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Headache Disability and Associated Factors Among High School Children with Primary Headache

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ABSTRACT

Background: Headaches is an extremely frequent occurrence in children and adolescence and considered as the commonest reasons for neurological consultation. The prevalence of primary headache ranges from 10-20% in school aged children and increases with increasing age. Headaches in children and adolescents have devastating impact resulting in school absence, and decreased school performance, poor quality of life, social withdrawal, and changes in family interaction.
The present study aims to assess headache disability among high school children with primary headache and determine the associated factors.
Methods: The prevalence of primary headache among high school children was diagnosed using ICHD 3 beta diagnostic criteria. Questionnaire consisting of socio personal data and clinical data sheet were used to collect data and headache related disability was determined using PEDMIDAS tool.
Results: Among 1200 children studied 10.7% had little or no disability, 26.5% had mild disability, 5.3% had moderate disability, and 0.7% had severe disability and 56.8% had no primary headache. There was significant association between headache disability with gender, religion, type of school, mode of living, socioeconomic status, sleep, academic stress, menstruation, skipping breakfast, exposure to sunlight, stress from peers, loud noise, duration, intensity of headache with p value<0.05 level.
Conclusion: The primary headaches are composed of multiple entities that cause episodic and chronic head pain in the absence of an underlying pathologic process, disease, or traumatic injury. Many factors that trigger headache can be avoided with behavioral modifications and non-pharmacological approaches and estimation of children with disability helps to identify and adopt behavioral and pharmacological approach in prevention and management of headache.

Keywords: Tension type headache, PEDMIDAS

INTRODUCTION

Primary headache

Headache disorders constitute a considerable public health concern among children and adolescents, leading to notable morbidity. Global, regional, and national burden of headache disorders, particularly migraine and tension-type headache (TTH), from 1990 to 2021, utilizing data from the Global Burden of Disease (GBD) 2021depicted that 811.7 million people around the world were affected with recurrent headache. From 1990

to 2021, the number of Years Lived with Disabilities worldwide caused by headache disorders rose from 10.3 million to 12.8 million. [1]

Currently 66% to 71% of 12- to 15-year-olds encounter at least one headache every three months, while 33% to 40% experience at least one headache weekly. Several studies have portrayed the following risk factors for headache or its chronicity (with a risk elevation of up to 5.8 times): a defective family environment, perpetual alcohol consumption, caffeine intake, smoking, diminished physical activity levels, physical or emotional abuse, peer tormenting, inequitable treatment in educational settings, and scarce leisure time. [2]

Incidence, prevalence, and both fatal and non-fatal outcomes of primary headache indicates that migraine and tension-type headache (TTH) collectively represent 37.5% of all-cause prevalence and 7% of all-cause Years Lived with Disability (YLDs). Over the last ten years, the rates of TTH in people of all ages and migraines in teenagers have gone up considerably. [3]

Headaches are the most common complaints among children. Studies examining quality of life (QoL) utilizing a validated outcome measure in pediatric patients with headaches were incorporated and the predominant health concepts identified were physical functioning (n = 113 items) and social and psychological wellbeing (n = 117, n = 91, respectively). Headache in children had a significant impact on the various components of quality of life. [4]

The overall prevalence of primary headache in children and adolescents was 62% [95% CI: 53–70%]; among females, it was 38% [95% CI: 16–66%], and among males, it was 27% [95% CI: 11–53%]. There was poor epidemiological data on less prevalent primary headaches, including trigeminal autonomic cephalgia. [5]

Recurrent headaches are a common issue among school-aged children. Currently, 66% to 71% of adolescents aged 12 to 15 experience at least one headache every three months, and 33% to 40% suffer from at least one headache weekly. [6]

Headache disorders are common and distressing conditions impacting people of all ages, including children and adolescents with significant impact on their academic activities and relaxation time. The results found that, migraine and tension-type headache (TTH) comprise 37.5% of prevalence and 7% of all-cause Years Lived with Disabilities (YLD). Over the past decade, prevalence rates exhibited a mild increase of TTH in all ages and of migraine alone for adolescents. The YLDs become greater among females of all ages with some regional differences that could be connected to the unequal accessibility in effective acute and prophylactic treatments. [7]

MATERIALS AND METHODS

Study design

Cross sectional design was adopted in the study to identify headache disability and associated factors.

Setting of study

Study was carried out in high schools of Thiruvananthapuram Corporation. 1200 school children in the age group of 12-16 years were examined for primary headache using International Headache Society diagnostic criteria. Among children identified as primary headache, headache disability was estimated using PEDMIDAS tool. The schools of Thiruvananthapuram corporation were stratified into government, private and aided schools and schools were selected using random sampling technique. Using population proportion to size 1200 participants were selected from government (410), private (172) and aided schools (618).

Sampling technique

Stratified multistage cluster sampling

Study Questionnaire

Tool 1- Questionnaire to assess socio demographic data

Tool 2 – Interview schedule which consist of ICHD -3 beta International Headache

Society diagnostic criteria for diagnosing primary headache.

Interview schedule consists of diagnostic criteria of migraine, tension type headache, trigeminal autonomic neuralgia and other primary headaches.

Tool 3- Clinical data

Tool 4 - Questionnaire to measure headache disability using PEDMIDAS tool.

PEDMIDAS tool was developed to assess migraine disability in pediatric and adolescent patients. In this tool headache related disability experienced by children in school, home were assessed. Score range is from 0-50 and children were categorized into little, mild, moderate and severe disability. The investigator had obtained copyright permission of the tool from the author.

Data collection procedure

Permission was obtained from Institutional Research committee, Human Ethical Committee, Govt. Medical College, Thiruvananthapuram. The investigator obtained prior permission for conduct of the study from the DPI, Thiruvananthapuram. Required number of school children were planned based on stratified multi stage cluster sampling technique.

Permission was obtained from the selected school and written informed consent from parents and informed written assent were obtained from the students. Participant information sheet was distributed and the purpose of data collection was explained. Data was collected in a single phase. Questionnaire was distributed to the students and the sociodemographic variables of each student were collected.

Among children with reported complaint of 2 episodes of headache in the last 6 months not related to fever or infection were evaluated using ICHD -3 beta Diagnostic Criteria 2018 by the investigator. Based on symptom characteristics children were diagnosed as migraine, tension type headache, trigeminal autonomic cephalgia and other headaches. Among children with headache, headache disability was assessed using PEDMIDAS tool. Duration of data collection in children without headache was 10 minutes and with complaints of headache was approximately 30 minutes. Parents of children with primary headache were be informed by the investigator and referral service to neurologist was done.

Ethical considerations

The research protocol got Institutional Research committee & Ethics Committee Clearance from Govt. Medical College, Thiruvananthapuram. Setting permission was obtained from Directorate of Public Instruction Thiruvananthapuram, written informed consent was obtained from the parents and written informed assent was obtained from each student prior to data collection. Participant information sheet was distributed to the students prior to data collection.

Statistical Analysis

Proportion of prevalence of headache disability was calculated with 95% confidence interval. Association of study variables with outcome variable were tested using Chisquare test. Data were analyzed using SPSS version 20 and significance was fixed at p value of <0.05 level.

RESULTS

Table 1 Characteristics of study group. n=1200

Characteristics	n	f (%)
Age	13	405 (33.8)
	14	460(38.3)
	15	335(27.9)
Gender	Male	550(45.8)
	Female	650 (54.2)
Class	8	465(38.8)
	9	360(30.0)
	10	375(31.3)

Type of School	Government	410(34.2)
	Private	172(14.3)
	Aided	618(51. 5)
Syllabus	State	1140(95)
	CBSE	60(5.0)
Type of family	Nuclear	792(66.0)
	Joint/Extended	408(34.0)
Socio Economic	Upper	107(8.9)
Status	Upper middle	414(34.5)
	Lower middle	323(26.9)
	Upper lower	223(18.6)
	Lower	133(11.1)

Table 2 Distribution of children based on headache disability. n=1200

Headache disability	n (%)
Little/None	128(10.7)
Mild	318(26.5)
Moderate	64(5.3)
Severe	8(0.7)
No headache	682(56.8)

Table 3 Association between headache disability and sociodemographic variables

Variables		Headache disability								χ^2	df	p
		Little/No		Mild		Moderate		Severe				
		F	%	f	%	f	%	f	%			
Gender	Male	29	13.6	157	73.7	19	8.9	8	3.8	34.45	3	0.00
	Female	99	32.4	161	52.8	45	14.8	0	0			
Religion	Hindu	86	24.9	211	61.2	43	12.5	5	1.4	13.2	6	0.04
	Muslim	17	21.2	43	53.8	18	22.5	2	2.5			
	Christian	25	26.9	64	68.8	3	3.3	1	1.0			
School	Government	16	11.4	106	75.2	15	10.6	4	2.8	18.39	6	0.05
	Private	25	28.1	47	52.9	16	17.9	1	1.1			
	Aided	87	30.2	165	57.3	33	11.5	3	31.0			

Table 4 Association between headache disability and dietary, academic, environmental variables

Headache disability												
Variables		Little/No		Mild		Moderate		Severe		χ^2	df	p
		F	%	f	%	f	%	f	%			
Skip breakfast	Yes	42	26	85	52.8	31	19.4	3	1.8	8	3	.004
	No	86	24.1	233	653	33	9.2	5	1.4			
Sleep deprivation	3 hrs.	8	38	7	33.3	5	23.9	1	4.8	16	6	.001
	4-6	70	31.1	130	58.3	22	9.8	2	0.8			
	7-9	50	18.4	181	66.3	37	135.5	5	1.8			
Peer	Always	18	41.9	19	44.2	6	13.9	0	0.00	18	6	.006
Stress	Sometimes	43	23.3	109	58.9	32	17.3	1	0.5			
	Never	67	23.1	190	65.5	26	8.9	7	2.5			
Loud	Always	31	29.5	50	47.6	23	21.9	1	1	12	6	.004
Noise	Sometimes	55	23	158	66.2	23	9.6	3	1.2			
	Never	42	24.8	105	62.1	18	10.6	4	2.5			
Sunlight	Always	48	28.7	90	53.9	27	16.2	2	1.2	15	6	.01
Exposure	Sometimes	56	21.4	178	68.3	22	84	5	1.9			
	Never	24	26.7	50	55.6	15	16.6	1	1.1			

DISCUSSION

The present study was intended to assess headache disability among children with primary headache and determine the associated factors. In the present study among 1200 children studied 10.7% had little

or no disability, 26.5% had mild disability, 5.3% had moderate disability, and 0.7% had severe disability and 56.8% had no primary headache. These findings are more or less congruent with a study done in India on headache disability among school children in a tertiary care center among 14 to 18 years using PEDMIDAS tool found that 32.9 % had no disability 35.2 % had mild disability 12.5% had moderate disability and 19.3% had severe disability.[8]

In this study it was found that there was significant association between headache disability with gender, religion, type of school, mode of living, socioeconomic status, sleep, academic stress, menstruation, skipping breakfast, exposure to sunlight, stress from peers, and loud noise with p value<0.05 level. The study findings agree with similar study done in United States in which children with primary headache were more likely to experience poor school attendance (17.3% [95% CI, 12.9-22.7] vs 3.0% [95% CI, 2.6-3.5]), school problems (22.8% [95% CI, 18.1-28.3] vs 9.6% [95% CI, 8.9-10.2]), and repeating a grade (8.3% [95% CI, 7.1-11.6] vs 5.0% [95% CI, 4.5-5.6]). After adjusting for covariates, children with headache had increased odds of school absenteeism (aOR, 2.7; 95% CI, 1.7-4.2) and school-reported problems (aOR, 1.6; 95% CI, 1.1-2.4).[9]

In the review related to headache disability and demographic and clinical variables there is scarcity of research studies in the last 5 years. However studies substantiate that recurrent headache in school children had significantly affected their school performance, social and physical wellbeing

CONCLUSION

The present study was conducted to assess headache disability among children with primary headache and determine the associated factors. In the present study among 1200 children studied 10.7% had little or no disability, 26.5% had mild disability, 5.3% had moderate disability, and 0.7% had severe disability and 56.8% had no primary headache. There was significant association between headache disability with gender, religion, type of school, mode of living, socioeconomic status, sleep, academic stress, menstruation, skipping breakfast, exposure to sunlight, stress from peers, and loud noise. Even though there was considerable reduction in headache disability among school children the affected children with increased frequency and severity require extensive behavioral and pharmacological management.

Declaration by Authors

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