

Parental awareness of headaches among elementary school-aged children in Riyadh, Saudi Arabia: A cross-sectional study

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ABSTRACT

Context: Headaches can negatively impact children's quality of life. Nevertheless, data on the parental awareness of childhood headache is very limited. **Aim:** The objective was to estimate the prevalence of childhood headaches and parental awareness of headaches among their elementary school children. **Settings and Design:** A cross-sectional study was conducted among parents who were shopping in five malls in Riyadh between March and July 2019. **Methods and Material:** Data were collected using a self-completed questionnaire, which included data on socio-demographic characteristics of the parents and their children, the presence of headache in children, and parental awareness about headache susceptibility, possible causes, associated symptoms, and management. **Statistical Analysis Used:** Descriptive and inferential statistics were employed as appropriate using the software SPSS. **Results:** A total of 292 parents were included. The majority were mothers (75.3%) in the age range of 26–45 years (83.2%). Approximately 62.3% of the parents reported headaches in their children. Approximately 47.6% of the headaches were attributed to "the use of electronic devices". The overall parental awareness of headaches was 55.1%, with scores being highest for management questions (67.0%) and lowest for susceptibility questions (45.4%). In a multivariate logistic regression analysis adjusted for socio-demographic characteristics, parental awareness was positively associated with the presence of children with headaches in the family and negatively associated with Saudi nationality of the children. **Conclusions:** Parental awareness of childhood headache is insufficient. There is a need to increase the awareness of parents about childhood headaches and the problems associated with heavy electronic device use.

Keywords: Awareness, headache, parents, school children

Introduction

Headache is defined as pain located above the orbitomeatal line.^[1] Headaches in children may be primary or secondary. Primary headaches are more frequent in children and present as migraines, tension headaches, cluster headaches, and trigeminal autonomic

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cephalalgias.^[2] Secondary headaches are less frequent and develop secondary to other conditions, such as fever, infection, abnormal intracranial pressure, brain tumours, cranial or cervical vascular disorder.^[1,3] Headache can be associated with other symptoms. They could be benign or indicate a serious underlying pathology that requires an urgent referral to a hospital and further workup.^[1,4] One of the most common complaints in pediatric neurological clinics is headache.^[4]

In the last decade, the prevalence of headache in children and adolescents has increased.^[5] Internationally, several studies have estimated prevalence of headaches and migraines among children and adolescents as between 54.4% and 58.4%.^[6,7] In Saudi Arabia, a cross-sectional study of Saudi children in primary and middle school showed that 49.8% of schoolchildren had recurrent headaches from a non-febrile illness, 7.1% had migraine headaches, and 42.7% had non-migraine headaches during the last year.^[8] The prevalence of headaches tends to be higher in older children and in girls than boys.^[5,7]

Not all parents are aware of their children's headaches.^[9,10] For example, a study carried out in Turkey in 2004 showed that 74% of parents who had children diagnosed with headache based on the International Headache Society criteria were actually aware of their children headaches.^[10] Additionally, parents, especially fathers, tend to underestimate the prevalence of childhood headache.^[11,12] There are factors that may affect the level of awareness, such as being the first child, the child's age, a family history of headaches, the number of family members, and maternal age.^[10,13] Headaches in children can have a substantial impact on their physical and mental health, school attendance and performance, and quality of life.^[14] Additionally, childhood headaches were responsible for 8.3 days of school absenteeism every year.^[15]

The current study was conducted to bridge an important knowledge gap. We were able to identify only one study that examined the prevalence of headaches among Saudi children.^[8] Additionally, data on parental awareness of childhood headaches are very limited internationally and are lacking within Saudi Arabia. Moreover, data on the factors that can affect the level of parental awareness of childhood headache are very limited.^[10,13] Therefore, the objective of this study was to estimate the prevalence of headaches among elementary school children, measure parental awareness of headaches among their children, and identify the factors that influence the parental awareness.

Subjects and Methods

Settings

Information for this study was conducted in shopping malls in Riyadh, the capital city of Saudi Arabia. Riyadh is geographically divided into five regions (Southern, Northern, Eastern, Western, and Central), and one mall from each region was chosen to adjust for possible regional differences in socio-demographic characteristics of the studied population. The chosen malls are

considered "middle-class" malls that are known to be visited by people from different economic classes (low, middle, and high).

Ethics

The study design was approved by the institutional review board of King Abdullah International Medical Research Center (Study number SP18/114/R). Data were only collected after explaining to the participants the purpose of the study and signing an informed consent. Participants were informed about their right to refuse to participate or to withdraw after participation. Information was obtained from each participant in a private setting. Sensitive information was not collected to ensure confidentiality. Data were accessed only by the principal and co-investigators and was locked away to ensure confidentiality.

Design

The study used an observational cross-sectional design and was conducted between March and July 2019.

Population

The study targeted parents who were shopping in one of the five included malls during the time of the study. Parents had to have children of elementary-school age. Parents were excluded if they did not have at least one child in this age range during the time of the study, even if they had older or younger children. Both mothers and fathers of any nationality were potential study candidates.

Sample size and sampling technique

In a previous study performed outside Saudi Arabia, 74% of parents were aware of their children's headaches (Sasmaz *et al.* 2014). Therefore, it was estimated that a total of 292 parents would be required to estimate an awareness prevalence of 74% with two-sided confidence limits of 5% using an 80% power level and 95% two-sided significance level. A non-random convenience sampling technique was used to recruit parents shopping at one of the five malls.

Shopping adult males and females were approached and asked whether they have children between 6 and 12 years old. Upon positive answers, the objectives of the study were explained, and the parents were invited to join the study. Parents who were able to sign an informed consent form were given a hard copy of the study questionnaire to fill out.

Data collection process

The data were collected using a self-completed structured study questionnaire, which was manually distributed and collected by students. The questionnaire included data on socio-demographic characteristics of the parents and their children, the presence of headache in children, and parental awareness about headache susceptibility, possible causes, associated symptoms, and management. Parents who had children with a history of headache were asked to describe the severity, causes, and

management of their children's headaches. The face and content validity of the questionnaire were evaluated by an expert panel of neurologists from King Abdulaziz Medical City. Additionally, a pilot study was conducted on a sample of 10 volunteer parents, and the feedback was very positive. This pilot study was used to test the clarity and validity of the data collection tool, to test the logistics of data collection, and to estimate its duration. The reliability of the tool was evaluated by re-administering the questionnaire after 10 days with the same 10 volunteer parents in the pilot study. Comparing the data from both times showed almost identical answers with Cronbach's alpha greater than 0.85.

Data analysis

The questionnaires were coded, and the data collected were entered into Excel files. All categorical variables are presented as frequencies and percentages, while continuous variables are presented as means and standard deviations. An awareness score was created by summing the responses ("strongly agree" was given a score of 5, while "strongly disagree" was given a score of 1). A higher score indicated better awareness. The score was then transformed into a 100-point scale for easy interpretation.

Next, the study population was divided into two groups based on the awareness score. Low and high-awareness groups were defined by awareness scores lower (<) and higher (\geq) than the median score of 57.8%, respectively. Socio-demographic characteristics of the parents and their children and the presence of headache in children were compared between the two groups. Chi-squared or Fisher's exact test was used as appropriate to examine differences in categorical variables, while a student's t-test or Mann-Whitney was used as appropriate to examine differences in continuous variables.

To detect factors independently associated with high awareness, a multivariate logistic regression analysis model was run after adjusting for the variables that were significantly associated with high awareness in the univariate analysis. Backward elimination was used to allow non-significant variables to leave the model. All *P* values were two-tailed. A *P* value <0.05 was considered as significant. The software SPSS (release 23.0, Armonk, NY: IBM Corp) was used for all statistical analyses.

Results

A total of 292 parents were included in the analysis. The socio-demographic characteristics of the parents and children are shown in Table 1. The majority of the parents were 26-45 years old (83.2%). Approximately three-fourths of the included parents were mothers (75.3%) and Saudi (74.3%). The majority of the parents were currently married (96.2%), and a few were divorced (2.4%) or widowed (1.4%). Almost two-thirds (65.4%) of the parents had a bachelor's degree or diploma, and slightly more than half (53.4%) were working.

Only 15.8% of the parents were healthcare workers. The most frequent monthly income range was <10,000 SAR (40.1%), followed by 10,000-20,000 SAR (36.0%) and >20,000

SAR (24.0%). The majority of the parents were living in Riyadh (94.2%). Only 8.2% of the parents were currently smoking, including 3.1% who did not smoke on a regular basis. The most frequent number of siblings was two or fewer (48.6%), followed by three to four (34.9%) and five or more (16.4%). The average age of the children was 8.9 ± 2.2 years. All children orders were represented, and slightly more males were included than females (53.1% versus 46.9%). Like their parents, three-fourths of the included children were Saudi (75.0%).

As shown in Figure 1, approximately 62.3% of the parents reported the presence of headaches in their children. This included headaches on a regular basis (16.4%) and infrequent ones (45.9%). The characteristics of the headaches reported among elementary school children are shown in Table 2. Most of the reported headaches had unremarkable or negligible effects on the children's lives (59.3%). However, 33.5% of the reported headaches affected the children's daily performance to some extent, and 7.1% of them prevented the children from doing their daily activities.

In approximately one-third (36.3%) of the cases, parents sought medical care for their children's headaches. The main motives for seeking medical care were general fear about the child (59.4%) and concerns about his or her daily activities (34.4%). In a few cases, the motives were concerns about vision problems (4.7%) and the development of seizures (1.6%). The main reason given by the physicians was "headache due to use of electronic devices", followed by headaches caused by vision problems (22.2%), other medical causes (17.5%), multifactorial (6.3%), sleep deprivation (3.2%), and all other causes (3.2%).

As shown in Figure 2, the overall parental awareness of childhood headaches was 55.1% of the maximum possible awareness. The awareness was highest for the questions covering the parental management response (67.0%), followed by questions about the possible causes of headaches (52.7%), associated symptoms (49.1%), and childhood susceptibility for different types of headaches (45.4%). The details of the agreement or

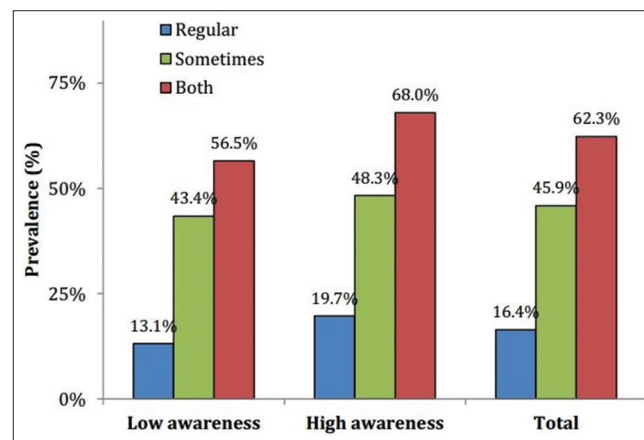


Figure 1: Prevalence of headache among elementary school children as reported by their parents

Table 1: Socio-demographic characteristics of parents and children by the level of parental awareness* of childhood headaches

	Low awareness (n=145)	High awareness (n=147)	Total (n=292)	P
Age of parents (years)				
16-25	11 (7.6%)	2 (1.4%)	13 (4.5%)	0.058
26-35	49 (33.8%)	60 (40.8%)	109 (37.3%)	
36-45	68 (46.9%)	66 (44.9%)	134 (45.9%)	
≥46	17 (11.7%)	19 (12.9%)	36 (12.3%)	
Gender of parents				
Male	38 (26.2%)	34 (23.1%)	72 (24.7%)	0.542
Female	107 (73.8%)	113 (76.9%)	220 (75.3%)	
Marital Status				
Married	138 (95.2%)	143 (97.3%)	281 (96.2%)	0.153**
Divorced	3 (2.1%)	4 (2.7%)	7 (2.4%)	
Widow	4 (2.8%)	0 (0.0%)	4 (1.4%)	
Nationality of parents				
Saudi	116 (80.0%)	101 (68.7%)	217 (74.3%)	0.027
Non-Saudi	29 (20.0%)	46 (31.3%)	75 (25.7%)	
Educational level				
High school or less	32 (22.1%)	29 (19.7%)	61 (20.9%)	0.783
Bachelor or Diploma	92 (63.4%)	99 (67.3%)	191 (65.4%)	
Post-graduate	21 (14.5%)	19 (12.9%)	40 (13.7%)	
Employment				
No	70 (48.3%)	66 (44.9%)	136 (46.6%)	0.563
Yes	75 (51.7%)	81 (55.1%)	156 (53.4%)	
Parent is a healthcare worker				
No	120 (82.8%)	126 (85.7%)	246 (84.2%)	0.488
Yes	25 (17.2%)	21 (14.3%)	46 (15.8%)	
Monthly Income (SAR)				
<10,000	60 (41.4%)	57 (38.8%)	117 (40.1%)	0.274
10,000-20,000	56 (38.6%)	49 (33.3%)	105 (36.0%)	
>20,000	29 (20.0%)	41 (27.9%)	70 (24.0%)	
Area of residence				
Riyadh	135 (93.1%)	140 (95.2%)	275 (94.2%)	0.436
Outside Riyadh	10 (6.9%)	7 (4.8%)	17 (5.8%)	
Smoking status of parents				
No	132 (91.0%)	136 (92.5%)	268 (91.8%)	0.720**
Yes	9 (6.2%)	6 (4.1%)	15 (5.1%)	
Sometimes	4 (2.8%)	5 (3.4%)	9 (3.1%)	
Number of siblings				
≤2	63 (43.4%)	79 (53.7%)	142 (48.6%)	0.133
3-4	53 (36.6%)	49 (33.3%)	102 (34.9%)	
≥5	29 (20.0%)	19 (12.9%)	48 (16.4%)	
Child age (years)	8.8±2.2	8.9±2.2	8.9±2.2	0.804***.1
Child order				
First	56 (38.6%)	60 (40.8%)	116 (39.7%)	0.766
Middle	47 (32.4%)	50 (34.0%)	97 (33.2%)	
Last	42 (29.0%)	37 (25.2%)	79 (27.1%)	
Child gender				
Male	79 (54.5%)	76 (51.7%)	155 (53.1%)	0.634
Female	66 (45.5%)	71 (48.3%)	137 (46.9%)	
Child nationality				
Saudi	117 (80.7%)	102 (69.4%)	219 (75.0%)	0.026
Non-Saudi	28 (19.3%)	45 (30.6%)	73 (25.0%)	

*Low and high awareness were defined as awareness score lower (<) and higher (≥) than the median score. **Fisher exact test was used and ***t-test was used (Chi square test was used otherwise)

disagreement of parents for 22 different awareness questions are shown in Supplementary Tables A and B.

The socio-demographic characteristics of parents and children were compared according to the level of parental awareness

Table 2: Characteristics of headaches among elementary school children by the level of parental awareness* of childhood headaches

	Low awareness (n=145)	High awareness (n=147)	Total (n=292)	P
Severity of the headaches				
Unremarkable/negligible effect	56 (68.3%)	52 (52.0%)	108 (59.3%)	0.081
Somehow affects the child's day/performance	21 (25.3%)	40 (40.0%)	61 (33.5%)	
Prevents the child from daily activities	5 (6.1%)	8 (8.0%)	13 (7.1%)	
Parents sought medical care for headaches in their children				
No	55 (67.1%)	61 (61.0%)	116 (63.7%)	0.396
Yes	27 (32.9%)	39 (39.0%)	66 (36.3%)	
Motive for seeking medical care				
Fear	15 (55.6%)	23 (62.2%)	38 (59.4%)	0.607**
Concerns about activities of daily living	9 (33.3%)	13 (35.1%)	22 (34.4%)	
Concerns about vision problems	2 (7.4%)	1 (2.7%)	3 (4.7%)	
Concerns about seizures	1 (3.7%)	0 (0.0%)	1 (1.6%)	
Physician diagnosis				
Use of electronics	14 (53.8%)	16 (43.2%)	30 (47.6%)	0.339**
Vision problems	7 (26.9%)	7 (18.9%)	14 (22.2%)	
Other medical causes	5 (19.2%)	6 (16.2%)	11 (17.5%)	
Sleep deprivation	0 (0.0%)	2 (5.4%)	2 (3.2%)	
Multifactorial	0 (0.0%)	4 (10.8%)	4 (6.3%)	
Others	0 (0.0%)	2 (5.4%)	2 (3.2%)	

*Low and high awareness were defined as awareness score lower (<) and higher (≥) than the median score. **Fisher exact test was used (Chi square test was used otherwise)

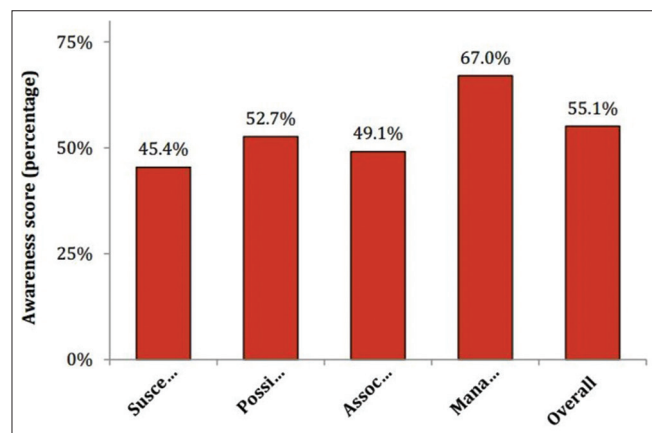


Figure 2: Percentage score of parental Awareness of childhood headache

of childhood headaches (above and below the median score of 57.8%). As shown in Table 1, out of all socio-demographic characteristics, only Saudi nationality for parents ($P = 0.027$) and their children (0.026) was associated with lower parental awareness of childhood headaches. Additionally, as shown in Figure 1, higher prevalence of headaches among elementary school children was associated with higher parental awareness of childhood headaches.(68.0% versus 56.5%, $P = 0.043$).

Table 3 shows the results of univariate and multivariate logistic regression analysis of potential predictors of high parental awareness. All socio-demographic characteristics that show significance ($P < 0.05$) or trends towards significance (P between 0.05 and 0.10) were included in the multivariate analysis. Saudi nationality of the children was an independent predictor of lower parental awareness of childhood headaches (adjusted odds

ratio = 0.55, 95% confidence interval 0.32-0.94, $P = 0.029$). Additionally, the presence of children with headaches in the family was an independent predictor of higher parental awareness of childhood headaches (adjusted odds ratio = 1.63, 95% confidence interval 1.01-2.63, $P = 0.048$).

Discussion

This study estimated that more than 60% of elementary school children in Riyadh had headaches at some time during the last year. This prevalence is slightly higher than that reported in similar studies nationally and internationally. For example, a cross-sectional study of Saudi children in primary and middle school showed that 49.8% of schoolchildren had recurrent headaches from a non-febrile illness during the last year.^[8] Internationally, a systematic review of 64 cross-sectional studies focused on headaches and migraines among children and adolescents and reported an overall prevalence of headaches of 54.4% and a 9.1% prevalence of migraines.^[6] In another systematic review of 50 studies, the prevalence of childhood headaches was estimated as 58.4%.^[7]

The difference in prevalence between the current study and previous studies may be related (at least partially) to the methods used in the prevalence estimation and the characteristics of the target population. For example, the question about “your child’s headaches in the last year” was answered by parents in this study and by either parents or teachers in the study by Al Jumah *et al.*^[8] It would be expected that teachers may miss infrequent headaches in children more than parents. Additionally, children in the current study were 6 to 12 years old, while in many international studies, both children and adolescents were included.^[6,7]

Table 3: Univariate and multivariate^{*,3} logistic regression analysis of potential predictors of higher level of parental awareness^{} of childhood headaches**

Potential predictors	Reference	Univariate analysis				Multivariate analysis			
		Odds ratio (OR)	95% confidence interval of OR		P	Odds ratio (OR)	95% confidence interval of OR		P
			Lower	Upper			Lower	Upper	
Age of parents	Younger age	1.13	0.83	1.53	0.449				
Number of siblings	Small number of siblings	0.91	0.78	1.05	0.185				
Saudi nationality of parents	Non-Saudi	0.55	0.32	0.94	0.028				
Saudi nationality of children	Non-Saudi	0.54	0.32	0.93	0.027	0.55	0.32	0.94	0.029
Presence of headaches	No headaches	1.64	1.01	2.64	0.044	1.63	1.01	2.63	0.048
Headache severity									
Somehow affects the child's day/performance	Unremarkable/negligible	2.05	1.07	3.93	0.030				
Prevents the child from daily activities	Unremarkable/negligible	1.72	0.53	5.60	0.366				

^{*,3}Multivariate logistic regression was done using backward elimination of all variables included in univariate analysis. ^{**}High awareness was defined as awareness score higher (\geq) than the median score

The overall parental awareness of different characteristics of childhood headaches in this study was approximately 55%. This may be less than that reported in two studies carried out in Turkey and Norway, which reported awareness levels of 74% and 57%, respectively.^[10,11] However, comparing the current findings with those of other studies is not an easy task. For example, data on parental awareness of childhood headaches is very limited internationally and lacking nationally.^[10,11,8] Even in the few studies that reported on parental awareness, the outcome was defined differently.^[10,11] For example, awareness in the current study referred to parental information about susceptibility, possible causes, associated symptoms, and management of childhood headaches. However, it only referred to their awareness of the presence of a headache previously diagnosed in their children.

The lack of parental awareness about their children's headaches may contribute to the delay in diagnosis and management.^(9,10) This might eventually affect the child's social and educational life and limit potential solutions to severe health problems other than the headache itself.^[10] This is further supported by the fact that 40% of the children with headaches in this study had considerable impacts on their daily activities and performance.

The parental awareness of childhood headaches in this study was independently associated with the presence of children with headaches in the family and Saudi nationality. Consistent with the current findings, Sasmaz *et al.* reported that a history of headaches in one of the family members, including offspring, the father, and the mother, was associated with a better parental awareness of childhood headache.^[10] This may be explained by the fact that parents with a family member with headaches are more exposed to health information about headaches and are more likely to consider headaches when observing relevant child symptoms.

The current findings may indicate a need to increase the awareness of parents about the causes, symptoms, warning signs, and management of childhood headaches, which could probably be addressed during primary care and paediatric visits. On the other hand, educational levels, economic status, and smoking status were not associated with parental awareness of childhood

headaches in this study and the study by Sasmaz *et al.*^[10] This again may indicate that the parental awareness of childhood headache is not influenced by sociodemographic characteristics of the parents but rather influenced by actual exposure to a child or a family member with headaches.

Another important finding in this study was the fact that close to half of children's headaches were attributed to the use of electronic devices. The use of smartphones and internet applications among Saudi children and adolescents has become an epidemic problem in the last few years.^[16] It has been estimated that Saudi children and adolescents spend at least 4 hours per day using smartphones and internet applications. The heavy use of electronic devices and the internet has been linked to various problems, including poor vision and short or altered sleep time.^[17,18] Both conditions are recognized as causes for childhood headaches in this study and previous studies.^[3] This finding may indicate a need to increase parental awareness about the problems associated with heavy internet use, including headaches.

This study had several strengths. There are limited studies that estimate parental awareness of childhood headaches among elementary school children and its influencing factors. Our study has covered a largely overlooked topic with limited data both nationally and internationally. Moreover, the sample was recruited in a way to geographically represent the city of Riyadh. Unlike previous studies, the awareness was referring to parental information about susceptibility, causes, symptoms, and management of childhood headaches and not mere awareness of the presence of headaches previously diagnosed in their children.^[10,11]

Nevertheless, a number of limitations to this study are acknowledged. The cross-sectional design does not prove causation but rather association. However, this was the only design used in similar previous studies.^[10,11] The convenience sampling may have reduced the ability to generalize the results to all Saudi children. Finally, the use of parents to report their children's headaches may result in underestimation of the true prevalence of childhood headaches.^[11,12] However, 75% of our

sample was mothers, who have been shown to have more accurate reporting than fathers.^[11,12] Additionally, parents are actually the only reliable source of information about the health of their children at this young age. In conclusion, childhood headache is a common problem in Saudi Arabia and affects more than 60% of elementary school children. Parental awareness of childhood headache is still insufficient. It is probably not influenced by sociodemographic characteristics of the parents but rather the actual exposure to a child or a family member with headaches. These findings may indicate the need for primary care physicians to increase the awareness of parents about the causes, symptoms, warning signs, and management of childhood headaches during primary care visits, as well as the problems associated with heavy electronic device use. Also, primary prevention is an important tool to avoid headache occurrence. Further studies may need to examine the impact of educational intervention on the prevalence and parental awareness of childhood headaches.

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Key Messages

This research studies parental awareness of childhood headache, and the factors affecting the level of awareness. This could help the parents to acknowledge the child's headache, seek medical attention and avoid triggers. It also provides an estimation of the prevalence of childhood headache and the possible causes as reported from the parents.

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Conflicts of interest

There are no conflicts of interest.

References

- How CH, Chan WS. Headaches in children. *Singapore Med J* 2014;55:128-30;quiz 31.
- Headache Classification Committee of the International Headache Society (IHS). The International Classification of Headache Disorders, 3rd edition. *Cephalalgia* 2018;38:1-211.
- Blume HK. Pediatric headache: A review. *Pediatr Rev* 2012;33:562-76.
- Dao JM, Qubty W. Headache diagnosis in children and adolescents. *Curr Pain Headache Rep* 2018;22:17.
- Albers L, von Kries R, Heinen F, Straube A. Headache in school children: Is the prevalence increasing. *Curr Pain Headache Rep* 2015;19:4.
- Wober-Bingol C. Epidemiology of migraine and headache in children and adolescents. *Curr Pain Headache Rep* 2013;17:341.
- Abu-Arafeh I, Razak S, Sivaraman B, Graham C. Prevalence of headache and migraine in children and adolescents: A systematic review of population-based studies. *Dev Med Child Neurol* 2010;52:1088-97.
- Al Jumah M, Awada A, Al Azzam S. Headache syndromes amongst schoolchildren in Riyadh, Saudi Arabia. *Headache* 2002;42:281-6.
- Mortimer MJ, Kay J, Jaron A. Childhood migraine in general practice: Clinical features and characteristics. *Cephalalgia* 1992;12:238-43;discussion 186.
- Sasmaz T, Bugdayci R, Ozge A, Karakelle A, Kurt O, Kaleagasi H. Are parents aware of their schoolchildren's headaches? *Eur J Public Health* 2004;14:366-8.
- Lundqvist C, Clench-Aas J, Hofoss D, Bartonova A. Self-reported headache in schoolchildren: Parents underestimate their children's headaches. *Acta Paediatr* 2006;95:940-6.
- Nakamura EF, Cui L, Lateef T, Nelson KB, Merikangas KR. Parent-child agreement in the reporting of headaches in a national sample of adolescents. *J Child Neurol* 2012;27:61-7.
- Dobrovoljac M, Hengartner H, Boltshauser E, Grotzer MA. Delay in the diagnosis of paediatric brain tumours. *Eur J Pediatr* 2002;161:663-7.
- Wober-Bingol C, Wober C, Uluduz D, Uygunoglu U, Aslan TS, Kernmayer M, *et al.* The global burden of headache in children and adolescents-Developing a questionnaire and methodology for a global study. *J Headache Pain* 2014;15:86.
- Kernick D, Campbell J. Measuring the impact of headache in children: A critical review of the literature. *Cephalalgia* 2009;29:3-16.
- Alobaid L, BinJadeed H, Alkhamis A, Alotaibi R, Tharkar S, Gosadi I, *et al.* Burgeoning rise in smartphone usage among school children in Saudi Arabia: Baseline assessment of recognition and attention skills among users and non-users using CANTAB tests. *Ulutas Med J* 2018;4:4-11.
- Bener A, Al-Mahdi HS, Vachhani PJ, Al-Nufal M, Ali AI. Do excessive internet use, television viewing and poor lifestyle habits affect low vision in school children? *J Child Health Care* 2010;14:375-85.
- LeBourgeois MK, Hale L, Chang AM, Akacem LD, Montgomery-Downs HE, Buxton OM. Digital media and sleep in childhood and adolescence. *Pediatrics* 2017;140:S92-6.

Supplementary Table A: Parental awareness of childhood headaches

	Strongly disagree	Disagree	Somewhat agree	Agree	Strongly agree
Susceptibility					
Headache affects people of all ages from childhood to old age	24 (8.2%)	48 (16.4%)	65 (22.3%)	80 (27.4%)	75 (25.7%)
Children can have migraines	12 (4.1%)	89 (30.5%)	85 (29.1%)	75 (25.7%)	31 (10.6%)
Children can have tension-type headache	16 (5.5%)	61 (20.9%)	64 (21.9%)	106 (36.3%)	45 (15.4%)
Children can have cluster headache	10 (3.4%)	71 (24.3%)	97 (33.2%)	83 (28.4%)	31 (10.6%)
Possible causes					
Childhood headaches can be secondary to other medical conditions	11 (3.8%)	53 (18.2%)	50 (17.1%)	117 (40.1%)	61 (20.9%)
Childhood headaches can be due to psychological causes	16 (5.5%)	51 (17.5%)	58 (19.9%)	110 (37.7%)	57 (19.5%)
Childhood headaches can be due to malnutrition	20 (6.8%)	38 (13.0%)	35 (12.0%)	120 (41.1%)	79 (27.1%)
Childhood headaches can be due to sleep disturbances	23 (7.9%)	37 (12.7%)	36 (12.3%)	106 (36.3%)	90 (30.8%)
Childhood headaches can be due to vision problems	24 (8.2%)	36 (12.3%)	17 (5.8%)	107 (36.6%)	108 (37.0%)
Childhood headaches can be due to dental problems	21 (7.2%)	39 (13.4%)	56 (19.2%)	95 (32.5%)	81 (27.7%)
Childhood headaches can be due to a brain tumor or hemorrhage	21 (7.2%)	43 (14.7%)	58 (19.9%)	84 (28.8%)	86 (29.5%)
Associated symptoms					
Childhood headaches can be accompanied by vomiting	14 (4.8%)	57 (19.5%)	72 (24.7%)	98 (33.6%)	51 (17.5%)
Childhood headaches can be accompanied by speaking difficulty or altered consciousness	9 (3.1%)	61 (20.9%)	99 (33.9%)	83 (28.4%)	40 (13.7%)
Childhood headaches can be accompanied by dizziness	20 (6.8%)	39 (13.4%)	58 (19.9%)	107 (36.6%)	68 (23.3%)
Childhood headaches can be accompanied by blurred vision	15 (5.1%)	39 (13.4%)	59 (20.2%)	110 (37.7%)	69 (23.6%)
Childhood headaches can be accompanied by fever	19 (6.5%)	61 (20.9%)	46 (15.8%)	112 (38.4%)	54 (18.5%)

Supplementary Table B: Parental awareness of childhood headaches

	Doesn't seem that serious	Let the child sleep	Wait until the next day	Give medication from personal expertise	Book an unurgent appointment	Go to emergency clinic
Management response						
Your response if your child is crying from the severity of headache	8 (2.7%)	47 (16.1%)	29 (9.9%)	98 (33.6%)	38 (13.0%)	72 (24.7%)
Your response if your child has changes in consciousness along with headache	10 (3.4%)	8 (2.7%)	20 (6.8%)	20 (6.8%)	73 (25.0%)	161 (55.1%)
Your response if your child develops fever along with headache	2 (0.7%)	5 (1.7%)	14 (4.8%)	102 (34.9%)	55 (18.8%)	114 (39.0%)
Your response if your child has headache and vomiting	7 (2.4%)	6 (2.1%)	19 (6.5%)	45 (15.4%)	40 (13.7%)	175 (59.9%)
Your response if your child has headache for 6 months	9 (3.1%)	2 (0.7%)	1 (0.3%)	6 (2.1%)	148 (50.7%)	126 (43.2%)
Your response if your child gets headache after falling on his/her head	5 (1.7%)	2 (0.7%)	11 (3.8%)	11 (3.8%)	31 (10.6%)	232 (79.5%)