Original Article

Clinical and demographic profile of recurrent headache in school-going children of Bundelkhand region, Central India

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ABSTRACT

Introduction: Headache is one of the most common neurological disorders worldwide. Headache in school-going children have several specific characters as compared to adults. It is also important to determine region-specific variable for better and effective health planning. **Aims and Objectives:** The present study was conducted to determine the clinical and demographic profile of various headache types, in school-going children of Bundelkhand region, Central India. **Materials and Methods:** This prospective, questionnaire-based cross-sectional study was conducted in a tertiary care hospital of Bundelkhand region, Central India. The study included all school-going children between 5 and 18 years, fulfilling International Classification of Headache Disorders, 3rd edition diagnostic criteria for a primary headache who presented to the neurology and pediatric outpatient department. Sociodemographic and clinical details were collected and analyzed. **Results:** A total of 121 patients were included in the study, out of the 55% were male. Mean age of presentation to the hospital was 12.3±4.3 years and age of onset of headache disease was 8.9±3.8 years. Migraine and tension-type headache were found in 62.8% and 26.4%, respectively. The mean interval of onset to a presentation at headache clinic was 26.8±24.6 months. All of them were on self-medication or over the counter medications before the presentation. **Conclusion:** This study provides a clinical profile of a headache in school-going children of central India. Majority of them were presented late for medical attention.

Key words: *Bundelkhand, Headache, Migraine, School-going children, Tension-type headache*

Headache is one of the most common somatic symptoms worldwide. Its reported prevalence is 10–20% in school-going children [1,2]. It is seen that before puberty, headache is more common in boys while in adolescents it is more common in girls [1-3]. Headache not only affects the child's daily routine but also his or her family and even the society. It leads to high utilization of health-care system, overuse of analgesics, and school absenteeism. Usually, children with a recurrent headache present late for medical care due to prevailing myths and misconceptions about a headache, patients or parents' own presumptive diagnosis and self-medication. Furthermore, it is believed that various clinically important characteristics of a headache vary with persons living in the different geographical area; due to the difference in ethnicity and cultural pattern [4]. It is important to determine the clinical profile of a headache among different human populations to broaden the available knowledge and to collect baseline data for cross-cultural comparison. This would also be helpful in adapting strategies for better and effective health planning.

In India, only a few studies are available regarding headaches in school-going children and adolescents [1,2,5]. Bundelkhand region is a geographic area of central India which is divided between the states of Uttar Pradesh and Madhya Pradesh. This region is considered as one of the most underdeveloped areas of Central India. It is economically backward and has a low level of health and education system [6]. To the best of our knowledge, no study on headache has been conducted in this area of our country. With this background, this study is planned to assess the clinical and demographic profile of a recurrent headache in school-going children attending the neurology and pediatric outpatient department of a teaching hospital in this region.

MATERIALS AND METHODS

This observational, cross-sectional study was conducted in the Department of Neurology and Department of Paediatrics of a Medical College Jhansi, which is the only tertiary referral center of Bundelkhand region central India. The study was conducted for a period of 6 months from July 2017 to December 2017. All children between 5 and 18 years of age (i.e., school-going children) attending the Neurology and Paediatric Outpatient Department with the chief complaint of a recurrent headache were included in the study. We obtained the consent from all children or their parents if the age of the child was <5 years. Institutional Ethical Committee Clearance was taken beforehand.

Diagnosis of a headache and their subtypes was made on the basis of International Classification of Headache Disorders,

3rd edition (ICHD-3) [7]. Secondary causes of a headache were ruled out by appropriate investigations. Sociodemographic information and details of clinical examination were collected in pre-structured study questionnaire. Socioeconomic status was determined according to the updated Prasad socioeconomic classification, 2014 for subjects from both rural and urban areas [8]. The intensity of pain was assessed using the numeric pain rating scale [9] for children older than 6 years of age and in children <6 years of age it was assessed by parents using faces pain scale-revised [10]. All children were evaluated as per the standard practice parameters under the guidance of a neurologist.

Investigations such as basic blood investigations, neuroimaging (computerized axial tomogram scan head or magnetic resonance imaging brain), and electroencephalogram were done as and when required to rule out the secondary causes of a headache. Data were analyzed using Statistical Package for the Social Sciences version 17 software. Continuous variable was calculated as mean and standard deviation while nominal/categorical variables were expressed as percentages. Variables were compared between groups using analysis of variance or Chi-square test when required.

RESULTS

The study included 121 patients out of the 55% were male wherein the ratio of male to female was similar in pediatric age group, but female outnumbered male in adolescent age group. Mean age of presentation to the hospital was 12.3±4.3 years (range 3.9–18, median 10.8) and age of onset of headache disease was 8.9±3.8 years (range 3.2–16.8, median 7.8). Mean age of presentation in boys and girls was 11.8±3.8 and 12.6±3.6 years, respectively. Migraine was diagnosed in 76 (62.8%) children; tension-type headache (TTH) was found in 32 (26.4%) children. One patient was suffering from primary stabbing headache and nummular headache each. Non-specific headache was found in 11 (7.4%) children (Fig. 1). The etiology of recurrent headache in the study subjects is shown in Table 1. Various clinical characteristics of the patients are shown in Table 2.

Sunlight and hot weather (43.6%) were most common triggering factor of a migraine, followed by stress, exertion, and fasting. Nausea and photophobia were the most common associated symptom. 32% of the patients had a positive family history of migraine while 12 patients had refractory errors. Correction of refractory error was done in all patients before enrolment in the study, but none of them had shown any improvement in character and severity of headache even after correction. 62% of patients belong to middle socioeconomic strata, while 30% was from lower and only 8% belonged to upper socioeconomic status. The mean interval of onset to a presentation at headache clinic was 26.8±24.6 months (range 1–108, median 28). Almost 80% of patients were on self-medication or over the counter medications before the presentation.

DISCUSSION

Recurrent headache may have a considerable impact on the quality of life of a child as it may affect school performance,

Table 1: Headache types in study subjects

Headache type	ICHD-3 code	Number of total cases n-121 (%)
Migraine (76)	1	76 (62.8)
Migraine without aura	1.1	52
Migraine with aura	1.2	5
Probable migraine	1.5	16
Cyclic vomiting syndrome	1.6.1.1	1
Abdominal migraine	1.6.1.2	1
Benign paroxysmal vertigo	1.6.2	1
TTH	2	32 (26.4)
Infrequent episodic tension-type headache	2.1	8
Frequent episodic tension-type headache	2.2	12
Chronic tension-type headache	2.3	10
Probable tension-type headache	2.4	2
Primary stabbing headache	4.7	1 (0.8)
Nummular headache	4.8	1 (0.8)
Non-specific headache	-	11 (7.4)

ICHD-3: International Classification of Headache Disorders, 3rd edition, TTH: Tension-type headache

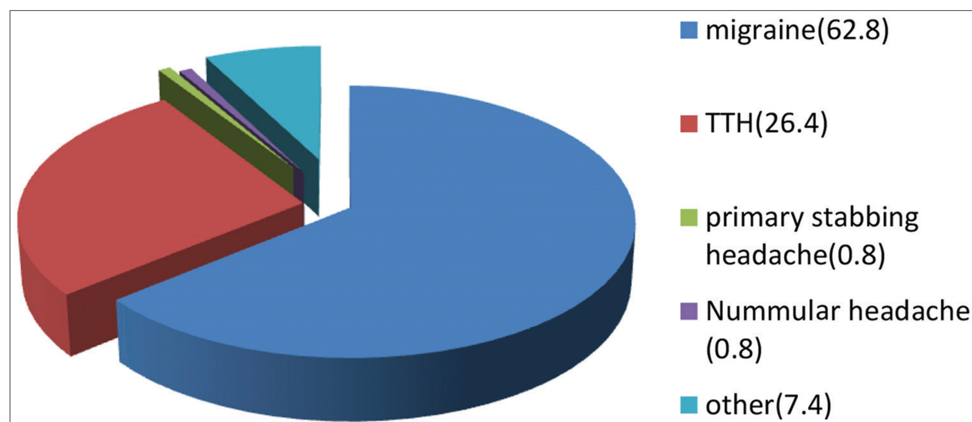

Figure 1: Type of headache

Table 2: Clinical and demographic characteristics of the study subjects

Variables	Migraine (n-76)	TTH (n-32)	Others (n-13)*
Age at presentation			
<6	9 (11.8)	2 (6.2)	0
6–10	30 (39.4)	14 (43.7)	6 (46.1)
>10	37 (48.6)	16 (50)	7 (53.8)
Location			
Frontal	18 (23.6)	4 (12.5)	3 (23.0)
Temporal	28 (36.8)	6 (18.7)	6 (46.1)
Occipital	10 (13.1)	10 (31.2)	0
Diffuse	20 (26.3)	12 (37.5)	4 (30.7)
Characteristics			
Throbbing/pulsatile	48 (63.1)	0	0
Band like	10 (13.1)	22 (68.7)	0
Undefined	18 (23.6)	10 (31.2)	11 (84.6)
Sharp	0	0	2 (15.3)
Duration			
<1 h	10 (13.1)	9 (28.1)	5 (38.4)
1–2 h	12 (15.7)	11 (34.3)	4 (30.7)
>2 h	54 (71.0)	12 (37.5)	4 (30.7)
Severity			
<3	18 (23.6)	6 (18.7)	0
3–5	24 (31.5)	12 (37.5)	1 (7.7)
6–8	26 (34.2)	14 (43.7)	4 (30.7)
9–10	8 (10.5)	0	8 (61.5)
Disability			
No (0–10)	6 (7.8)	4 (12.5)	2 (15.3)
Mild (11–30)	39 (51.3)	18 (56.2)	8 (7.6)
Moderate (31–50)	23 (30.2)	10 (31.2)	3 (23.0)
Severe(>50)	8 (10.5)	0	0
Family history	32 (42.1)	6 (18.7)	0
Psychiatric comorbidity	12 (15.7)	14 (43.7)	0
Previous management			
Self-medication	36 (47.3)	18 (56.2)	7 (53.8)
Prescribed by physician	24 (31.5)	8 (25.0)	1 (7.6)
No medication	16 (21.0)	6 (18.7)	5 (38.4)
Duration of headache			
<6 months	10 (13.1)	4 (12.5)	4 (30.7)
6 months–1 year	18 (23.6)	8 (25.0)	5 (38.4)
1–2 years	20 (26.3)	15 (46.8)	4 (30.7)
>2 years	28 (36.8)	5 (15.6)	0

TTH: Tension-type headache

general work capacity, and leisure time activity. This study was done to shed light on the clinical profile of a headache in this region of the country. In this cross-sectional study of 121 children attending tertiary care hospital for a recurrent headache, 62.8% were suffering from migraine and 26.4% with TTH. This proportion of migraine was similar to previous Indian [1,2] as well as western [11] studies. In contrast to our study, the prevalence of TTH and migraine was found to be 50.99% and 26.9%, respectively, in a study on school-going children of Northwest India [12]. This difference may be due to a patient seeking medical help only for most disabling headache which hampers their daily routine activity. Non-specific headache was found in 11 (7.4%) children which was similar to previous studies [13]. We also found one patient each of a nummular headache and primary stabbing headache in our study subjects.

Clinical characteristics and incidence of both uncommon headache disorders are comparable to previous studies [1,14]. Male outnumbered female in the proportion of 1.2:1 in our study. It was also noted that female had a slightly earlier age of onset and more headache frequency than male. In a gender-based study on pediatric and adolescent migraine, Markus and Zeharia [15] reported that female patients had an earlier age at admission, earlier age of migraine onset, higher rate of migraine with aura, and higher migraine frequency. All the patients of a probable migraine did not meet duration criteria as per the ICHD-3, and the majority of them had headache duration of 30 min to 1 h.

Arruda *et al*. [16] reported that 76% of probable migraine in their study fails to receive a migraine diagnosis based on duration criteria. Lima *et al*. [17] also recommended revising the duration criteria in ICHD-3 beta classification. Family history of migraine in sibling or parents was found in almost one-third of our study subjects. A higher prevalence of headache and migraine in first degree relatives was also found in previous studies [1,13]. Psychiatric comorbidity was found in 14 children of TTH and 12 with migraine. Bellini *et al*. [18] revealed that depression and anxiety were more common in children and adolescents with a headache than in the normal population. Sunlight and hot weather were the most common triggering factors (46.5%) in our study subjects which may be related to the hot climate of this area.

Despite common belief of medical professionals regarding refractory error as the cause of headache, the relationship between minor refractive error and headache lacks conclusive evidence [19]. In this study also, correction of refractory error did not relieve headache in any child. Majority of the children consulted for the 1st time after 1–4 years of onset of symptoms. Mean interval of onset to presentation was 26.8±24 months. Reason for this delayed health-seeking behavior for headache was the absence of significant disability, financial constraints, lack of awareness regarding headache disease, and easy availability of over the counter analgesic medicines. Medical facilities are also far fling for patients living in a rural area. This pattern of treatment gap and delayed health-seeking behavior is more grievous than the patients attending a public hospital in Delhi [5]. These findings corroborate to previously suggestive barriers for headache care in India [4].

Since this was a hospital-based study, the finding may not indicate the true pattern of a childhood headache in this geographic area. However, this is the only tertiary care hospital of Bundelkhand region which caters for the whole of the adjacent population; the headache scenario of most of the cases in this region might have been reflected in findings of this study. This study will also help to overcome the barriers in headache care and will help the health-care providers and policy-makers to devise appropriate strategies for effective management of headache.

CONCLUSION

Clinical profile of a recurrent headache from this region who presented to the hospital is similar to reports from other part of India as well as other countries, with some important differences related to treatment gap and disability. Further community-based studies are required to accurately determine the clinical and demographic profile of a recurrent headache from this part of the country.

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