Original Article

Frequency and Diversity of Presentation of Migraine Among School Going Children in Rajshahi City.

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Abstract

Background: Most people experience headache at some point in their lifetime. Among them a small proportion suffers from migraine. It is difficult to estimate actual prevalence of headache. Objectives: The aim of our study was to measure frequency of migraine among school going children in Rajshahi city and to evaluate different presentations of migraine. Materials and Methods: This is a population based cross-sectional type of descriptive study in which the survey was conducted among school going children aged 12 -16 years at Rajshahi City from January, 2014 to December, 2015. The diagnostic criteria for migraine defined by International Headache Society (IHS) were used. After taking informed consent purposively collected total 271 migraine patients were enrolled for the proposed study. Screening questionnaire (Questionnaire A) was given to total 2000 students (girls 1000 and boys 1000). A detailed Questionnaire B was distributed to those who had headache. Result: Mean (+SD) age of student of migraine was 13(+1) years, highest proportion (43.54%) of student was between 13 to 15 years of age. Higher frequency of migraine was observed in girls (51.4%) as compared to boys (27.8%). Pulsatile headache is the commonest type of headache. Majority of students reported unilateral headache. 80.4% students reported their headache to aggravated by movement. Associated features were photophobia or phonophobia 63.5%, both 26.6%, nausea 82.7%, vomiting 30.6%. Most students (29.5%) reported sleep disturbance as the aggravating factor of migraine and they reported that their attack is relieved by rest. Conclusion: Early diagnosis and treatment of migraine as well as the education of health workers and families are very important. In our environment the numerical importance of this disease suggests the need to perform further and broader epidemiological studies.

Introduction

Headache is one of humanity's most common afflictions. It has been estimated that one person in three experiences severe headaches at some stage of life. Most people with a mild recurrent or isolated headache do not consult a physician and therefore the true prevalence is unknown. The lifetime prevalence for any type of headache as estimated from population-based studies is more than 90% for men and 95% for women. A survey of a sample of 20000 household in the United States reveals a prevalence rate of migraine of 18.2% in female and 6.5% in male is resulting in an estimated 27.9 million migraineurs. The term migraine derives from the ancient Greek word, hemikranios, which means "half head," underscoring the unilateral distribution of head pain in many sufferers. In the United States approximately 60% of patients with migraine experiences 2 or more attacks per month and more than 75% of migraineurs reports severe or extremely severe attack.[1] More than 90% of patient report an impaired ability to function during migraine attack and 53% report severe disability requiring bed rest. Approximately 31% of the patients with migraine missed at least one day from work or school in the preceding 3 months due to migraine.[2] Indirect cost of migraine related decreased productivity and cost day of work have been calculated to be $30 billion per year. It has been estimated that the convenience of 112 million bedridden days per year are attributable to migraine.[3] Indeed the World Health Organization declared migraine to be among the most disabling medical condition experience worldwide.1 Hoque et

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al. showed in their study that the mean age of headache in school children was 12.6+ 1.08 years with a relatively older age of presentation among girls.[4] The sex ratio was 1.64:1 in favor of girls at an older age. Tension-type headache (71.1%) was the most common form of headache, followed by migraine (18.4%) and mixed headache (6.7%). Though the girls had more frequent headache of both tension type (59.4%) and migraine (68.1%) variety, the latter was significantly associated in girls (p<0.001). Headache was of moderate severity in 53.3%, whereas severe headache was experienced by 19.9% of the children. The children commonly had nausea and/or vomiting (47.2%), as well as photophobia (24.7%) with headache. Mental stress (34%) and sunlight (30.9%) were common triggering factors whereas a sound sleep relieved headache in the majority (59.4%). Paracetamol (83.3%) and nortryptyline (62.8%) were most commonly prescribed drugs taken by them.

In a population based, cross-sectional, questionnaire study, followed by interviews of selected cases and their ophthalmoscopy was conducted in eight secondary schools from different parts of Karachi to cover all socioeconomic groups. A total of 1211 school children aged 12 to 20 years, were included. In result the estimated prevalence rate of headache in school children was 85.5%. Of them 43.1% had mild, 46.6% had moderate and 8.8% had severe headache. Nearly half of them (49.6%) had a frequency of 3 or less episodes per month. Majority (58.7%) had no warning symptoms. The most common symptom prior to headache was subjective weakness (19.0%) followed by sensitivity to light (11.5%). The most common site was frontal headache (30.4%) and in 66.7% of the cases it was aching in character.[5] Antoniu et al. analyzed prevalence, frequency and cause of headache among 460 children ranging from 10 to 14 years-old from a Brazilian school.[6] A questionnaire was handed both to children and parents to know if there would be differences among children and parental reports. The lifetime prevalence of headache was 93.5% (children reports) and 93.3% (parental reports). The last year prevalence was 90% (children) and 89.8% (parents). Headache episodes were frequent in 17.6% (children) and 18.5% (parents). The most often reported cause was "flu" (39.1% by children, and 46.7% by parents). This study demonstrated that the prevalence of headache in children is high and few differences were noted between data obtained from children and parents. Shivpuri et al. studied on migraine among school going children. They distributed a screening questionnaire among 1000 boys and 1000 girls, studying in classes VI to X (11 to 15 years) in two public school of Jaipur. The prevalence of recurrent headache was found to be 18% in boys and 21% in girls, while the prevalence of migraine was 9% in boys and 14% in girls. Among the other causes of recurrent headache TTH was seen in 3.6%, eye problems in 0.38%, sinusitis in 0.22% and undetermined etiology is 2.14% in children.[7] A study was carried out in 200 children (7– 15 years) with migraine from a metropolitan city in Eastern India, both retrospectively and prospectively, with headache diaries to note the incidence of various triggers. In the retrospective study, triggers could be identified in 94% of subjects while in 100% of children in the prospective part of the study more than one trigger could be identified. Most migraine triggers

identified were environmental (sun exposure, hot humid weather, smoke and noise) and stress related (school stress mostly). Quite often these operated concurrently to precipitate individual migraine attacks.[8] In the study done by Arafeh et al. identified and analyzed 50 population-based studies reporting the prevalence of headache and / or migraine in children and adolescents (<20y). The estimated prevalence of headache over periods between 1 month and lifetime in children and adolescents is 58.4% (95% confidence interval (CI 58.1–58.8). Females are more likely to have headache than males (OR 1.53, 95% CI 1.48–1.6). The prevalence of migraine over periods between 6 months and lifetime is 7.7% (95% CI 7.6–7.8). Females are more likely than males to have migraine (OR 1.67, 95% CI 1.60–1.75). Regional differences in prevalence of migraine, though statistically significant, may not be of clinical significance. The change in the IHS's criteria for the diagnosis of migraine was not associated with any significant change in the prevalence of migraine.[9]

Frequency of migraine varies widely throughout the world. There is a paucity of data on migraine in school children especially in Bangladesh. Most of the knowledge on this group of patient is based mainly on study from European countries and few reports from United States. The present study was carried out to investigate migraine in school going children in Rajshahi city. It aimed at observing distribution of migraine according to age and sex, finding out the aggravating and relieving factors of migraine, treatment status among the known migraine, impact of migraine on presence on school and also academic performance and associated the family history of migraine.

The aim of our study was to measure frequency of migraine among school going children in Rajshahi city, socio-demographic characteristics of students with migraine, different presentations, associated features of migraine and impact of migraine on academic performances.

Materials and Methods

This is a population based cross-sectional type of descriptive study in which the survey was conducted among children aged 12 -16 years. The study was conducted among school students of Govt. Laboratory High School, Rajshahi Govt. P.N. girls High School, Rajshahi Govt. Girls High School and Rajshahi Collegiate School in Rajshahi City from January, 2014 to December, 2015. 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. Stratification was based upon geographical location. The diagnostic criteria for migraine used in my study were defined by the International Headache Society (HIS). All information was based on structured prospective personal interviews in Bengali by physicians and qualified nurses.

The sample size was determined with the prior 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 socio-demographic

and environmental factor. Therefore on completing for 99% confidence limits and with 2.5% error bounds, it yielded the required sample size of 2000. This was considered the target population. The level p<0.05 was considered as the part of value for significance. 271 migraine patients were enrolled for the proposed study. Sample was collected by purposive sampling. School for sample collection was chosen by lottery. Screening questionnaire was given to total 2000 students (girls 1000 and boys 1000) studying in 4 public school of Rajshahi. Questionnaire A consisted of a single question to parents "Does your child suffer from recurrent headache?" To those who responded in the affirmative, a detailed Questionnaire B was distributed. Questionnaire B consisted of 20 questions pertaining to characteristics and associations of headache. From Questionnaire B a diagnosis of migraine was made according to IHS criteria, 1988 and severity of headache was assessed by MIDAS score. Data was collected after taking informed consent of the patient.

The data was analyzed with the help of SPSS software program. Descriptive analytical techniques involving frequency distribution, computation of percentage, mean, SD, etc was applied. Association between variable was conducted applying chi-square test.

Eligibility of each case was assessed and identified. Every patient and/or responsible family member was asked for informed consent. They were informed about the procedure and the study goal. The patient was also informed that they are free to refuse to participate or to withdraw at any time without compromising their medical care.

Results

Table I (a): Prevalence of headache. (n= 2000)

	Male N (%)	**Female** N (%)	**Total** N (%)
With headache	395 (39.5)	514 (51.4)	909 (45.5)
Without headache	605 (60.5)	486 (48.6)	1091 (54.5)
Total	1000 (100)	1000 (100)	2000

Table I(b): Prevalence of migraine and other types of headache (n= 909)

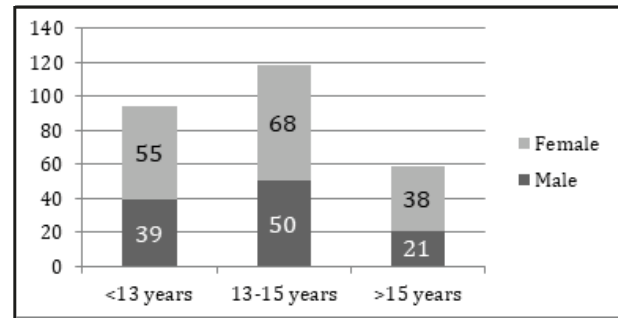|	**Male** N (%)	**Female** N (%)	**Total** N (%)
Migraine	110 (27.8)	161 (31.3)	271 (29.8)
Tension type headache	257 (65.1)	321 (62.5)	578 (63.6)
Others	28 (7.1)	32 (6.2)	60 (6.6)
Total	395 (100)	514 (100)	909

Figure 1- Age distribution of student with migraine. (n = 271)

Table Ia shows that 45.5% student complaint of headache. Among male 39.5% and among female 51.4% had headache. Table Ib shows that prevalence of migraine in students with headache was 29.8% and that of tension type headache was 63.6%. Mean (±SD) age of student with migraine was 13(±1) years, highest proportion of student was between 13 to 15 years of age (118, 43.54%). No significant difference was observed between the age of boys and girls with migraine (t=-1.187, df = 269, p>0.05) (Fig 1). Fig 2 shows that higher prevalence of migraine was observed in girls (161, 59.4%) as compared to boys.
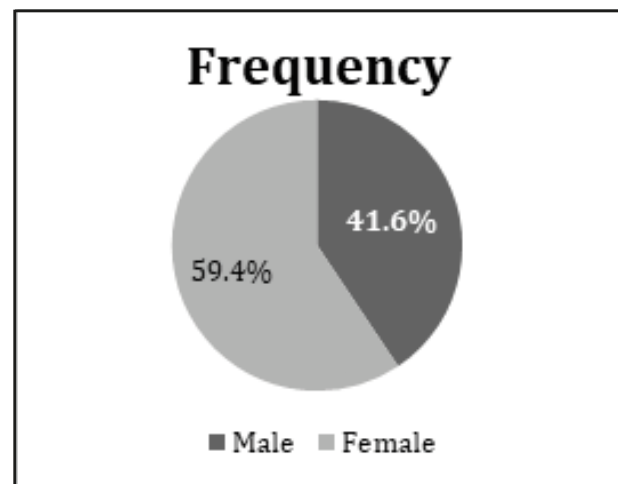

Figure 2: sex distribution of students with migraine. (n=271)

Table II: Family history of migraine. (n = 271)

	Sex		**Total** N (%)
	Male N (%)	**Female** N (%)	
Family history present	53 (48.18)	118 (73.29)	171 (63.09)
Family history absent	57 (51.82)	43 (26.71)	100 (36.91)
Total	110 (100)	161 (100)	271 (100)

Table III: Type, location and severity of headache in students with migraine. (n = 271)

	Male N (%)	Female N (%)	Total N (%)
Type of headache			
Pulsatile	68 (61.8)	109 (67.7)	177 (65.3)
Heaviness	17 (15.5)	4 (2.5)	21 (7.7)
Compressive	13 (11.8)	12 (7.5)	25 (9.2)
Stabbing	0 (0.0)	6 (3.7)	6 (2.2)
Thunderclap	3 (2.7)	1 (0.6)	4 (1.5)
Sharp	9 (8.2)	29 (18.0)	38 (14.0)
Location of headache			
Unilateral	90 (81.8)	156 (97.5)	246 (91.1)
Bilateral	20 (18.2)	4 (2.5)	24 (8.9)
Severity of headache			
Moderate	85 (77.3)	97 (60.2)	182 (67.2)
Severe	25 (22.7)	64 (39.8)	89 (32.8)
Total	**110 (100.0)**	**161 (100.0)**	**271 (100.0)**

Overall 171(63.09%) students with migraine reported a positive family history. Among them 118 (73.29%) was girl which was significantly higher (x2 = 17.697, df = 1, p<0.01) as compared to boys (53, 48.18%) (Table II). Pulsatile headache is the commonest type of headache (overall 65.3%, male 61.8% and female 67.7%). Second most common type of headache in boys is heaviness (15.5%) and in girls is sharp pain (18.0%). Majority of students reported unilateral headache both in male (90, 81.8%) and in female (156, 97.5%). Majority of students reported headache of moderate intensity. Severe headache was reported by 22.7% of boys and 39.8% of girls (Table III).

Table IV: Associated features of migraine in students. (n=271)

Associated features		Male N (%)	Female N (%)	Total N (%)
Aggravation by movement	Present	83 (75.5)	135 (83.9)	218 (80.4)
	Absent	27 (24.5)	26 (16.1)	53 (19.6)
Photophobia or phonophobia	Present	73 (66.4)	99 (61.5)	172 (63.5)
	Absent	37 (33.6)	62 (38.5)	99 (36.5)
Both photophobia and phonophobia	Present	21 (19.1)	51 (31.7)	72 (26.6)
	Absent	89 (80.9)	110 (68.3)	199 (73.4)
Nausea	Present	95 (86.4)	129 (80.1)	224 (82.7)
	Absent	15 (13.6)	32 (19.9)	47 (17.3)
Vomiting	Present	25 (22.7)	58 (36.0)	83 (30.6)
	Absent	85 (77.3)	103 (64.0)	188 (69.4)

218 (80.4%) students reported their headache to aggravated by movement. 172 (63.5%) students have either photophobia or phonophobia and 72 (26.6%) students have both photophobia and phonophobia. 224 (82.7%) patients was associated with nausea and 83 (30.6%) patients was associated with vomiting (Table IV). Most students (29.5%) reported sleep disturbance as the aggravating factor of migraine (male – 30.9% and female – 28.6%). Most students (29.5%) reported that their attack is relieved by rest (male – 67.3% and female – 65.2%) (Table V).

Table V: Aggravating and relieving factors of migraine in students. (n = 271)

	Male N (%)	Female N (%)	Total N (%)
Aggravating factors			
Chocolate	7 (6.4)	5 (3.1)	12 (4.4)
Chiken liver	5 (4.5)	2 (1.2)	7 (2.6)
Weather	16 (14.5)	27 (16.8)	43 (15.9)
Hunger	13 (11.8)	19 (11.8)	32 (11.8)
Sleep disturbance	34 (30.9)	46 (28.6)	80 (29.5)
Drugs	2 (1.8)	0 (0.0)	2 (0.7)
Mental stress	12 (10.9)	21 (13.0)	33 (12.2)
Excessive tiredness	21 (19.1)	41 (25.5)	62 (22.9)
Relieving factors			
Rest	74 (67.3)	105 (65.2)	179 (66.1)
Avoid light	3 (2.7)	2 (1.2)	5 (1.8)
Dark calm space	15 (13.6)	30 (18.6)	45 (16.6)
Medicine	11 (10)	19 (11.8)	30 (11.1)
Massage	7 (6.4)	5 (3.1)	12 (4.4)
Total	**110 (100)**	**161 (100)**	**271 (100)**

Table VI: Type of treatment received by students.(n=271)

	Sex		Total
	Male	Female	N (%)
	N (%)	N (%)	
Symptomatic	77 (70.0)	116 (72.0)	193 (71.2)
Preventive	33 (30.0)	45 (28.0)	78 (28.8)
Total	110 (100)	161 (100)	271 (100)

Table VII: Comparison of decline in school performance in students with migraine. (n=271)

Decline in performance	Sex		Total
	Male	Female	N (%)
	N (%)	N (%)	
Yes	23 (20.9)	38 (23.6)	61 (22.5)
No	87 (79.1)	123 (76.4)	210 (77.5)
Total	110 (100)	161 (100)	271 (100)

Table VI shows that preventive treatment was received by only 28.8% students. Rest of them was taking symptomatic treatment only. Among 271 migraine patients only 61 (22.5%) reported decline in school performance due to migraine and there in no difference of school performance between male and female students ($x2 = 0.272$, df = 1, p > 0.05) (Table VII).

Discussion

In our study mean (+SD) age of student of migraine was 13(+1) year, highest proportion of student was between 13 to 15 years of age (118, 43.54%). No significant difference was observed between the age of boys and girls with migraine. (t=-1.187, df = 269, p>0.05). Chakravarty et al. mentioned in their study that mean age was 11.8 (+0.8) which is slightly lower than our study.[8] Similar lower mean age is seen in study by Hoque et al. '(12.6 +1.08), Antoniuk et al. (11.9) and Thilothammal et al. (9 years). [4,6,10] Slightly higher age of onset was found in the study by Siddiqui et al. (14.49+1.08) Higher prevalence of migraine was observed in girls (161, 59.4%) as compared to boys (110, 40.6%) in our study.[5] Similar higher prevalence of girls was found in the study by Hoque et al. (in girls it was 68.1% compared to 30.9% in boys). Higher prevalence of migraine in female was also noted by the study by Arafeh IA (9.7% in girls compared to 6.0% in boys) and Shivpuri et al. (14% in girls and 9% in boys).[7,9]

Present study shown that overall 171(63.09%) students with migraine had a positive family history. Among them 118(73.29%) was girl which was significantly higher (X2 =

17.697, df = 1, p<0.01) as compared to boys (53, 48.18%). In the previous study family history was present in 52.5%.[5] Similar lower prevalence of family history was found in the study by Shivpuri et al. (35%).[7] Higher prevalence of family history was found in the study by Thilothammal et al. (88%).[10] In our study majority of students had unilateral headache both in male (90, 81.8%) and in female (156, 97.5%). In our study pulsatile headache is the commonest type of headache (overall 65.3%, male 61.8% and female 67.7%). Second most common type of headache in boys is heaviness (15.5%) and in girls is sharp pain (18.0%). Majority of students reported headache of moderate intensity. Severe headache was reported by 22.7% of boys and 39.8% of girls. Significantly higher proportions of girls have reported higher intensity of headache. (X2 = 8.585, df = 1, p< 0.01). In the current study 218 (80.4%) students reported that their headache is aggravated by movement. 172 (63.5%) students had either photophobia or phonophobia and 72 (26.6%) students had both photophobia and phonophobia. In our study among 271 migraine patients only 61 (22.5%) reported decline in school performance due to migraine and there in no difference of school performance between male and female students (X2 = 0.272, df = 1, p > 0.05). In the study by Arruda & Bigel they stated that school performance was significantly reduced in school going children which was in 30%.[11] In the study we found that preventive treatment was received by only 28.8% students. Rest of them was taking symptomatic treatment only. In our study we found that most students (29.5%) reported that their attack is relieved by rest (male – 67.3% and female – 65.2%). Migraine has impact upon the school performance in school going children. This study on migraine in school children also state that most of the students

Conclusion

The early diagnosis and treatment of migraine as well as the education of health workers and families are very important. The main drawback of this study was the number of selection of schools. Here, migraine patients were selected only from four schools. So, it may not represent total population. Another drawback is that no imaging or other investigations to exclude secondary headache was done. Early diagnosis, preventive measures and counseling of migraine patients in school going children should be done to improve school performance.

Acknowledgement

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