



Research Article

Primary Headache Among Secondary School Children: Prevalence, Pattern and Other Characteristics in Enugu, South East Nigeria

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Summary

Introduction: Primary headaches impact substantially on daily activities of the sufferers leading to increased direct and indirect medical burden on its sufferers. It is a growing public health problem affecting an estimated 5.6% of Africans yet, among young Nigerians the disorder remains underestimated in scope and scale, under-recognized and under-treated.

Methods: This was a questionnaire bases cross sectional study conducted in Enugu South East Nigeria. Frequency of headache and pain intensity were accessed questions (a) and (b) of the MIDAS questionnaire. Precipitating factors, drugs used, medical consultation and academic limitation were also assessed.

Results: A total of 218 students were interviewed. The lifetime prevalence of primary headache was 74.3%. The corresponding prevalence of migraine and tension type headache were 7.8% and 32.6% respectively. Unlike migraine, tension type headache was significantly higher in females. Most headaches lasted 1-5 days (all primary headaches 24.7%, migraine 11.8% and TTH, 35.2%) similar in males and females. The proportion of students who worried over headache and attacks compared to those who did not: all primary headaches, 22.2%, who consulted a physician 16% and whose academic performance were often affected 26.5%. Limitation in academic performance was significantly higher among students that received medical consultation and students who worried over attacks.

Conclusion: Primary headaches are common among secondary school children in Enugu, South East Nigeria, Nigeria. Most headaches last 1-5 days, frequently limit the academic activities of its sufferers and are sources of concern to the sufferers.

Key words: Migraine, Tension type headache, burden, Students, Nigerians

Enugu Güney Doğu Nijerya'da Ortaokul Öğrencileri Arasında Primer Başağrısı: Prevalans, Patern ve Diğer Özellikler

Özet

Giriş: Birincil baş ağrılarının ağrıyı çeken kişilerin günlük aktivitelerine belirgin etkisi vardır; doğrudan ve dolaylı olarak ağrıyı çeken kişilerde tıbbi yükün artmasına yol açmaktadır. Afrika genelinde %5.6'lık görülme oranıyla büyüyen bir halk sağlık sorunu olmasının yanında, genç Nijeryalılar arasında bu hastalığın kapsamı ve ölçeği hafife alınmış, yeteri kadar değerlendirilmemiş ve tedavi edilmemiştir.

Yöntem: Bu, Güney Doğu Nijerya Enugu'da yapılan ankete dayalı kesitsel bir çalışmadır. Baş ağrısı sıklığı ve ağrı yoğunluğu, ve MIDAS anketinin (a) ve (b) soruları ile elde edildi. Tetikleyen faktörler, kullanılan ilaçlar, tıbbi danışma ve akademik kısıtlılıklar ayrıca değerlendirildi.

Bulgular: Toplam 218 öğrenci ile görüşüldü. Birincil başağrılarının hayat boyu prevalansı % 74.3 idi. Benzer migren ve gerilim tipi başağrısı prevalansı sırasıyla % 7.8 ve % 32.6 idi. Migrendekinin aksine, gerilim tipi baş ağrısı kadınlarda anlamlı olarak daha yüksekti. Çoğu baş ağrısı erkek ve kadınlarda benzer şekilde 1-5 gün arasında sürdü (tüm birincil baş ağrıları % 24.7, migren % 11.8 ve

gerilim tipi baş ağrısı % 35.2). Baş ağrısı atakları hakkında endişelenen öğrencilerinin oranı endişelenmeyenlerle karşılaştırıldığında: tüm birincil baş ağrıları arasında % 22.2, hekime danışanlar arasında % 16 ve akademik performansı etkilenenler arasında % 26.5 idi. Akademik performanstaki kısıtlılıklar tıbbi konsültasyon alan ve baş ağrıları hakkında endişelenen öğrenciler arasında anlamlı olarak daha yüksekti.

Sonuç: Birincil baş ağrısı, Güney Doğu Nijerya Enugu'da ortaokul öğrencileri arasında sık görülmektedir. Baş ağrılarının çoğu 1-5 gün arasında sürer, sıklıkla etkilenen kişilerde akademik aktiviteleri kısıtlar ve etkilenen kişilere endişe verir.

Anahtar Kelimeler: Migren, gerilim tipi baş ağrısı, yük, öğrenciler, Nijeryalılar

INTRODUCTION

Headache is a common neurological disorder with variable intensity and one of the commonest neurological disorders among young Nigerians (1-7). Headaches impact substantially on daily activities of the sufferers leading to increased direct and indirect medical costs, health care resource utilization, reduced health-related quality of life and higher rates of comorbidities (8-11). It is a growing public health problem affecting an estimated 5.6% of Africans yet, among young Nigerians the disorder remains underestimated in scope and scale, under-recognized and under-treated (7).

Globally, the lifetime prevalence of primary headaches in children and adolescents vary widely depending on the age group studied(13-14). The estimated

global prevalence of migraine and tension type headache (TTH) among children range between 3-7% with female preponderance (13). The prevalence and pattern of migraine and TTH in young adults and students varied widely with most studies focusing on migraine (13-20). Table 1.

Few studies have reported the prevalence and pattern of primary headaches within the 10-18 year-olds or similar age groups (2,13-27). No study has reported the precipitating factors, impact on school activities and treatment among school children with headache in South East Nigeria. The aim of this study was to document the pattern of primary headaches, treatment and impact among secondary school students in Enugu, South Eastern Nigeria.

Table 1. Prevalence and pattern of primary headaches in selected studies 10-18 years

	Year	Sample size	Age group	Primary Headache (%)	Migraine	TT H	Method	Point Reference
King ²¹	1990	900	10-18	57	-	-	Q	1 year
Berea ²²	1996	538	10-18	83	9.9	-		1 year
Bendell- Hockstra ²³	2001 2002	2358 1868	10-17 11-18	91 -	- 6.1	- 12.1	I	1 year lifetime
Ayatollah(f) ²⁴								
Ho and Ong ²⁵	2003	205	10-19	85	2.9		Q and I	Lifetime
Zencir ²⁶	2004	2490	11-18	-	8.8	18	Q and I	1 year
Ofovwe ²	2010		11-18	19.5	13.5			1 year
Omid ¹⁵	2011	4096	11-18	49.9	27.1		Q	
Lima(f) ²⁷	2014	228	10-19	87.7	8.8	11.7		-
Index Study Ezeala-Adikaibe	2016	218	10-18	74.3	7.8	32.6	Q	Lifetime

f-female

Q-questionnaire.

I-interview

MATERIAL AND METHODS

Study Area

Enugu is the capital of Enugu state, an educational, governmental, industrial trade center located in South East Nigeria. The city is divided into three local government areas -Enugu North, Enugu South and Enugu East with the city center located in Enugu North and Enugu East. At the time of the study, there were four public secondary schools at the city center. Using of convenience sampling technique, we selected the two most populous public secondary schools from the urban center: one from Enugu North and Enugu South. Participants drawn from these schools were evaluated in their respective schools. The aim was to recruit all the students attending headache lecture held at the school hall in each school. A meeting was first organized with the principals of both schools and subsequently with the head teachers in charge of the morning assemblies. Sensitization of the students was done a day before data collection. On the day of the study the investigators obtained an informed consent from the students who were willing to participate after explaining the aims and objectives.

Data was collected using a previously validated semi-structured, multiple choice questionnaire⁴. A clinic-based validation of a subset of a random sample of 30 screened individuals (20 positives, 10 negatives) was assessed by a neurologist (blinded to screening results) who conducted a complete neurologic history, physical examination, and review of prior medical records before determining if the patient met the case definition for primary headaches and subsets of migraine, TTH. The questionnaire exhibited an overall 98% sensitivity (100% for migraine and 95% for tension headache) and 95% specificity (100% for tension headaches and 95% for migraine). False-positive

screens occurred primarily among individuals who had experienced headaches hours to days before developing a febrile illness (for example, malaria). Validation of the screening questionnaire was carried out in Neurology clinic of the department of medicine, University of Nigeria Teaching Hospital Enugu (4).

The questionnaire consisted of two principal sections, including a (first) section on general information about the respondents such as age and sex and related characteristics; the second section contained questions that assessed the lifetime prevalence of headache and headache profiles over the preceding three months. Additional questions to assess the frequency of headache and pain intensity using the additional questions (a) and (b) of the MIDAS questionnaire were included in the second section (28). Precipitating factors, drugs used, medical consultation and academic limitation were also assessed.

Headache frequency over the last 3 months and grouped as none (0), 1-10 and > 10 days. Pain intensity was scored over 10; with 0 as no pain and 10 as the worst possible pain. Pain intensity was categorized as Mild (scores 1-4), Moderate (scores 5-8) and severe (scores 9-10). All the questionnaires were self-administered with guidance of the principal investigator and retrieved the same day. The study protocol was reviewed and approved by the ethics committee of the University of Nigeria Teaching Hospital Enugu.

Headache profiles were analyzed according to ICHD-III beta (29).

Data were assembled, tallied, put in frequency tables and analyzed. For database management and statistical analyses SPSS version 22 (IBM Corporation, New York, USA) and GraphPad Prism version 6, (GraphPad Software, La Jolla California USA) were

used. Descriptive statistics were used to analyze the demographic data. Mean age was compared using the student's T test and ANOVA test where applicable. In all the analyses, the level of significance was kept at <0.05 .

RESULTS

A total of 218 students were interviewed. Males were 64(29.4%) and females 154(70.6%) with a male to female ratio of 1:2.4. Table 1. The participants' age ranged from 10 to 18 years, averaging 15.2(95% CI,14.97-15.5) years. There was no significant difference between the ages of males (15(95% CI,14.4-15.6)) and females (15.3(95% CI, 15.1-15.6)) years. $P=0.22$.

Primary headaches

The lifetime (74.3%) prevalence of primary headache and their distribution is shown in Table 2. The corresponding prevalence of migraine and TTH were 7.8% and 32.6% respectively. Overall, primary headaches were similar in males and females $P= 0.75$ and did not significantly increase with age. Unlike migraine, TTH was significantly higher in females. ($P=0.01$).

The duration of headaches subtypes and their distribution is shown in table 3. Most headaches lasted 1-5 days (all primary headaches 24.7%, migraine 11.8% and TTH, 35.2%) while 35.2% of migraineurs and 11.3% of TTH had headaches that lasted 6 or more days over the preceding three months. About 11.7% did not remember how long their headaches lasted (migraine 5.9% versus TTH 11.3%). There were no statistical differences between the mean duration of migraine and TTH and as well as the mean duration in males and females. Table 3.

Effect of headache on the students

Table 4 shows that the proportion of students who worried over headache attacks compared to those who did not: consisting of all primary headaches, 22.2% ($p=0.001$), who consulted a physician 16% ($p=0.001$) and whose academic performance were often affected 26.5% ($p=0.001$). Furthermore, limitation in academic performance was significantly higher among students that received medical consultation and students who worried over attacks. Table 5.

Table 2. Age distribution and pattern of lifetime prevalence of primary headaches

Characteristic	Primary headaches	Migraine	Tension Headache	Total
	<i>Age</i>	-	-	-
10-12	14(66.7)	-	9(42.9)	21(9.6)
13-14	39(78)	3(6)	18(36)	50(22.9)
15-16	64(72.7)	8(9.1)	26(29.5)	88(40.4)
17-18	45(76.3)	6(10.2)	18(30.5)	59(27.1)
p value	0.75	0.45	0.39	-
-	-	-	-	-
<i>Sex</i>	-	-	-	-
Males	46(71.9)	7(10.9)	13(20.3)	64(29.4)
Females	116(75.3)	10(6.5)	58(37.7)	154(70.6)
p value	0.6	0.22	0.01	<0.001
Total	162(74.3)	17(7.8)	71(32.6)	218(100)

Table 3. Headache duration over the preceding three months and its distribution.

Age	All Primary headaches	Migraine	Tension Headache	Males	Females
<i>Headache frequency</i>	-	-	-	-	-
None	-	-	-	-	-
1-5 days	82(50.6)	8(47.1)	30(42.3)	25(54.3)	57(49.1)
6-10 days	40(24.7)	2(11.8)	25(35.2)	8(17.4)	32(27.6)
≥11 days	10(6.2)	5(29.4)	3(4.2)	5(10.9)	5(4.3)
Do not remember	11(6.8)	1(5.9)	5(7)	1(2.2)	10(8.6)
Mean(95%CI)	19(11.7)	1(5.9)	8(11.3)	7(15.2)	12(10.3)
	3(1.7-4.2)	3.8(0.4-7.2)	3.4(1-5.5)**	2.6(-0.9-5.3)	3.1(1.7-4.5)*

**p- value for mean duration of migraine and tension headache = 0.83.

*p- value for mean duration in males and females = 0.73

Table 4. Burden of headache among the students

Characteristic	All headaches(%)	Primary Migraine headache(%)	Tension headache(%)
Worried about headache attacks	-	-	-
Yes,n,(%)	36(22.2)	7(41.2)	15(21.1)
p-value	0.002	0.047	0.77
Consulted a doctor	-	-	-
Yes,n,(%)	26(16)	6(35.3)	13(18.3)
p-value	0.001	0.02	0.49
Limitation in academic performance	-	-	-
Rarely/Never	-	-	-
Often	119(73.5)	10(58.8)	50(70.4)
p-value	43(26.5)	7(41.2)	21(29.6)
	0.001	0.15	0.44
Total	162(74.3)	17(7.8)	71(32.6)

Table 5. Distribution of academic performance among those worried about having headaches and who consulted their doctors.

Characteristic	Consulted doctor	a Worried about headache
Limitation of academic performance	-	-
-	-	-
Rarely/Never	14(8)	23(13.1)
Often	12(27.9)	13(30.2)
p-value	<0.001	0.01
Total	26(11.9)	36(16.5)

DISCUSSION

Migraine is a growing public health disorder among young Nigerians (1-5,7). However, little data exist on the prevalence, pattern and the burden of the disorder among Nigerian school children and adolescents. The prevalence of primary headaches (lifetime, migraine and TTH) among secondary school students in this study was 74.3%, 7.8% and 32.6% respectively. About 22.2% of them were worried about attacks, 16% sought the services of physicians and 26.5% suffered limitations in their academic activity. Over the preceding three months, most headaches lasted for 1-5 days.

The lifetime prevalence of primary headache in this study (as well as in males and females) is within the range found in similar studies and falls within the range of global estimates (13-27,30,31). In Benin City, South South Nigeria, the prevalence of primary headache among school children 11-18 years was 19.5% which is lower than 74.3% in this study (2). Unlike in the index study most population based follow-up studies have documented that the prevalence of primary headaches increased with age (31,32). Differences in methodology, diagnostic criteria, duration of headache types studied (lifetime versus 1- year or current headache), genetic and sociocultural environment may all contribute to the wide range of prevalences reported (31,32). Factors such as walking to and from school especially on hot sunny days, poor feeding habits among students may also be contributing to the high prevalence found in the index study.

Some studies that reported on the prevalence of migraine and TTH in adolescents of similar age group as in the index study have reported varying prevalence of migraine (Table 1). The overall trend suggests a preponderance of females and increasing headache frequency and intensity with older age (13-27,30-32). In Northern Brazil, the prevalence of

migraine among adolescents was 8.8% which is similar to our current finding (27). In Nigerian, Ofovwe and Ofili reported a prevalence rate of 13.5% (2). The prevalence of migraine in this study compares favourably with studies also from various other countries (20,24).

The lifetime prevalence of TTH (32.6%) was higher than prevalence ranges previously reported for Africa among young people but within the global range of 12-78% (13). In this study, the lifetime prevalence of TTH peaked in 10-11-year olds. Though TTH is very prevalent in the community, higher proportion in the younger age group may be attributed to difficulty in explaining their symptoms. The spectrum of pain severity in TTH are more heterogeneous than that of migraine. In Brazil a prevalence of 11.7% was reported by Berea et al, in Turkey Zencir et al reported a prevalence rate of 18% and in Iran the lifetime prevalence of TTH was 12.1% lower than 32.6% in the index study (22,26).

Most headache pain in migraineurs lasted 6-10 days unlike in TTH where they lasted 1-5 days. Furthermore, TTH sufferers who forgot the duration of their headache were twice that of migraineurs. These findings support the fact that migraine carries a greater burden of disease attributable to headache disorders, causing significant deterioration in normal daily functioning and in the quality of life (8,9,13,33). In Nigeria, headache disorders are underrecognized, underdiagnosed and undertreated. The burden of migraine is likely to be enormous especially among students. Few data exist on the disability of migraine in Nigeria (2,3,4).

The ratio of the proportion of migraineurs to TTH sufferers who were worried about headaches was 2:1. Apart from pain intensity and its duration, reduction in academic performance and cost of medications may also add to the health concern of headache sufferers. Cost

containment is an important factor in Nigeria as most Nigerians pay for their health care needs from their own pockets (56.6% of private expenditure for health) (34).

Overall, 16% of primary headache sufferers consulted their doctors. Reasons for low consultations rates in this study were not further explored, but factors such as the dearth of neurologists and high cost of specialist consultations may be contributory. The proportion who sought medical attention was within the range of 16%- 66% as reported in other studies (6,11,35). As expected, greater proportion of those who consulted doctors also reported frequent limitations in academic activity. This is also true for those who were worried about headache attacks. In a study among university students by Timothy et al. 64.8% of undergraduate students suffering from headache reported that it affected their academic activities (3). In another study, 76.8% of secondary school students with primary headache reported inability to participate in outdoor activities, household chores, and school absenteeism (2).

The main strength of this study was in documenting the prevalence and pattern of primary headaches among secondary school children as well as its frequency and burden. To the best of our knowledge, this is the first such a study is in South East Nigeria. Low income, lack of access to health care and factors such as intense heat, poor feeding habits and stressful academic activities may precipitate and sustain primary headaches thus aggravating the level of disability caused by the disorder. Therefore, the burden of primary headaches may be very high among secondary school students and the primary headache disorders under diagnosed.

Limitations. This study had some limitations. All the characteristics described could have been influenced by recall bias. This was minimized by the use

of multiple choice questions and check lists. All data were self-reported and no supporting medical records or data were accessed. The strict use of ICDH III beta may underestimate mild forms of primary headaches. Considering that this was a memory based survey, it is possible that students might have copied from each other. The immediate collection of data was done to reduce this to the barest minimum. Finally the population size was relatively small as well as the total number of migraineurs and TTH. This will limit the generalization of the findings.

CONCLUSION

Primary headaches are common among secondary school children in Enugu, South East Nigeria, Nigeria. Most headaches last 1-5 days, frequently limit the academic activities of its sufferers and are sources of concern to the sufferers. Inclusion of headache disorders in school health education curriculum and education of teachers to understand the disorders are necessary to increase awareness and improve quality of care.

Acknowledgement

The authors are grateful to the administrators, teaching staff and students of the educational institutions which served as sites for this study. We are also grateful to Miss Loveth Emmanuel (Secretary, Neurology and EEG services), Mount Carmel Hospital Enugu, for her help in the office.

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Received by: 12 July 2016

Revised by: 26 September 2016

Accepted: 22 February 2017

The Online Journal of Neurological Sciences (Turkish) 1984-2017

This e-journal is run by Ege University
Faculty of Medicine,
Dept. of Neurological Surgery, Bornova,
Izmir-35100TR
as part of the Ege Neurological Surgery
World Wide Web service.
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E-mail: editor@jns.dergisi.org
URL: <http://www.jns.dergisi.org>
Journal of Neurological Sciences (Turkish)
Abbr: J. Neurol. Sci.[Turk]
ISSNe 1302-1664

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