for long hours	450 (41.1%)	275 (38.6%)	0.3
Working on the computer for long hours	652 (59.5%)	397 (55.8%)	0.12
Menstrual cycle (females)	238 (38.8%)	103 (34.1%)	0.17

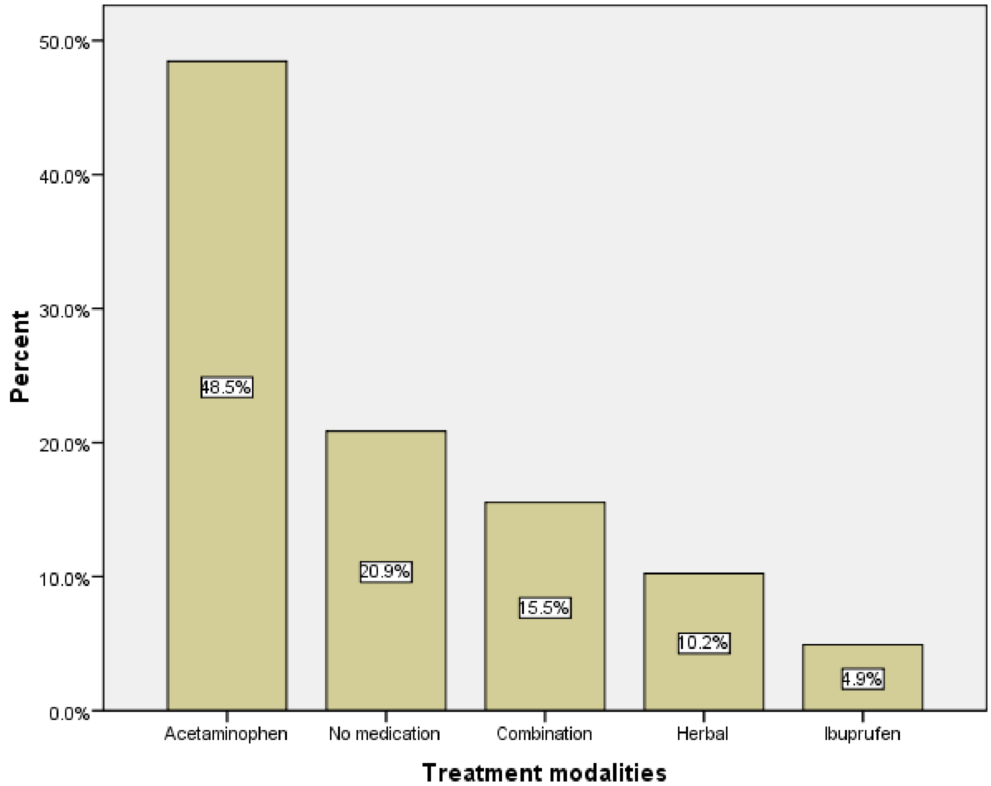

Figure 1. Treatment options for headache among students reporting at least one episode in the previous year. Results included respondents who listed brand names. Combination remedy included 2 analgesics or one analgesic with herbal remedy.

Appendix 1

Gender:
Age:
College:
Academic year:
Place of Living:
Eye Glasses (Y, N)

Q1. Do any of your family members have recurrent headache episodes? (Yes, No)

Q2. Did you have headache episodes in the previous year? (Yes, No)

Q3. If "yes", then how many episodes of headaches did you have?

1- 2/ year 1 – 2/ 6 months 1 / month
2 – 3/ month ≥ 1 every week

Q4. When you have a headache episode, how long it lasts without a medication

1 – 4 hrs 4 – 12 hrs 12 – 24 hrs
24 – 72 hrs > 72 hrs

Q5. When you have an episode of headache, how often do you

Have moderate to severe pain	Never	Rarely	Usually	always
Have pulsating, pounding or throbbing pain	Never	Rarely	Usually	always
Have worse pain on one side of your head	Never	Rarely	Usually	always
Have worse pain when you move or bend over	Never	Rarely	Usually	always
Have nausea	Never	Rarely	Usually	always
Have sensitivity to or bothered by light	Never	Rarely	Usually	always
Have sensitivity to or bothered by sound/ noise	Never	Rarely	Usually	always
Need to limit or avoid daily activity	Never	Rarely	Usually	Always
Want to lie down in a quiet, dark room	Never	Rarely	Usually	Always
See visual disturbances, spots or light flashes	Never	Rarely	Usually	Always

Q6. Check any of the following that could trigger a headache episode with you.

1	Intense lights, smells, or sounds	Yes	No
2	Weather changes	Yes	No
3	Allergies or sinus pain/ pressure	Yes	No
4	Stress or tension	Yes	No
5	Too little sleep	Yes	No
6	Too much sleep	Yes	No
7	Missed meals	Yes	No
8	Lack of caffeine	Yes	No
9	Too much caffeine	Yes	No
10	Entering certain places	Yes	No
11	Lack of cigarette smoking	Yes	No
12	Changes in mood/ excitement	Yes	No
13	Certain types of food	Yes	No
14	Watching T.V for long hours	Yes	No
15	Working on the computer for long hours	Yes	No
16	Monthly menstrual cycle (females)	Yes	No

Q7. Do you usually have any warning symptoms which alert you that you are going to have a headache episode? (Yes, No)

Q8. When you have a headache episode, check what you do

1. Take medications available at home
2. Take medications from pharmacy
3. Go to the physician
4. Take herbal remedies at home (specify ...)
5. Do not take anything, just lie down.
6. Others (specify:)

Q9. If you take prescribed or OTC medications for headache episode, what are they?