

## Original Article

## Prevalence of Headache and Migraine among School Children in Jordan

Hussein F. Alawneh<sup>1</sup> MD, Hussein A. Bataineh<sup>2</sup> MD<sup>1</sup> Pediatric Department at Prince Rashed Hospital, Irbid, Jordan<sup>2</sup> Pediatric Department at Prince Rashed Hospital, Irbid, Jordan. 260, Aidoun 21166, Irbid, Jordan, e-mail: hussein\_azzam@yahoo.com**Abstract**

**Objective:** The aim of this study was to determine the prevalence of headache and migraine among school children in the Irbid, Jordan and to determine the relationship between headache and various factors especially migraine.

**Materials and Methods:** A cross-section population study was performed over a period between January 2005 and September 2005. Subjects were selected by multistage stratified sampling procedure. Data was collected by screening questionnaires followed by clinical interviews. This involved children for a total of 1120 schoolchildren, who visited the pediatric clinic in the same study period.

**Results:** The prevalence rate of headache was estimated to be 24%, and for migraine 2.8%. The study showed that the prevalence of headache increases with age, the highest rate being among 13-year-olds (13.2%).

**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.

**Key Words:** Headache, Migraine. School children, Jordan

**Introduction**

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

Epidemiological studies in migraine have reported the role of genetic <sup>(13,14)</sup> and sociodemographic factors, <sup>(15)</sup> and several lines of evidence suggest

that race may also be an important determinant of the prevalence of migraine <sup>(16)</sup>.

The present study aims to determine the prevalence rate of headache and migraine in a sample of schoolchildren aged in Irbid, Jordan, as defined by the International Headache Society criteria and validation of the questionnaire responses with clinical interviews.

**Materials and Methods**

This was a cross-sectional population-based study in which 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 children aged 6-14 years. The diagnostic criteria for migraine were those defined by the International Headache Society. 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. In order to secure a representative sample of the study population, the sampling plan was stratified with proportional allocation according to stratum size<sup>(17)</sup>. 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 Jordan which is more or less similar to Western countries; or that it may be affected by parity, heredity, climate and sociodemographic and environmental factors. 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 level  $p < 0.05$  was considered as the cut-off value for significance.

### Results

The original sample included 1400 students, but the total number for analysis was 1120, due to losses, resulting in a response rate of 80%. Of the total population, 269(24%) reported recurrent headache over the previous year.

Furthermore, 140(12.5%) reported recurrent headache which was severe enough to stop or interfere with normal daily activities. Only 221(19.1%) of the parents 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 13%.

We examined some variables like 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 1. 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<sup>(9)</sup> to define migraine. Using these criteria, 32(2.9%) was classified as having migraine.

However, 86(32%) 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, 15(46.8%) had migraine without aura, 17(53.1%) had migraine with aura, and 12(37.5%) had ophthalmoplegic migraine.

In those children who were reported to have migraine, 10(31.2%) reported general undefined family problems, 8(25%) had school problems and 14(43.8%) gave a history of recurrent headaches in a parent. These were significantly different from rates reported in children without headache.

**Table 1. Comparison variables between children with headache and those without headache.**

Variable	Children with headache	Children without headache	P-value
	N=269	N=851	
Family problems	49(18.2%)	90(10.6%)	0.0003
School problems	60(22.3%)	119(14.0%)	0.0002
Parent(s)often complaining of headaches	124(46.1%)	520(61.1%)	0.0001

### Discussion

Since there are no data on headache and migraine among Jordanian children because no studies have been conducted in this area, 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,<sup>(8)</sup> Denmark,<sup>(11-13)</sup> USA,<sup>(15,16)</sup> Australia,<sup>(19)</sup> Great Britain,<sup>(3,5,20)</sup> and Sweden<sup>(6,21)</sup>. These reports suggest that the prevalence rate varies between 3% and 10%, depending on the age range investigated and the method of investigation. The

rates of recurrent headache are considerably higher, ranging between 20% and 50%<sup>(21-24)</sup>.

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<sup>(25-27)</sup>.

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<sup>(2)</sup>. The increase of the prevalence rate in 13 year olds and above, particularly girls, is also in agreement with other studies<sup>(8,21,22)</sup>.

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<sup>(28)</sup>.

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.

#### References

1. Jerett WA. Headache in general practice. *Practitioner* 1979; 222: 549-55.
2. Becker LA, Iverson DG, Read FM, Calogne N, Miller RS, Freeman WL. A study of headache in North America primary care. *J R Coll Gen Pract* 1987; 37: 400-3.
3. Hockaday JM. Migraine in children. *J Maternal Child Health* 1991; 16: 246-7.
4. Water WE. *Epidemiology of migraine*. In: Pearce J, editor. *Modern topics in migraine*. London: Heinemann Medical, 1975; 8-21.
5. Abu-Arefeh I, Russell G. Prevalence of headache and migraine in schoolchildren. *BMJ* 1994; 308: 765-9.
6. Bille B. Migraine in schoolchildren. *Acta Paediatr* 1962; 1: 1-51.
7. Hockaday JM. *Definitions, clinical features and diagnosis of migraine*. In: Hockaday JM, editor. *Migraine in childhood*. London: Butterworth, 1988: 5-24.
8. Sillanpaa M. Changes in the prevalence of migraine and other headaches during the first seven school years. *Headache* 1983; 23: 15-9.
9. Headache Classification committee of the International Headache Society. Classification and diagnostic criteria for headache disorder neuralgias and facial pain. *Cephalgia* 1988; 8: 1-96.
10. Ad Hoc Committee on the classification of headache. Classification of headache. *JAMA* 1962; 179: 717-8.
11. Rasmussen BK, Jensen R, Schroll M, Olesen J. Epidemiology of headache in a general population: a prevalence study. *J Clin Epidemiol* 1991; 44: 1147-57.
12. Rasmussen BK, Olesen J. Migraine with aura and migraine without aura, in an

- epidemiological study. *Cephalgia* 1992; 12: 221-8.
13. Russell MB, Olesen J. Increased familial risk and evidence of genetic factor in migraine. *BMJ* 1995; 311: 541-4.
  14. Allen W. The inheritance of migraine. *Arch Intern Med* 1930; 13: 590-9.
  15. Stewart WF, Lipton RB, Celentano DD, Reed ML. Prevalence of migraine headache in the United States. *JAMA* 1992; 267: 64-9.
  16. Stewart WF, Lipton RB, Liberman J. Vomiting in migraine: prevalence by race. *Neurology* 1996; 47: 52-9.
  17. Cochran WG. *Sampling techniques*. Third edition. New York: John Wiley & Sons, 1977.
  18. Norusis MJ. *SPSS/PC+ for Windows: base and advanced statistics*. User's Guide, version 6.0. Chicago, IL :SPSS, Inc., 1992.
  19. King JJ, Sharpley CF. Headache reactivity in children and adolescents. *J Pediatr Child Health* 1990; 26: 50-4.
  20. Collin C, Hockaday JM, Walters WE. Headache and school absence. *Arch Dis Child* 1985; 60: 245-7.
  21. Egermark-Erikseon I. Prevalence of headache in Swedish schoolchildren: a questionnaire survey. *Acta Paediatr Scand* 1982; 71: 135-40.
  22. Carlsson J. Prevalence of headache in schoolchildren: relation to family and school factors. *Acta Paediatr* 1996; 85: 692-6.
  23. Passchier J, Orlebeke JK. Headache and stress in schoolchildren: an epidemiological study. *Cephalgia* 1985; 5: 167-76.
  24. Saraceni G, Armani S, Bottazzo S, Gesmundo E. Prevalence of migraine in 901 Venetian schoolchildren between 6 and 13 years. In: Lanzi G, Balottin U, Cernibori A, editors. Headache in children and adolescents. New York: Elsevier, 1989: 181-4.
  25. Leviton A, Slack WV, Masek B, Bana D, Graham JR. A computerized behavioural assessment for children with headaches. *Headache* 1984; 24: 182-5.
  26. Larsson B. The role of psychosocial, health behavioural and medical factors in adolescent headaches. *J Dev Med Child Neurol* 1988; 30: 616-25.
  27. Alfven G. The covariation of common psychosomatic symptoms among children from socio-economically differing residential areas: an epidemiological study. *Acta Paediatr* 1993; 82: 484-7.
  28. Kowal A, Pritchard D. Psychological characteristics of children who suffer from headache: a research note. *J Child Psychol Psychiatr* 1990; 31: 637-49.