Pattern of headache in school children in the State of Qatar

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ABSTRACT

Objectives: The aim of this study is to determine the prevalence rate and impact of headache in school children on school attendance with particular attention to migraine.

Methods: A cross sectional survey was conducted among the school children ranging from 6-17 years old over a period from March 2001 to April 2003. The study was carried out in 10 primary, preparatory and secondary schools. Subjects were selected by multistage stratified sampling procedure. This involved 851 children studying in the first to tenth year of school in the State of Qatar.

Results: The present study showed that the prevalence rate of recurrent headache was 85% and migraine 11.9%. Comparing gender frequency of headache, it was noted that it was higher in female students (86.5%) than males (81%). In respect of age, it was observed that the oldest children had more frequent episodes of headache, the highest rate was in the age group of 11-15 years old (49%). The most common triggers were fatigue (35.8%) and lack of sleep (17.6%). The most common symptoms that occurred before headache were change in mood for female students (39.1%) and blurred vision for males (34.6%). The impact of headache on children was frequent absence from school (80%), which affected their school performance.

Conclusion: The current study indicated the high prevalence of headache among school children in Qatar, and its effect on school attendance and performance.

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Headache is a world-wide problem that affects all ages. Headache is one of the most common causes of consultation to the Pediatrician. Generally, headache is a common often benign symptom among school children and become more common and increases in frequency during adolescence.[1] Migraine with or without aura is said to be the most common cause of primary headache in children.[2] In the life of a child, school represents an important stress factor similar to that of working life in the adulthood. The classic work on childhood headache and migraine in Sweden provided the first well-conducted population based study.[1] The diagnostic criteria for migraine initially defined by the Ad Hoc Committee on the Classification of Headache[3] and subsequently by the Headache Classification Committee of the International Headache Society (IHS)[4] are now widely accepted and have been applied successfully to the studies of the epidemiology of migraine in children.[5-6] An epidemiologic survey of 9000 school children found that one third of the children who were at least 7 years of age and one half of those who were at least 15 years of age had headache.[7-8] The prevalence of headache ranged from 37-51% in those who were at least 7 years of

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age and gradually rose to 57-82% by age 15. Before puberty, boys were affected more frequently than girls but after the onset of puberty, headache occur more frequently in girls.[7-8] It is noted that some patients have more than one type of headache (5-8%) which also includes migraine.[8] Migraine is a syndrome characterized by recurrent headaches with or without aura that can include various combination of neurologic, gastrointestinal and autonomic changes. Migraine is a disabling illness. Students who experienced migraine were not able to attend the school for many days in a school year. Recurrent headaches can limit activity, worsen with activity, affect school performance and lead to frequent absence from school. Early and accurate recognition can help make the headache better. Migraine episodes are frequently triggered by several factors such as emotional stress, hypoglycemia, lack of sleep or excess (week end migraine), sensorial stimulation (loud noise, light, strong odor) and sympathetic stimulation (sport, physical exercise).[9] The classification and epidemiology of headache disorders in children is well worth studying for many reasons. First, epidemiologic studies determine the scope and distribution of the public health problems related to headache. Second, these studies will help identify the risk factors for various pediatric headache disorders. Third, these studies can help to determine the level of health care utilization and define the health care needs. The present study focuses on the prevalence of headache and migraine and its associated factors in school children and their impact on the subjects.

Methods. A cross-sectional survey was conducted among school children 6-17 years old over a period from March 2001 to April, 2003. The study was carried out in 10 primary, preparatory and secondary schools in Qatar. In order to secure a representative sample of the study population, the sampling plan was stratified with proportional allocation according to stratum size. The sample size was determined with the prior knowledge that the prevalence rate of migraine and headache in the State of Qatar is somewhat similar to Western countries; or that it may be affected by parity, heredity, climate and socio-demographic and environmental factors. Allowing an error of 2.5% and level of significance (Type-1 error) of 1%, it was believed that a sample size of 1000 children was adequate to achieve a high degree of precision in estimating the true prevalence rate of headache and migraine in the general population. Therefore, on computing for 95% confidence limits and with 2.5% error bound, it yielded the required sample size of 1000. The population of Qatar for the year 2003 was 724125, and for those below the age of 15 year was 192307.

Subjects were selected by multistage stratified sampling procedures. Representative sample of 1000 school children were approached and only 851 children responded to our questionnaire. Overall, 72.3% of the respondents were females and 27.7% were males. The information was based on structured prospectively questionnaire in Arabic by one of the researchers. Qualified nurses and social workers were instructed to interview and to complete the questionnaire, but subject below 10 years of age depended on their parents to fill the questionnaire. The diagnostic criteria was according to the International Headache Society (IHS).

Data are expressed as mean and SD unless otherwise stated. Chi-square analysis was performed to test for differences in proportions of categorical variables between 2 or more groups. In 2 x 2 tables, the Fisher exact test (2-tailed) was used instead of Chi-Square when the sample size was small. The Pearson's correlation coefficient was used to evaluate the strength of association between variables. The level $p<0.05$ was considered as the cut-off value for significance.

Results. **Table 1** shows the socio-demographic characteristics of the studied children. The data revealed that the prevalence of headache were 85% and it was more prevalent in females than males (86.5% versus 81%). In respect of age, children had higher prevalence of headache with the highest rate in those of 11-15 years (49%). Most of the subjects who had headache were in preparatory school (68.0%).

Table 2 shows the various characteristics of the studied subjects who had headache by gender. The male and female students were more likely to have headache in the morning (54.5% and 42.3%), while in the evening the incidence of headache was higher among females (34.8%) than among males (27.2%).

Table 1 - Distribution of demographic data of school children studied by occurrence of headache (N=851).

Variables	Headache				*p*-value*
	Yes N=723		No N=128		
Age group (years)					0.003
≤10	330	(45.6)	38	(29.7)	
11-15	354	(49)	80	(62.5)	
>15	39	(5.4)	10	(7.8)	
Gender					0.042
Male	191	(26.4)	45	(35.2)	
Female	532	(73.6)	83	(64.8)	

*significant

It is reported that a frequency of episodes once a week was as common in boys as in girls. Girls had frequent headache more than once (79.5%) compared to boys (60.7%). Also, females had (45.1%) family history of headache when compared to males (36.6%). It was observed that the majority of the students' complain of severe headache where male students took higher frequency (59.2%) than girls (21.2%). The most common symptoms prior to headache were change in mood for female students (39.1%) and blurred vision for males (34.6%). Triggers and other related factors to headache are detailed in **Table 3**. Among males, triggers often reported during fatigue and lack of sleep. For the factor "fatigue", male students had a higher frequency (56%) than females. Similarly for "lack of sleep" males had also higher frequency (23%) while females only 15.6%. A significant difference was found statistically in these 2 factors between both sexes ($p<0.05$). The most common concurrent symptoms of headache for males and females were mood instability, throbbing pain and blurred vision. Of these, mood instability was the most common for females (76.1%) and throbbing pain for males (55%). Most of the subjects got relief after taking simple analgesics. However, the

Table 2 - Distribution of characteristics of study subjects with headache according to gender (N=723).

Variables	Gender				P value*
	Male N=191		Female N=532		
Age (years)					-
≤10	1	(0.5)	329	(61.8)	
11-15	158	(82.7)	196	(36.8)	
>15	32	(16.8)	7	(1.3)	
Headache history in previous year					<0.001*
Yes	178	(93.2)	528	(99.2)	
No	13	(6.8)	4	(0.8)	
Frequency of having headache in previous year					<0.001*
Once	62	(32.5)	105	(19.7)	
More than Once	116	(60.7)	423	(79.5)	
Unknown	13	(6.8)	4	(0.8)	
Family history of headache					0.043*
Yes	70	(36.6)	240	(45.1)	
No	121	(63.4)	292	(54.9)	
Reoccurrence of headache					NS
Daily	39	(20.4)	104	(19.5)	
Weekly	70	(36.6)	208	(39.1)	
Monthly	57	(29.8)	172	(32.3)	
Unknown	25	(13.1)	48	(9)	
Duration of headache					NS
<1 Hour	98	(51.3)	259	(48.7)	
> Hour	56	(29.3)	176	(33.1)	
Whole day	37	(19.4)	97	(18.2)	
Time of headache					0.002*
Morning	104	(54.5)	225	(42.3)	
Evening	52	(27.2)	185	(34.8)	
Night	26	(13.6)	59	(11.1)	
Unknown	9	(4.7)	63	(11.8)	
Signs and symptoms before headache(aura)					
None	26	(13.6)	93	(17.5)	NS
Blurred vision	66	(34.6)	117	(22)	<0.001*
Change in Mood	49	(25.7)	208	(39.1)	<0.001*
Abdominal Pain	34	(17.8)	78	(14.7)	NS
Strange feelings in extremities	16	(8.4)	36	(6.8)	NS
Severity of Headache					<0.001*
Yes	113	(59.2)	113	(21.2)	
No	78	(40.8)	419	(78.8)	
Unilateral					
Yes	82	(42.9)	233	(43.8)	
No	109	(57.1)	299	(56.2)	

*significant, NS - not significant

males mostly relieved their headache by rest, sleeping or by staying in dark area. Of those children who had headache, 80.1% students were affected in their school performance because headache caused frequent absence from school. **Table 4** shows the different types of headache found among school children. Approximately 11.9% of the total study subjects had migraine, mostly in the age group 11-15 years (71.3%).

Discussion. Headache is a subjective complaint without any specific laboratory correlate, thus any prevalence assessment is based exclusively on information given by the subjects.[5] Migraine is said to be the most common cause of primary headache in children.[9-12] The present study shows that 85% of the children suffer headache and migraine. Also, it showed that girls (86.5%) had more frequent headache episodes than boys. These findings are in agreement with the study conducted by Egermarck-Ericksson[13] in Sweden. It was reported in the study by Egermarck-Ericksson that headache was more common in older (11 and 15 years of age) than in younger children, and more common in girls with 15 years of age than in the boys of the same age.[13] Similar results were reported by Bille[1] in children of 10-15 years old. However, Bille[1] did not observe significant differences in prevalence of headache considering gender in children of 7 years of age. Also, it is observed in our study that most of the subjects who had headache were in the age group 11-15 years.

Chronic daily headache in children shows that frequent headache is a significant problem for children and teenagers. This study documented that "headache in childhood are a common and significant health problem".[14] Researchers studied 577 children and teenagers who had been evaluated at Cincinnati Children Headache Center, one of the largest headache center in the United States. Of these, 35% had chronic daily headache, a minimum of 15 days with headache each month. The most common symptoms occurring in children with chronic daily headache were nausea, vomiting, sensitivity to light and sound. In State of Qatar, most of the students had at least one episode a week (38.5%) and 31.7% had almost every month and 20% had daily headache. Also, most triggers found among the students were fatigue (35.8%) and lack of sleep (17.6%). Migraine is the most common cause of severe recurrent headache in children and one child in 9 (11.5%) of school age children suffers from migraine.[15] In a community of the same culture, United Arab Emirates, migraine prevalence was found to be 13.7% , recurrent headache 37% and chronic headache 34.6%.[16] In Qatar, this study shows that 28% had unclassified headache, 20% had chronic daily headache, 14.6% had episodic tension headache, and 11.9% had migraine. Of the subjects, 43.6% experienced unilateral headache and 4.2% of them had migraine with aura. Most investigators argue that the gender difference is mainly due to hormonal changes as stated by Kristjansdottir and Wablgerg,[17] the inconsistent difference found in gender indicate that factors other than gender and age might play a greater role in the prevalence of headache in children. The results of the present study revealed that a significant difference was

Table 3 - Factors involved in episodes by gender.

Variables	Gender		*p*-value*
	Male N=191	Female N=532	
Triggers			
None	20 (10.5)	228 (42.9)	<0.001
Fatigue	107 (56.0)	152 (28.6)	<0.001
Lack of Sleep	44 (23.0)	83 (15.6)	0.021
Psychotic stress	20 (10.5)	41 (7.7)	NS
Menses	- -	28 (5.3)	-
Concurrent symptoms			
Mood instability	100 (52.4)	405 (76.1)	<0.001
Abdominal pain	49 (25.7)	159 (29.9)	NS
Nausea and vomiting	48 (25.1)	150 (28.2)	NS
Throbbing pain	105 (55.0)	320 (60.2)	NS
Blurred Vision	74 (38.7)	272 (51.1)	0.003
Phonophobia	62 (32.5)	167 (31.4)	NS
Relieving factors			
Rest	72 (37.7)	79 (14.8)	<0.001
Sleeping	50 (26.2)	91 (17.1)	0.007
Dark area	11 (5.8)	8 (1.5)	0.002
Analgesic tablets	51 (26.7)	113 (21.2)	NS
Unknown	7 (3.7)	241 (45.3)	-
More than one type of headache	66 (34.6)	203 (38.2)	NS
N of days absence from school			NS
None	35 (18.3)	109 (20.5)	
Once	76 (39.8)	191 (35.9)	
More than once	80 (41.9)	232 (43.6)	

*significant, NS - not significant

Table 4 - Different types of headache found among the school children.

Type of headache	Percentage
Migraine	11.9
Episode tension headache	14.6
Chronic daily headache	20
Unclassified headache	28
Once headache	19.6

found in the prevalence of headache between males and females.

In conclusion, the present study revealed that frequent headache and migraine are a significant problem for children and teenagers. It is incapacitating for school students at any age supposed to be full of enthusiasm and ambition in their young age. The result of our present study are comparable and similar to that found in other parts of the world.

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