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PREVALENCE AND PATTERNS OF CHILDHOOD HEADACHE AND MIGRAINE IN GOVT SCHOOLS IN PAKISTAN.

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Abstract:
Headache in children is among the top five health problems in childhood. Childhood headaches and migraine have a severe adverse impact, not only on the daily life of the child but also on the family of the child.

1. To determine the prevalence of childhood headaches and migraine in government school children.
2. To determine the different patterns and associated symptoms of headache and migraine in schoolchildren.

Study Design: Descriptive cross-sectional study.

Settings: Four Government schools including two boys and two girls schools were selected for the study.

Duration of Study: Six months from 24-08-2018 to 23-02-2019.

Subject and Methods: This cross-sectional study includes 1000 school children enrolled from four different Government schools. Children who fulfilled the inclusion criteria were enrolled in the study. A standard questionnaire was designed and used for the collection of data from school children. Detailed demographic and medical history of each child including age, class, signs, and symptoms (weakness, dizziness, noise intolerance, light sensitivity, visual disturbances, light flashes, tingling, numbness, nausea, vomiting), pattern, and frequency of headache. Diagnosed patients will be referred to a specialist for proper treatment. Questionnaire was filled by the students in the classroom setting under the supervision of a researcher which was further validated by a researcher. Data were analyzed by using Statistical Package for the Social Sciences version 22.

In the current study, 679 children of four different schools were evaluated for headaches and migraine, out of which 366 (53.9%) children were male and 313 (46.1%) children were female. Headache was present in 539 (79.4%) school children, and migraine in 109 (20.2%) children. The frequency of headaches in schoolchildren was 3 or less/month in 273 (50.6%) children, 3 or less/week in 248 (46.0%) children, and daily in 18 (3.4%) children. Front headache was most commonly reported in school children 173 (32.1%) followed by bilateral headache in 149 (27.6%) children, top headache in 81 (15.0%) children, unilateral headache in 79 (14.7%) children, back headache in 47 (8.7%) children, and non-specific headache in 10 (1.9%) children.

It was concluded from the study that headache and migraine in schoolchildren were the most commonly reported complaint and the major health problem resulting in school absenteeism, loss of school hours, and loss of children's activity in extracurricular activities.

Keywords: Headache, children, migraine, adverse, family.

Introduction:

Headache is a common presentation in primary care. It affects patients' work, relationships, and social activities, and exacts a significant social and financial cost. While headaches make up 5% of the global disease burden in terms of disability. Headaches are among the top five health problems in childhood [1]. Headaches are common during childhood and become more common and more frequent during adolescence. An epidemiologic survey of 9,000 schoolchildren found that one-third of the children who were at least seven years of age and one-half of those who were at least 15 years of age had headaches [2]. Frequent headache was reported in 2.5 percent of children who were at least seven years of age and

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15 percent of those who were at least 15 years of age. The prevalence of headaches ranged from 37 to 51 percent in those who were at least seven years of age and gradually rose to 57 to 82 percent by age 15. Before puberty, boys are affected more frequently than girls, but after the onset of puberty, headaches occur more frequently in girls [3-5].

In 1962, Bille reported a prevalence of 40% for childhood headaches by seven years of age and 75% by 15 years of age [2]. Sillanpäa and Antilla found an increase in the prevalence of headaches from 14% in 1974, to 52% in 1996, among seven-year-old Finnish schoolchildren [6]. Among Canadian adolescents, it was found that 26.6% of 12- to 13-year-olds and 31.2% of 14- to 15-year-olds reported headaches at least once per week [7]. Prevalence estimates for migraines vary from 1% to 3% for children seven years of age, and 4% to 11% for children eight to 15 years of age [2, 8, 9]. In a Canadian population-based study, a prevalence for migraine of 2.4% for 12- to 14-year-olds and 5.0% for 15- to 19-year-olds was reported [10].

Pediatricians must have an approach to the management of children with headaches. In a 20-year follow-up study, headaches were found to persist into adulthood in 73% of children who presented with headaches. Teaching appropriate management may, therefore, have lifelong benefits [11].

MATERIAL AND METHODS:

SETTING:
Four Government schools including two boys and two girls schools were selected for the study. These were;
1. Government Girls High School Green Belt Karachi = A
2. Noore Islam Government Girls School Karachi =B
3. Government School Malir Boys Karachi = C
4. Government Chanesar Village Boys School Karachi = D

DURATION OF STUDY:
Six months from 24-08-2018 to 23-02-2019.

STUDY DESIGN:
Descriptive cross-sectional study.

SAMPLE SIZE:
During the study period, four government schools were visited. Eight hundred (800) questionnaires were distributed, among which 121 were not filled and contains incomplete information so excluded from the study, whereas the remaining 679 questionnaires were completely filled and included in the study.

SAMPLING TECHNIQUE:
Consecutive sampling.

SAMPLE SELECTION:

Inclusion Criteria:
Following patients were included in the study;
- Children of either gender (male or female).
- Children having age of 12 to 20 years.
- Children enrolled in classes VIII to X.

Exclusion Criteria:
Following patients were excluded from the study;
- Children having age < 12 years or > 20 years.
- Children of class VII or below.

Children are not willing to participate in the study.

DATA COLLECTION PROCEDURE:
This study was performed after the permission of the research evaluation unit (REU) of Ziauddin University Karachi and permission was also obtained from the director of education of schools, as well as from the headmasters of schools. Students of class VIII to X were informed about the objective and scope of study and then included in the study after obtaining informed consent.

A standard questionnaire was designed and used for the collection of data from school children. Questionnaires were made in English, Urdu, and Sindhi language and distributed among school children. Questionnaire includes the detailed demographic and medical history of each child including age, class, signs, and symptoms (weakness, dizziness, noise intolerance, light sensitivity, visual disturbances, light flashes, tingling, numbness, nausea, vomiting), pattern and frequency of headache. Questionnaire was filled by the students in the classroom setting under the supervision of a researcher which was further validated by the researcher. Diagnosed patients will be referred to a specialist for proper treatment.

DATA ANALYSIS PROCEDURE:
After the collection of data, the analyses were conducted by using Statistical Package for Social Science (SPSS) software, Version 22.

Mean and standard deviation was calculated for a quantitative variables like age (in years) and frequency of headache. Frequency and percentages were calculated for gender, age in groups, educational level, signs and symptoms (weakness, dizziness, noise intolerance, light sensitivity, visual disturbances, light flashes, tingling, numbness, nausea, vomiting), site of headache, headache (yes/no), migraine (yes/no) and severity of headache. Effect modifiers like gender, age in groups, educational level, site of headache were controlled by stratification with a headache by applying chi-square test and taking p-value ≤ 0.05 as significant.

OBJECTIVES:
1. To determine the prevalence of headaches and migraine in schoolchildren.
2. To determine the different patterns and associated symptoms of headache and migraine in schoolchildren.

OPERATIONAL DEFINITION:
Headache:
Headache was defined as the occurrence of more than a single episode of the headache of more than 2 hours duration in the last year.

Migraine:

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Migraine headaches were defined as those lasting 4-72 hours, usually unilateral, having pulsating nature, moderate or severe in intensity, worsening with routine exertion, and associated with nausea and/or photophobia and phonophobia.

RESULTS:

In the current study, 679 children of four different schools were included who fulfill the inclusion criteria of the study.

In table 1 four different schools with selected children were enlisted, among which 161 (23.7%) children from school A, 173 (25.5%) children from school B, 165 (24.3%) children from school C, and 180 (26.5%) children from school D.

In table 2 descriptive statistics of the continuous variable of age (in years) were done, where the mean and standard deviation of the age was 14.6 ± 1.18 (12-20) years.

In table 3 descriptive statistics of the continuous variable of frequency of headache (per month) were done, where the mean and standard deviation of the frequency of headache was 5.78 ± 5.75 (1-30) per month.

In table 4 distribution of gender was done; in this study 366 (53.9%) children were male and 313 (46.1%) children were female.

In table 5 distribution of age in groups was done; in this study enrolled children were grouped as; in 12-14 years 348 (51.3%) children, in 15-17 years 317 (46.7%) children and in 18-20 years 14 (2.1%) children.

In table 6 distribution of school children's class was done; in this study enrolled children were grouped as; in VIII class 292 (43.0%) children, in IX class 202 (29.7%) children, and in X class 185 (27.2%) children.

In table 7 distribution of weakness was done; in this study 141 (20.8%) children have weakness and 538 (79.2%) children have no weakness.

In table 8 distribution of dizziness was done; in this study 86 (12.7%) children have dizziness and 593 (87.3%) children have no dizziness.

In table 9 distribution of noise, intolerance was done; in this study 79 (11.6%) children have noise intolerance and 600 (88.4%) children have no noise intolerance.

In table 10 distribution of light sensitivity was done; in this study 83 (12.2%) children have light sensitivity and 596 (87.8%) children have no light sensitivity.

In table 11 distribution of visual disturbance was done; in this study 80 (11.8%) children have visual disturbance and 599 (88.2%) children have no visual disturbance.

In table 12 distribution of light flashes was done; in this study 62 (9.1%) children have light flashes and 617 (90.9%) children have no light flashes.

In table 13 distribution of tingling was done; in this study 23 (3.4%) children have tingling and 656 (96.6%) children have no tingling.

In table 14 distribution of numbness was done; in this study 22 (3.2%) children have numbness and 657 (96.8%) children have no numbness.

In table 15 distribution of nausea was done; in this study 41 (6.0%) children have nausea and 638 (94.0%) children have no nausea.

In table 16 distribution of vomiting was done; in this study 34 (5.0%) children have vomiting and 645 (95.0%) children have no vomiting.

In table 17 distribution of headaches was done; in this study 539 (79.4%) children have a headache and 140 (20.6%) children have no headache.

In table 18 distribution of frequency of headache was done; in this study enrolled children were grouped as; 3 or less/month having 273 (50.6%) children, 3 or less/week having 248 (46.0%) children and daily having 18 (3.4%) children.

In table 19 distribution of site of headache was done; in this study enrolled children were grouped as; front headache in 173 (32.1%) children, bilateral headache in 149 (27.6%) children, top headache in 81 (15.0%) children, unilateral headache in 79 (14.7%) children, back headache in 47 (8.7%) children, and non-specific headache in 10 (1.9%) children.

In table 20 distribution of migraine was done; in this study 109 (20.2%) children have migraine and 430 (79.8%) children have no migraine.

In table 21-23 stratification of headache was done with respect to gender, age in groups (years), and a class of school children. Post-stratification chi-square test was applied that shows non-significant p-value with gender, age, and in groups (years) and significant p-value with a class of school children.

In table 24-26 stratification of migraine was done with respect to gender, age in groups (years), and a class of school children. Post-stratification chi-square test was applied that shows non-significant p-value with gender, age, and in groups (years) and a class of school children.

TABLES:

Table: 1

DISTRIBUTION OF SCHOOLS

Schools	Frequency	Percent
A	161	23.7

B	173	25.5
C	165	24.3
D	180	26.5
Total	679	100.0

Table: 2
DESCRIPTIVE STATISTICS OF CONTINUOUS VARIABLE(AGE)

Variable	N	Min.	Max.	Mean	Std. Deviation
Age (Years)	679	12	20	14.6	1.18

Table: 3
DESCRIPTIVE STATISTICS OF CONTINUOUS VARIABLE (FREQUENCY OF HEADACHE)

(n=539) **Variable**	**N**	**Min.**	**Max.**	**Mean**	**Std. Deviation**
Frequency of Headache (per months)	539	1.0	30.0	5.78	5.75

Table: 4
DISTRIBUTION OF GENDER

(n=679) **Gender**	**Frequency**	**Percent**
Male	366	53.9
Female	313	46.1
Total	679	100.0

Table: 5
DISTRIBUTION OF AGE GROUPS

(n=679) **Age Groups**	**Frequency**	**Percent**
12-14	348	51.3
15-17	317	46.7
18-20	14	2.1
Total	679	100.0

Table: 6
DISTRIBUTION OF CLASS

(n=679) **Class**	**Frequency**	**Percent**
VIII	292	43.0
IX	202	29.7
X	185	27.2
Total	679	100.0

Table: 7

DISTRIBUTION OF WEAKNESS

(n=679) **Weakness**	**Frequency**	**Percent**
Yes	141	20.8
No	538	79.2
Total	679	100.0

Table: 8
DISTRIBUTION OF DIZZINESS

(n=679) **Dizziness**	**Frequency**	**Percent**
Yes	86	12.7
No	593	87.3
Total	679	100.0

Table: 9
DISTRIBUTION OF NOISE INTOLERANCE

(n=679) **Noise Intolerance**	**Frequency**	**Percent**
Yes	79	11.6
No	600	88.4
Total	679	100.0

Table: 10
DISTRIBUTION OF LIGHT SENSITIVITY

(n=679) **Light Sensitivity**	**Frequency**	**Percent**
Yes	83	12.2
No	596	87.8
Total	679	100.0

Table: 11
DISTRIBUTION OF VISUAL DISTURBANCE

(n=679) **Visual Disturbance**	**Frequency**	**Percent**
Yes	80	11.8
No	599	88.2
Total	679	100.0

Table: 12
DISTRIBUTION OF LIGHT FLASHES

(n=679) **Light Flashes**	**Frequency**	**Percent**
Yes	62	9.1
No	617	90.9
Total	679	100.0

Table: 13
DISTRIBUTION OF TINGLING

(n=679) **Tingling**	**Frequency**	**Percent**
Yes	23	3.4
No	656	96.6
Total	679	100.0

Table: 14
DISTRIBUTION OF NUMBNESS

(n=679) **Numbness**	**Frequency**	**Percent**
Yes	22	3.2
No	657	96.8
Total	679	100.0

Table: 15
DISTRIBUTION OF NAUSEA

(n=679) **Nausea**	**Frequency**	**Percent**
Yes	41	6.0
No	638	94.0
Total	679	100.0

Table: 16
DISTRIBUTION OF VOMITING

(n=679) **Vomiting**	**Frequency**	**Percent**
Yes	34	5.0
No	645	95.0
Total	679	100.0

Table: 17
DISTRIBUTION OF HEADACHE

(n=679) **Headache**	**Frequency**	**Percent**
Present	539	79.4
Absent	140	20.6
Total	679	100.0

Table: 18
DISTRIBUTION OF FREQUENCY OF HEADACHE

(n=539) **Frequency of Headache**	**Frequency**	**Percent**
3 or less/month	273	50.6
3 or less/week	248	46.0

Daily	18	3.4
Total	539	100.0

Table: 19
DISTRIBUTION OF SITE OF HEADACHE

(n=539) **Site of Headache**	**Frequency**	**Percent**
Front	173	32.1
Bilateral	149	27.6
Top	81	15.0
Unilateral	79	14.7
Back	47	8.7
Non-specific	10	1.9
Total	539	100.0

Table: 20
DISTRIBUTION OF MIGRAINE

(n=539) **Migraine**	**Frequency**	**Percent**
Present	109	20.2
Absent	430	79.8
Total	539	100.0

Table: 21
STRATIFICATION OF HEADACHE WITH RESPECT TO GENDER
(Chi- square value = 0.010
P-value = 0.9 (Non-significant)

(n=679) **Gender**	**Headache**				**Tota**	
	Present		**Absent**			
N	**%**	**N**	**%**		**N**	**%**
Male	290	53.8	76	54.3	366	53.9
Female	249	46.2	64	45.7	313	46.1
Total	539	100.0	140	100.0	679	100.0

Table: 22
STRATIFICATION OF HEADACHE WITH RESPECT TO AGE GROUP
(Chi- square value = 0.352
P-value = 0.8 (Non-significant)

(n=679) **Age Group**	**Headache**				**Total**	
	Present		**Absent**			
N	**%**	**N**	**%**		**N**	**%**
12-14	276	51.2	72	51.4	348	51.3

15-17	251	46.6	66	47.1	317	46.7
18-20	12	2.2	2	1.4	14	2.1
Total	539	100.0	140	100.0	679	100.0

Table: 23
STRATIFICATION OF HEADACHE WITH RESPECT TO CLASS
(Chi- square value = 5.887
P-value = 0.05 (Significant)

(n=679) **Class**	**Headache**				**Total**	
	Present		**Absent**			
	N	**%**	**N**	**%**	**N**	**%**
VIII	223	41.4	69	49.3	292	43.0
IX	158	29.3	44	31.4	202	29.7
X	158	29.3	27	19.3	185	27.2
Total	539	100.0	140	100.0	679	100.0

Table: 24
STRATIFICATION OF MIGRAINE WITH RESPECT TO GENDER
(Chi- square value = 3.458
P-value = 0.06 (Non-significant)

(n=539) **Gender**	**Migraine**				**Total**	
	Present		**Absent**			
	N	**%**	**N**	**%**	**N**	**%**
Male	50	45.9	240	55.8	290	53.8
Female	59	54.1	190	44.2	249	46.2
Total	109	100.0	430	100.0	539	100.0

Table: 25
STRATIFICATION OF MIGRAINE WITH RESPECT TO AGE GROUP
(Chi- square value = 1.173
P-value = 0.5 (Non-significant)

(n=539) **Age Group**	**Migraine**				**Total**	
	Present		**Absent**			
	N	**%**	**N**	**%**	**N**	**%**
12-14	58	53.2	218	50.7	276	51.2
15-17	50	45.9	201	46.7	251	46.6
18-20	1	0.9	11	2.6	12	2.2
Total	109	100.0	430	100.0	539	100.0

Table: 26
STRATIFICATION OF MIGRAINE WITH RESPECT TO CLASS

(Chi- square value = 1.160
P-value = 0.5 (Non-significant)

(n=539) **Class**	**Migraine**				**Total**	
	Present		**Absent**			
	N	**%**	**N**	**%**	**N**	**%**
VIII	50	45.9	173	40.2	223	41.4
IX	30	27.5	128	29.8	158	29.3
X	29	26.6	129	30.0	158	29.3
Total	109	100.0	430	100.0	539	100.0

DISCUSSION:

Headache and migraine is the most commonly reported complaint in school children and the most common health problem affecting school children throughout the world [12, 13]. The prevalence of headaches has increased considerably in children during the last few decades and the age of onset has decreased [12, 14]. Moreover, much less is known about the prevalence and causes of headaches in schoolchildren in general [15]. Very much less work has been done locally and less data is available locally regarding its prevalence, frequency, different patterns, and associated features.

Therefore, the current research was designed for local school children of Karachi, Sindh Pakistan. The research focuses on determining the prevalence of headache and migraine in schoolchildren along with different patterns and associated symptoms of headache and migraine in schoolchildren.

In the current study, 679 children of four different schools were evaluated for headaches and migraine. Out of which headache was present in 539 (79.4%) school children, and migraine was present in 109 (20.2%) children. A similar Pakistani study by Siddiqui SJ, et al. also reported a similar higher prevalence of 85.5% of headaches in schoolchildren [76]. Another study by Zwart JA, et al. also reported a higher prevalence 76.8% of headaches and lower prevalence 7% of migraine in schoolchildren [17]. Antoniuk S, et al. also reported a higher headache prevalence 93.5% in school children [18]. Similar studies are reporting the higher prevalence of headaches and lower prevalence of migraine in school children.

In the current study, the frequency of headaches in schoolchildren was 3 or less/month in 273 (50.6%) children, 3 or less/week in 248 (46.0%) children, and daily in 18 (3.4%) children. A similar Pakistani study by Siddiqui SJ, et al. also reported a similar pattern of frequency distribution such as 49.6% of children had either 3 or less episodes of headache per month whereas 32.0% of children had either 3 or fewer episodes per week and only 0.7% children were found to have daily headaches [76]. The frequency of headaches in schoolchildren depends upon the severity of headaches vary from child to child.

In the current study, site of headache in schoolchildren was; front headache in 173 (32.1%) children, bilateral headache in 149 (27.6%) children, top headache in 81 (15.0%) children, unilateral headache in 79 (14.7%) children, back headache in 47 (8.7%) children, and non-specific headache in 10 (1.9%) children. A similar pattern of the site of headache was reported by another Pakistani study Siddiqui SJ, et al. who observed frontal headache in 30.4% of children, bilateral headache in 26.9% children, top headache in 16.7% of children, unilateral headache in 15.8% children, back headache in 8.4% children and non-specific headache in 1.7% children [16].

In the current study, 366 (53.9%) children were male and 313 (46.1%) children were female. Prevalence of headache was high in male children 290 (53.8%) compared to female children 249 (46.2%). A Pakistani study by Siddiqui SJ, et al. also reported that similar male 50.7% and female 49.3% children suffering from headache [16]. Similar studies are showing that both male and female children are at equal risk of developing headaches and migraine.

In the current study, the most affected age group of school children was 12-14 years having 348 (51.3%) children followed by 15-17 years having 317 (46.7%) children and 18-20 years having 14 (2.1%) children with a mean age of 14.6 ± 1.18 (12-20) years. A similar pattern of headache and migraine was observed in different age groups. Siddiqui SJ, et al. also reported a higher prevalence of headache in 12-14 years of age group followed by 15-17 years and 18-20 years [16]. Antoniuk S, et al. also reported the higher headache prevalence in age ranging from 10-14 years [17]. A study by Al-Hashel JY, et al. reported a higher prevalence of headaches in the 12 to 17 years age group [18]. As the age increased prevalence of headaches and migraine decreased. After the age of 15 years, there was a decline in headaches, showing puberty being a susceptible age.

In the current study most commonly reported signs and symptoms of headache were; weakness in 141 (20.8%) children, dizziness in 86 (12.7%) children, noise intolerance in 79 (11.6%) children, light sensitivity in 83 (12.2%) children, visual disturbance in 80 (11.8%)

children, light flashes in 62 (9.1%) children, tingling in 23 (3.4%) children, numbness in 22 (3.2%) children, nausea in 41 (6.0%) children, and vomiting in 34 (5.0%) children. Siddiqui SJ, et al. also reported the similar prevalence of different signs and symptoms of headache among school children including weakness in 19.0% of children followed by sensitivity to light in 11.5% children, visual disturbance in 11.2% of children, light flashes in 8.2% children, tingling or numbness in 2.8% children, and difficulty in speaking prior to their headaches in 1.3% children [16]. Similar signs and symptoms were also reported by Jeong YJ, et al. in school children [20].

CONCLUSION:

It was concluded from the study that headache and migraine in schoolchildren were the most commonly reported complaint and the major health problem resulting in school absenteeism, loss of school hours, and loss of children's activity in extracurricular activities.

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