PREVALENCE OF HEADACHE AND MIGRAINE IN SCHOOLCHILDREN IN THE UNITED ARAB EMIRATES

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Background: The aim of this report was to study the prevalence of headache and migraine among schoolchildren in the United Arab Emirates, and to determine the relationship between headache and various factors, with special emphasis on migraine, and the impact of headache on school attendance.
Materials and Methods: A cross-section population study was performed over a period between October 1995 and June 1996. Subjects were selected by multistage stratified sampling procedure. Data was collected by screening questionnaires followed by clinical interviews. This involved children of 12 primary schools in Al-Ain, Dubai, and Sharjah Emirates, for a total of 1159 schoolchildren.
Results: The prevalence rate of headache was estimated to be 36.9%, and for migraine 3.8%. The study showed that the prevalence of headache increases with age, the highest rate being among 13-year-olds (17.5%).
Conclusion: The prevalence rate of headache and migraine in our study was similar to that found in other parts of the world. However, cultural and social factors may play a role in determining the incidence rate in this region.
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Key Words: Headache, migraine.

Headache is a common symptom and complaint in pediatric practice,[1-3] but consultation rates do not reveal the true prevalence.[4] Moroever, much less is known about the prevalence and causes of headache in non-hospital populations among schoolchildren.[5] Migraine is said to be the most common cause of primary headache in children.[6-8] The classic work of Bille on childhood headache and migraine in Sweden provided the first well-conducted population-based study.[6] The diagnostic criteria for migraine, defined by the International Headache Society[9,10] are now widely accepted and have been applied successfully to studies on the epidemiology of migraine in adults.[11,12]

Epidemiological studies in migraine have reported the role of genetic[13,14] and sociodemographic factors,[15] and several lines of evidence suggest that race may also be an important determinant of the prevalence of migraine.[16] The present study aims to determine the prevalence rate of headache and migraine in a random sample of schoolchildren aged 6-14 years in the United Arab Emirates, as defined by the International Headache Society criteria and validation of the questionnaire responses with clinical interviews.

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Materials and Methods

Study Design

This was a cross-sectional population-based study conducted in Al Ain, Dubai, and Sharjah Emirates in the United Arab Emirates (UAE). The survey was performed to study the association between headache and migraine, and sociodemographic, genetic and environmental factors deemed to be the most important determinants. The survey was conducted among UAE national children aged 6-14 years. The diagnostic criteria for migraine were those defined by the International Headache Society.

Data Collection

A representative sample of 1400 UAE national schoolchildren aged 6-14 years were included in this study, which was conducted between October 1995 and June 1996. All information was based on structured prospective personal interviews in Arabic, by physicians and qualified nurses.

A multi-stage stratified cluster sampling design was developed using the administrative division of the UAE into three Emirates of approximately equal size in terms of number of inhabitants. In order to secure a representative sample of the study population, the sampling plan was stratified with proportional allocation according to stratum size.[17] According to the 1995 Ministry of Health Annual Report, the total population was 2.3 million. UAE nationals constitute 30% of the total population. Stratification was based upon geographical location. The

sample size was determined with the a priori knowledge that the prevalence rate of migraine and headache in the UAE is more or less similar to Western countries; or that it may be affected by parity, heredity, climate and sociodemographic and environmental factors. Allowing an error of 2.5% and level of significance (Type-I error) of 1%, it was believed that a sample size of 1400 was adequate to achieve a high degree of precision in estimating the true prevalence rate of migraine and headache in the general population. Therefore, on computing for 99% confidence limits and with 2.5% error bound, it yielded the required sample size of 1400. This was considered the target population. The subjects selected from each region were predetermined to be proportional to the size of Emirates and Medical Health Districts. Furthermore, schools and classes were then selected proportionally and randomly. Within the randomly selected classes, a quota of randomly selected students completed the survey.

Statistical Method and Analysis

The questionnaires were coded, entered and processed in the Department of Community Medicine on the IBM computer of the Faculty of Medicine and Health Sciences at the United Arab Emirates University. The statistical package program SPSS[18] was used to calculate chi-square, to ascertain the association between two or more categorical variables. In 2x2 tables, the Fisher's exact test (two-tailed) was used instead of the chi-squared test, especially when the sample size was small. Student's *t*-test (two-tailed) was used to determine the significance of difference between two continuous variables. The level $P<0.05$ was considered as the cut-off value for significance.

Results

The original sample included approximately 1400 students, but the total number for analysis was 1159, due to losses from school absence and incomplete questionnaires, resulting in a response rate of 82.7%. Of the total population, 428 (36.9%) reported recurrent headache over the previous year. Furthermore, 190 (16.4%) reported recurrent headache which was severe enough to stop or interfere with normal daily activities. Those who reported recurrent headache missed a mean of 3.5 (SD 4.3) days of school in the previous term because of headache. Those who did not report headache missed, on average, 2.7 (SD 3.1) days of school during the same period (*t*-value 3.10, $P=0.002$). Only 221 of the parents (19.1%) could report a cause for the headache. The prevalence of recurrent complaints of headache ranged from 9% to 11% until the age of 13 years, when it peaked at 17.5%. There were no significant differences between the three cities in terms of prevalence of headache and of migraine, as shown in Table 1.

We examined some variables which we thought would be of interest to the health of the community. We were interested in home environment, school environment, and role models for headache. We compared children who reported headache with those who did not. Cross-tabulation of the results is shown in Table 2. Only small variations in the number of respondents to those items in the questionnaire occurred.

The next question was how many children suffered from migraine. We used the International Headache Society criteria[9] to define migraine. Using these criteria, 44 (3.8%) were classified as having migraine. However, 378 (32.6%) reported the attacks as lasting more than two hours in most instances, but not fulfilling enough of the research criteria for migraine. Of the children who had migraine, 20 (45.5%) had migraine without aura, 13 (29.5%) had migraine with aura, and 18 (40.9%) had ophthalmoplegic migraine. In those children who were reported to have migraine, 14 (31.8%) reported general undefined family problems, 14 (31.8%) had school problems and 29 (65.9%) gave a history of recurrent headaches in a parent. These were significantly different from rates reported in children without headache.

Discussion

There are no data on headache and migraine among UAE children because no studies have been conducted in this area. The small sample size and the use of only questionnaires as a way of collecting the data restrict the generalization of the results. However, some observations on the prevalence of headache can be determined by this study. Prevalence studies of migraine among school-children have been reported in different countries, such as Finland,[8] Denmark,[11-13] USA,[15,16] Australia,[19] Great Britain,[3,5,20] and Sweden.[6,21] These reports suggest that the prevalence rate varies between 3% and 10%,

TABLE 1. *Prevalence of headache and migraine in three cities in the UAE.*

City	Headache %	Migraine %
Al-Ain	37.8	3.6
Dubai	38.4	4.1
Sharjah	34.5	3.7

TABLE 2. *Comparison variables between children with headache and those without headache.*

Variable	Children with headache	Children without headache	*P*-value
	N=428	N=731	
Family problems	78 (18.2%)	78 (10.7%)	0.0003
School problems	97 (22.7%)	103 (14.1%)	0.0002
Parent(s) often complaining of headaches	196 (46.2%)	479 (68.9%)	0.0001

depending on the age range investigated and the method of investigation. The rates of recurrent headache are considerably higher, ranging between 20% and 50%. [21-24]

Our findings show a similar pattern to that reported elsewhere. However, our culture is different and the explanations for these prevalence rates may vary. Somatization is common in the Middle East, and parents (particularly women) often complain of headache as a representation of psychological symptoms. Children are likely to use their parents as role models, as shown by our findings.

Another possible explanation is the genetic loading factor, particularly for migraine. Our results are consistent with others which suggest that family conflict, emotional factors and educational pressures are important in determining the prevalence of headaches. [25-27] It was interesting to note that the prevalence of headache among children living only with their mothers was 64.7%, compared to 57% in those living with intact families.

Our data showed that the highest prevalence rate of headache occurred among those aged 13 years, indicating that the prevalence increases at puberty, as has been found in other studies. [2] The increase of the prevalence rate in 13 year olds and above, particularly girls, is also in agreement with other studies. [8,21,22] This may be related to biological factors (usually hormonal) at this stage of development. However, there are other possibilities that may be culturally determined. In this culture, academic achievement by children is an extremely pertinent issue. Often the emphasis is on achieving high grades in examinations at the expense of enjoyable learning. Children are often subjected to these stresses, and complaints of headache are common, particularly during the examination season. The second cultural issue is the stress of social restrictions, particularly on teenage girls. Social expectations of girls are different from those of boys in relation to personal freedom, choices and peer relations. Often this can be a source of conflict, anxiety and mood problems—factors known to be associated with headache. [28]

In conclusion, the prevalence of headache and migraine among schoolchildren in this country are similar to other parts of the world, but there may be culturally set factors that play a role in determining the extent of these phenomena. Consanguineous marriages, social expectations, social restrictions and role models (particularly in relation to somatization), seem to be prime candidates. A more rigorously designed and narrowly focused investigation is currently being planned to investigate the influences of these variables.

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