Parental Knowledge Attitudes and Practice Towards Headaches Among Elementary School-Aged Children in Al-Baha, Saudi Arabia

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Abstract: *Aim:* To evaluate parental knowledge, attitudes, and practices regarding childhood headaches in Al-Baha, Saudi Arabia, and identify gaps that could inform targeted educational interventions.

Methods: A cross-sectional online survey was administered to 399 parents residing in Al-Baha. The survey assessed parental understanding, behavior, and perceptions concerning pediatric headaches. Data analysis was conducted using SPSS version 27.0, applying descriptive statistics, Mann–Whitney U, Kruskal–Wallis, and Spearman's correlation tests.

Results: Among the respondents, 52.4% were female (N = 209) and 47.6% male (N = 190), with a mean age of 42.56 years. Female participants exhibited significantly higher knowledge scores than their male counterparts. The most frequently reported headache triggers were sleep disturbances (79.4%), vision problems (61.7%), and psychological factors (52.1%), whereas malnutrition was identified by only 48.9% of respondents. Symptom monitoring practices varied: 46.1% of parents reported observing symptoms before seeking medical care, while 23.0% considered headaches an emergency. Notably, 57.4% sought professional consultation when symptoms persisted, yet 32.1% administered painkillers without medical advice. Knowledge scores were positively correlated with both attitude scores ($r = 0.151$, $p = 0.002$) and practice scores ($r = 0.336$, $p < 0.001$).

Conclusion: The findings indicate that parental understanding of childhood headaches is often limited, particularly concerning nutritional triggers and evidence-based management strategies. This underscores the urgent need for targeted educational initiatives to enhance awareness, promote appropriate health-seeking behavior, and reduce the risk of mismanagement.

Keywords: Awareness, childhood headache, headache management, knowledge, parental attitudes, nutrition, Saudi Arabia.

1. INTRODUCTION

Multiple factors lead to the development of primary headaches in pediatric patients. The primary headache triggers consist of sleep disturbances together with visual strain, emotional stress, and dietary factors. Medical research demonstrates that vitamin D deficiency and calcium and magnesium deficiencies work together as important physiological factors that lead to headache development [1,2]. Research shows that nutritional deficiencies that affect essential vitamins and minerals lead to more frequent and severe headaches in children. Parents need education about nutrition and dietary factors that prevent headaches from becoming a primary strategy for lowering headache occurrences.

Research shows that irregular eating habits combined with excessive consumption of processed foods lead to worsened headaches, yet this connection remains unidentified by most caregivers. Secondary headaches require immediate medical evaluation since they typically stem from central nervous system infections, space-occupying lesions, or traumatic injuries [3, 4-8]—reports, which indicate rates between 13.2% and 62.3% [4, 6]. The weight of this condition exists despite the fact that community awareness about it remains low among parents and primary caregivers. Children with chronic headaches need to visit healthcare facilities repeatedly, which results in school absences and emotional distress for both children and their parents [2, 7, 9]. A complete strategy for pediatric headache management includes precise diagnosis, symptom treatment and lifestyle adjustments, and education for parents [6, 8, 10, 11].

The way caregivers handle pediatric headaches depends on their understanding of sociocultural standards, health knowledge, and the available healthcare facilities in their area. The global health discourse about pediatric neurological disorders has

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increased, yet the Kingdom of Saudi Arabia lacks specific data about caregiver awareness. This investigation represents the initial research to examine these phenomena in the Al-Baha region, which features its distinctive geographical features together with cultural traditions and healthcare system characteristics.

The research investigates parental awareness and behavior toward childhood headaches in Al-Baha by assessing their knowledge and attitudes. The findings about existing misconceptions and behavioral trends will help create specific educational programs and public health interventions to improve early detection and proper treatment of pediatric headaches in the region.

2. METHODS

2.1. Study Design

The research design follows a survey method with cross-sectional elements and uses an online questionnaire adapted from Altwaijri WA *et al*. [6] with their permission. Our questionnaire adapted from the original tool underwent modifications to evaluate knowledge alongside attitudes and practice levels instead of awareness because our study objectives diverged from the original purpose.

2.2. Study Setting

This study was conducted in Al-Baha, Saudi Arabia, to measure parents' knowledge, attitudes, and practices regarding childhood headaches. An online survey was disseminated using social media platforms (Facebook, X, WhatsApp, and Snapchat) to enlist responses. Both mothers and fathers were recruited from participating families. To minimize any potential bias, if both parents from the same family participated, each completed the questionnaire independently, ensuring that responses were not influenced by one another. Participants were recruited in December 2024.

2.3. Study Population

All parents (male and female) who reside in the Al-Baha region had the opportunity to participate in our study.

2.4. Sample Size

The estimated sample size, according to the Raosoft website for sample calculation, is 384, with a confidence level of 95% and a margin error of 5%.

2.5. Inclusion Criteria and Exclusion Criteria

All parents who agreed to participate, and were residents of Al-Baha region, with at least 1 child were included in our study. Non-residents of Al-Baha, those who refused to participate, or non-parents were excluded from this study.

2.6. Data Collection and Management

The questionnaire divided its content into four sections, with sociodemographic data comprising the first part, including age, marital status, education, employment, and smoking status. The questionnaire divided its content into four sections: the second section evaluated parental understanding of pediatric headache parameters, the third section measured parental attitudes toward pediatric headaches, and the fourth section explored parental actions when their child experienced a headache.

We conducted a pilot study before collecting the main data because it helped improve the feasibility and effectiveness of the research methodology. The pilot study functioned as a preliminary test to discover problems and enhance questionnaire design and data collection methods. We obtained important feedback from 18 participants, who helped us revise the questionnaire properly.

2.7. Statistical Analysis

Descriptive Statistics

The researchers utilized descriptive statistics to present participant demographic information and response data. They displayed categorical variables through frequencies and percentages, yet continuous variables received mean and standard deviation (SD) reporting for normal distributions and median with interquartile ranges (IQR) reporting for non-normal distributions.

Scoring

The knowledge, attitude, and practice scoring system was structured based on correct responses. Knowledge scores were calculated by assigning 1 point for each correct response, with a higher total indicating greater knowledge about headaches in children. Attitude scores were derived based on concern levels, with higher scores assigned to more concerned responses. Practice scores were determined by awarding points for recommended and medically appropriate actions regarding headache management in children.

Questions	Correct Answers	Scoring
Knowledge Score		
What is a migraine	A headache is characterized by throbbing pain on one side or the entire head.	1
What is a tension headache	Headache is characterized by a feeling of tightness or pressure in the head.	1
What is a cluster headache	A headache characterized by short, sharp attacks of pain around the eye.	1
What is a secondary headache	Headache caused by other health problems.	1
What types of headaches can children get	Cluster Headache	1
	Tension Headache	1
	Secondary Headache	1
	Migraine	1
What are the possible causes of headaches	Psychological causes	1
	Sleep disturbances	1
	Malnutrition	1
	Vision problems	1
	Dental problems	1
Which of the following symptoms may accompany headaches in children	Nausea	1
	Difficulty speaking or altered consciousness	1
	Dizziness (vertigo)	1
	Blurred vision	1
	Fever	1
Attitude Score		
How concerned are you when your child complains of headaches	I am very concerned and consider it an emergency	1
	I am somewhat concerned and am monitoring the progression of symptoms	1
Headaches in children may indicate serious health problems.	I strongly agree	5
	I agree	4
	Neutral	3
	I do not agree	2
	Strongly disagree	1
Practice Score		
How do you deal with your child's complaint of a headache	Monitor symptoms and consult a doctor if they persist	1
	Go directly to the doctor	1
When your child complains of a headache, what is the first step you take	Provide comfort and calm, and monitor his condition	1
	Consult a doctor immediately (for severe cases)	1
How do you deal with your child's headache if it recurs on a daily basis	Seek professional medical advice	1
	Look for causes in diet or daily routine	1
What is your primary source of information about headaches in children	A doctor or healthcare provider	1

Inferential Statistics

The Mann-Whitney U test evaluated knowledge, attitude, and practice score differences between independent groups, while the Kruskal-Wallis test evaluated multiple group differences. Spearman's rank correlation determined the relationship between age and scores from knowledge, attitude, and practice assessments.

Significant Value

A p-value of less than 0.05 was considered statistically significant.

2.8. Software

All statistical analyses were performed using IBM SPSS Statistics version 27.0.1.

2.9. Ethical Considerations

The research adhered to Helsinki Declaration ethical principles while following the guidelines set by the International Committee of Medical Journal Editors (ICMJE). The Institutional Review Board (IRB) at Al-Baha University in Saudi Arabia approved the study through IRB/PEA/BU-FM/2024/128. All participants were granted electronic consent before starting the questionnaire. The research participants received detailed information about the study goals, and they could freely choose to join or withdraw at any moment while the study implemented privacy protection measures. The survey questionnaire contained no questions that would enable the identification of participants. The research team maintained exclusive control over secure storage facilities containing anonymized data. Adult parents or legal guardians served as the sole information providers for the study, and the research excluded all minor participants.

3. RESULTS

3.1. Demographic Characteristics of Study Participants

The research involved 399 participants. A total of 209 female participants comprised 52.4% of the study group, and 190 male participants comprised 47.6% of the total participants. The research participants maintained an average age of 42.56 years with a standard deviation of 9.95. The research participants included 367 married individuals, who made up 92.0% of the sample; 25 separated people, who accounted for 6.3%; and 7 widowed individuals, who made up 1.8%. The participants' educational attainment showed N=268 held bachelor's degrees (67.2%), followed by N=42 diploma holders (10.5%) and N=42 secondary school graduates (10.5%), then N=29 had master's degrees (7.3%), and N=9 had middle school education (2.3%), and N=7 had PhDs (1.8%) while only N=2 had primary education (0.5%). The research sample included 88.0% of participants who did not work in healthcare (N=351) and 12.0% of healthcare workers (N=48). The research sample comprised N=337 non-smokers, 84.5% of participants, and N=62 smokers, 15.5% of the total participants (Table **1**).

3.2. Knowledge, Attitude, and Practice Toward Headaches in Children

The study assessed participants' knowledge, attitudes, and practices regarding headaches in children. When asked about migraines, N=300 (75.2%) correctly identified them as headaches characterized by throbbing pain, while N=64 (16.0%) associated them with tension and anxiety. Regarding tension headaches, N=225 (56.4%) recognized them as headaches causing tightness or pressure in the head. However, knowledge about cluster

headaches was limited, with only N=120 (30.1%) correctly identifying them as sharp pain around the eye, while N=204 (51.1%) did not know the answer. Similarly, knowledge about secondary headaches varied, with N=137 (34.3%) correctly linking them to other health problems, while N=182 (45.6%) were unaware. When asked about headaches in children, N=144 (36.1%) identified tension headaches as common, followed by secondary headaches (N=92, 23.1%) and migraines (N=85, 21.3%). Sleep disturbances were the most frequently recognized cause of headaches (N=317, 79.4%), followed by vision problems (N=246, 61.7%) and psychological factors (N=208, 52.1%). Commonly recognized symptoms accompanying headaches in children included dizziness (N=253, 63.4%), blurred vision (N=201, 50.4%), and nausea (N=185, 46.4%). In terms of management, N=229 (57.4%) monitored symptoms before consulting a doctor, while N=128 (32.1%) administered painkillers without medical advice. Concern levels varied, with N=182 (46.1%) somewhat concerned and monitoring symptoms and N=91 (23.0%) viewing headaches as an emergency. Regarding headache severity, N=154 (38.6%) agreed that headaches in children may indicate serious health problems, while N=107 (26.8%) strongly agreed. The most common first response to a child's headache was providing comfort and monitoring (N=249, 62.4%), while N=176 (44.1%) consulted a doctor immediately. If headaches recurred daily, N=357 (90.2%) sought professional medical advice, while N=112 (28.3%) investigated dietary or lifestyle causes. The primary source of headache-related information was healthcare providers (N=247, 61.9%), followed by the internet or media (N=163, 40.9%) and personal experiences (N=141, 35.3%) (Table **2**).

3.3. Association Between Demographic and Lifestyle Factors and Knowledge Score

Knowledge scores showed significant variations between groups in terms of gender, educational background, and smoking habits. The study showed that females scored higher on average with a median knowledge score of 9.00 (IQR: 6.00-11.00) than males who achieved a median score of 7.00 (IQR: 4.00-

Table 1: Demographic Characteristics of Study Participants

		N/Mean	%/SD
Gender	Female	209	52.4%
	Male	190	47.6%
Age		42.56	9.95
Marital status	Married	367	92.0%
	Separate	25	6.3%
	Widow	7	1.8%
Educational Qualification	Bachelor's	268	67.2%
	Diploma	42	10.5%
	Master's	29	7.3%
	Middle	9	2.3%
	PhD	7	1.8%
	Primary	2	0.5%
	Secondary	42	10.5%
Are you an employee in the health sector?	No	351	88.0%
	Yes	48	12.0%
Are you a smoker?	No	337	84.5%
	Yes	62	15.5%

Table 2: Knowledge, Attitude, and Practice Toward Headaches in Children

		N	%
Knowledge Questions			
What is a migraine	A headache characterized by throbbing pain on one side of the head or the entire head.	300	75.2%
	Headache affecting only the neck area.	8	2.0%
	A headache caused by other health problems	12	3.0%
	A headache caused by tension and anxiety.	64	16.0%
	I don't Know	32	8.0%
What is tension headache	Headache characterized by pain around the eyes	78	19.5%
	Headache characterized by a feeling of tightness or pressure in the head	225	56.4%
	Headache caused by sensitivity of light	15	3.8%
	Headache caused by other health problems	20	5.0%
	I don't know	79	19.8%
What is cluster headache	A headache characterized by throbbing pain on one side of the head.	40	10.0%
	A headache characterized by short, sharp attacks of pain around the eye.	120	30.1%
	A headache caused by sensitivity to noise.	15	3.8%
	A headache caused by tension and anxiety.	31	7.8%
	I don't know	204	51.1%
What is secondary headache	Headache caused by other health problems.	137	34.3%

(Table 2). Continued

		N	%
	Headache caused by tension.	48	12.0%
	A headache characterized by throbbing pain on one side of the head.	18	4.5%
	Headache affecting only the neck area.	23	5.8%
	I don't know	182	45.6%
What types of headaches can children get	Cluster Headache	54	13.5%
	Tension Headache	144	36.1%
	Secondary Headache	92	23.1%
	Migraine	85	21.3%
	I don't know	168	42.1%
What are the possible causes of headaches	Psychological causes	208	52.1%
	sleep disturbances	317	79.4%
	Malnutrition	195	48.9%
	Vision problems	246	61.7%
	Dental Problems	193	48.4%
Which of the following symptoms may accompany headaches in children	Nausea	185	46.4%
	Difficulty speaking or altered consciousness	93	23.3%
	Dizziness (vertigo)	253	63.4%
	Blurred vision	201	50.4%
	Fever	150	37.6%
	Heat	34	8.5%
Attitude Questions			
How concerned are you when your child complains of headaches	I am somewhat concerned and am monitoring the progression of symptoms.	182	46.1%
	I am very concerned and consider it an emergency.	91	23.0%
	A little, and I don't worry unless it lasts a long time.	98	24.8%
	Neutral	24	6.1%
Headaches in children may indicate serious health problems	I agree	154	38.6%
	I do not agree	29	7.3%
	Neutral	101	25.3%
	I strongly agree	107	26.8%
	I strongly disagree	8	2.0%
Practice Questions			
How do you deal with your child's complaint of headache	Monitor symptoms and consult a doctor if they persist.	229	57.4%
	Go directly to the doctor.	118	29.6%
	I give him painkillers without medical advice.	128	32.1%
	I consider headaches normal and do not intervene.	20	5.0%
	Seek immediate medical attention.	57	14.3%
When your child complains of a headache, what is the first step you take	Provide comfort and calm and monitor his condition.	249	62.4%
	Consult a doctor immediately.	176	44.1%
	Giving him painkillers without medical advice	132	33.1%
	Ignore it if the headache is simple.	29	7.3%

(Table 2). Continued

		N	%
How do you deal with your child's headache if it recurs on a daily basis	Seek professional medical advice.	357	90.2%
	I use home treatment such as rest or compresses.	69	17.4%
	I look for causes in diet or daily routine.	112	28.3%
What is your primary source of information about headaches in children	Internet or media.	163	40.9%
	Personal experiences or advice from friends and family.	141	35.3%
	Doctor or health care provider.	247	61.9%
	I'm not looking for information in general.	24	6.0%

10.00) (p=0.006). PhD holders scored the highest at 11.00 (IQR: 3.00-13.00), while participants with middle-level education had the lowest score of 3.00 (IQR: 2.00-8.00) for knowledge (p=0.004). The same pattern continued with master's degree holders scoring 9.00 (IQR: 6.00-13.00). This study found that smoking status demonstrated a significant relationship with knowledge scores (p=0.019) since non-smokers achieved an 8.00 median score (IQR: 5.00-11.00) while smokers had a 6.00 median (IQR: 4.00-10.00). The research data shows that knowledge levels increase when participants belong to the female gender group, have higher education levels, and do not smoke (Table **3**).

3.4. Association Between Demographic and Lifestyle Factors and Attitude Score

The analysis of attitude scores showed no significant associations with gender, marital status, educational qualification, employment in the health sector, or smoking status, as all p-values were above 0.05. Females had a median attitude score of 5.00 (IQR: 4.00-5.00, p = 0.538), while males had a similar median of 5.00 (IQR: 4.00-6.00). Marital status did not significantly impact attitude scores, with married participants scoring 5.00 (IQR: 4.00-5.00, p = 0.697), separated individuals scoring 5.00 (IQR: 4.00-6.00), and widows scoring 4.00 (IQR: 3.00-5.00). Educational qualification also had no significant effect (p = 0.619), with bachelor's degree holders scoring 5.00 (IQR: 4.00-5.00) and PhD holders scoring 4.00 (IQR: 4.00-5.00). Employees in the health sector had a median score of 5.00 (IQR: 3.50-5.00, p = 0.674), similar to non-employees at 5.00 (IQR: 4.00-5.00). Lastly, smokers and non-smokers both had a median attitude score of 5.00, with IQRs of 4.00-6.00 and 4.00-5.00, respectively (p = 0.505). Since all p-values exceeded the significance threshold of 0.05, no statistically significant differences were observed in attitude scores across demographic and lifestyle factors (Table **4**).

3.5. Association Between Demographic and Lifestyle Factors and Practice Score

The analysis of practice scores revealed a significant association with gender ($p < 0.001$). Females had a higher median practice score of 4.00 (IQR: 3.00-5.00) than males, who had a median score of 4.00 (IQR: 3.00-4.00), indicating a statistically significant difference in practice scores between genders. Additionally, smoking status showed a near-significant association with practice scores ($p = 0.068$). Non-smokers had a median score of 4.00 (IQR: 3.00-5.00), while smokers had a median score of 4.00 (IQR: 3.00-4.00), suggesting a possible trend toward lower practice scores among smokers. Other demographic and lifestyle factors, including marital status, educational qualification, and employment in the health sector, did not show statistically significant associations with practice scores (Table **4**).

Correlation Between Age and Knowledge, Attitude, and Practice Scores

Absolute statistical linkages between Knowledge, Attitude, and Practice scores emerged through the application of Spearman's rank correlation coefficient evaluation. The results showed that subjects with higher knowledge scores demonstrated better attitudes ($r = 0.151$, $p = 0.002$) and practice ($r = 0.336$, $p < 0.001$) regarding headaches. The results showed that better attitudes led to enhanced practices since their scores demonstrated a positive correlation ($r = 0.296$, $p < 0.001$). Depending on the Knowledge test results, people become slightly less knowledgeable as they age ($r = -0.109$, $p = 0.030$). The research revealed no meaningful relationship between participant age and their Attitude scores ($p = 0.403$) or their Practice scores ($p = 0.686$). The research demonstrates how knowledge, attitudes, and practices relate to each other while showing that older participants tend to have slightly reduced knowledge scores (Table **5**).

Table 3: Association Between Demographic and LifestyleFactors and Knowledge Score

		Knowledge Score (1-18)		
		Median	**IQR**	**P value[K/U]**
Gender	Female	9.00	6.00-11.00	0.006*
	Male	7.00	4.00-10.00	
Marital status	Married	8.00	5.00-10.00	0.147
	Separate	9.00	7.00-12.00	
	Widow	10.00	5.00-13.00	
Educational qualification	Bachelor's	8.00	5.50-10.00	0.004*
	Diploma	8.00	5.00-10.00	
	Master's	9.00	6.00-13.00	
	Middle	3.00	2.00-8.00	
	PhD	11.00	3.00-13.00	
	Primary	6.00	5.00-7.00	
	Secondary	6.50	4.00-9.00	
Are you an employee in the health sector?	No	8.00	5.00-10.00	0.362
	Yes	8.00	5.50-11.50	
Are you a smoker?	No	8.00	5.00-11.00	0.019*
	Yes	6.00	4.00-10.00	

[K]Independent Samples Kruskal-Wallis test.
[U]Independent Samples Mann-Whitney U test.
*p<0.05, Significant.

Table 4: Association Between Demographic and Lifestyle Factors and Attitude & Practice Scores

Demographic Factor	Attitude Score (1-6)	Median (IQR)	P Value	Practice Score (0-7)	Median (IQR)	P Value
Gender						
Female	5.00 (4.00-5.00)	0.538	4.00 (3.00-5.00)	<0.001*		
Male	5.00 (4.00-6.00)		4.00 (3.00-4.00)			
Marital Status						
Married	5.00 (4.00-5.00)	0.697	4.00 (3.00-4.00)	0.333		
Separated	5.00 (4.00-6.00)		4.00 (3.00-5.00)			
Widow	4.00 (3.00-5.00)		3.00 (3.00-4.00)			
Educational Qualification						
Bachelor's	5.00 (4.00-5.00)	0.619	4.00 (3.00-4.00)	0.772		
Diploma	5.00 (4.00-6.00)		4.00 (3.00-5.00)			
Master's	4.00 (3.00-5.00)		4.00 (2.00-5.00)			
Middle	6.00 (4.00-6.00)		3.00 (3.00-4.00)			
PhD	4.00 (4.00-5.00)		4.00 (4.00-5.00)			
Primary	4.00 (2.00-6.00)		4.00 (2.00-6.00)			
Secondary	4.00 (4.00-6.00)		4.00 (3.00-4.00)			
Are you an employee in the health sector?						
No	5.00 (4.00-5.00)	0.674	4.00 (3.00-5.00)	0.450		
Yes	5.00 (3.50-5.00)		4.00 (3.00-4.00)			
Are you a smoker?						
No	5.00 (4.00-5.00)	0.505	4.00 (3.00-5.00)	0.068		
Yes	5.00 (4.00-6.00)		4.00 (3.00-4.00)			

Table 5: Correlation between Age and Knowledge, Attitude, and Practice Scores

Correlations						
			Knowledge Score	Attitude Score	Practice Score	Age
Spearman's Rank	Knowledge Score	Correlation Coefficient	1.000	0.151**	0.336**	-0.109*
		Sig. (2-tailed)		0.002	0.000	0.030
		N	399	399	399	399
	Attitude Score	Correlation Coefficient	0.151**	1.000	0.296**	-0.042
		Sig. (2-tailed)	0.002		0.000	0.403
		N	399	399	399	399
	Practice Score	Correlation Coefficient	0.336**	0.296**	1.000	-0.020
		Sig. (2-tailed)	0.000	0.000		0.686
		N	399	399	399	399
	Age	Correlation Coefficient	-0.109*	-0.042	-0.020	1.000
		Sig. (2-tailed)	0.030	0.403	0.686	
		N	399	399	399	399

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The research involved 399 participants, with equal numbers of male and female participants. The research population included 209 female participants, who comprised 52.4% of the total, while 47.6% comprised 190 male participants. The participants averaged 42.56 years old (SD = 9.95), which indicated a wide range of ages among the respondents.

Most participants (92.0%) were married, while separated participants made up 6.3%, and widowed participants accounted for 1.8% of the total sample, demonstrating a stable family structure. The participants demonstrated diverse educational backgrounds and qualifications. A majority of 268 participants (67.2%) held bachelor's degrees as their highest qualification, while 42 participants (10.5%) had diplomas and 29 participants (7.3%) had master's degrees. The remaining participants held various other qualifications between middle school education (2.3%, N=9) and PhD (1.8%, N=7) and primary education (0.5%, N=2) and secondary education (10.5%, N=42).

The research revealed that 88.0% (N=351) of participants were not employed in health services, but 12.0% (N=48) maintained healthcare employment. Among the participants, 84.5% (N=337) identified as non-smokers, but 15.5% (N=62) admitted to being smokers.

The study assessed parental knowledge, attitudes, and practices regarding childhood headaches. A significant portion of parents correctly identified migraine (75.2%), with 56.4% identifying tension headaches as a feeling of tightness or pressure in the head, while fewer recognized cluster headaches and secondary headaches (30.1% and 34.3%, respectively). The most commonly identified triggers included sleep disturbances (79.4%), vision problems (61.7%), and psychological causes (52.1%), with malnutrition and dental problems identified by nearly half of the participants. Symptoms accompanying headaches, such as dizziness (63.4%) and blurred vision (50.4%), were also widely recognized. Regarding parental attitudes, 46.1% were somewhat concerned and monitored symptoms, while 23.0% considered headaches an emergency. A significant portion, 38.6%, agreed that headaches in children may indicate serious health problems. In terms of practices, 57.4% of parents monitored symptoms before consulting a doctor, though 32.1% administered painkillers without medical advice. When headaches recurred, 90.2% of parents sought professional medical advice, while home treatment was used by 17.4%. Healthcare providers were the primary source of information for 61.9% of parents, followed by the internet or media (40.9%) and personal experiences (35.3%).

The research evaluated parental comprehension of childhood headaches using a Knowledge Score ranging from 1 to 18. The data showed females scored 9.00 (IQR: 6.00-11.00) in the Knowledge Score test, which was significantly higher than males who scored 7.00 (IQR: 4.00-10.00) ($p = 0.006$), indicating females had better knowledge of childhood headaches. Parental marital status did not affect their knowledge score about childhood headaches since married parents scored 8.00 (IQR: 5.00-10.00), while separated parents scored 9.00 (IQR: 7.00-12.00) and widowed parents scored 10.00 (IQR: 5.00-13.00) ($p = 0.147$). Parents who completed their PhD education demonstrated the highest median score of 11.00 (IQR: 3.00-13.00) for understanding childhood headaches, yet parents with middle school education achieved the lowest median score of 3.00 (IQR: 2.00-8.00). The understanding of childhood headaches showed a positive correlation with higher parental educational attainment with a bachelor's degree, yielding a median score of 8.00 (IQR: 5.50-10.00) ($p = 0.004$). The knowledge scores of parents who worked in health professions (median: 8.00, IQR: 5.50-11.50) matched those of parents who did not work in health (median: 8.00, IQR: 5.00-10.00) without any statistical difference ($p = 0.362$). The knowledge scores of smokers reached a median of 6.00 (IQR: 4.00-10.00), while non-smokers achieved a median of 8.00 (IQR: 5.00-11.00) ($p = 0.019$), indicating smoking might be linked to reduced understanding of childhood headaches.

The research examined how different demographic characteristics affected both attitude scores and practice scores. The gender analysis showed no significant difference between females and males since their median attitude score was 5.00 ($p = 0.538$). The practice score median for females reached 4.00 (IQR: 3.00-5.00) while males scored 4.00 (IQR: 3.00-4.00) but showed a statistically significant difference ($p < 0.001$). Marital status did not affect attitude or practice scores between married, separated, and widowed participants, although widowed participants demonstrated slightly lower practice scores (median = 3.00). The median attitude score for participants with a master's degree was 4.00, while middle school education holders demonstrated the lowest practice score of 3.00. The attitude and practice scores between PhDs and secondary education participants were equal at 5.00 and 4.00, respectively. The scores between health sector workers and non-health sector workers showed no significant differences according to the attitude ($p = 0.674$) and practice ($p = 0.450$) measurements. The practice scores of smokers reached a median of 4.00, but this difference did not achieve statistical significance ($p = 0.068$).

The study used Spearman's Rank correlation to evaluate the relationships between Knowledge Score, Attitude Score, Practice Score, and Age. The results demonstrated a strong positive relationship between Knowledge Score and both Attitude Score ($r = 0.151$, $p = 0.002$) and Practice Score ($r = 0.336$, $p < 0.001$), which indicates that better knowledge leads to more positive attitudes and improved practices regarding childhood headaches. The results indicate that parents with positive attitudes toward childhood headaches tend to practice appropriate management techniques ($r = 0.296$, $p < 0.001$). The results indicated that older participants demonstrated lower knowledge scores, as shown by a negative correlation ($r = -0.109$, $p = 0.030$). The study revealed no meaningful statistical relationships between parental age and their scores on attitude ($r = -0.042$, $p = 0.403$) or practice ($r = -0.020$, $p = 0.686$).

4. DISCUSSION

Despite the high prevalence of pediatric headaches, limited research has explored parental understanding and management of these conditions. This investigation evaluated parental comprehension in Al-Baha, Saudi Arabia, revealing varied levels of knowledge, concern, and treatment strategies. While most parents correctly identified common headache types such as migraines and tension headaches, knowledge regarding less prevalent forms—namely cluster and secondary headaches—was notably limited. Only 30.1% and 34.3% of respondents could accurately identify cluster and secondary headaches, respectively. These figures are consistent with findings from Riyadh [7] and other regions [12, 13], where awareness rates for headache types remained modest. Such trends point to the necessity of targeted public education campaigns to improve the recognition of non-migraine headache subtypes and reduce the risks associated with delayed diagnosis.

Participant responses further emphasized sleep disturbances (79.4%), visual strain (61.7%), and psychological stress (52.1%) as leading headache triggers. These results align with studies from Kuwait [14], where primary headache disorders were found in over 40% of schoolchildren. However, fewer parents in the current study recognized malnutrition and dental issues as contributing factors. This gap reflects a lack

of awareness about the influence of dietary deficiencies, specifically involving vitamin D [1], magnesium, and calcium [2], on headache severity and frequency in children. A broader understanding of these links could improve the uptake of preventative and non-pharmacological strategies.

Parental attitudes and practices also varied considerably. While nearly half (46.1%) monitored their child's symptoms, only 23.0% regarded headaches as a medical emergency. Secondary headaches require immediate medical evaluation since they typically stem from central nervous system infections, space-occupying lesions, traumatic injuries, or comorbid conditions such as epilepsy [13,15]. This relatively low concern may differ from other regions where heightened parental anxiety is more common [16], potentially due to variations in healthcare access and public health messaging. Furthermore, 32.1% of parents reported administering painkillers without prior consultation, raising concerns about medication-overuse headaches [17,18]. Similar practices have been documented in Indian cohorts [19], where unsupervised over-the-counter treatments are prevalent. These behaviors underscore the importance of educating caregivers about appropriate pharmacological intervention and the risks of self-medication.

Female caregivers demonstrated higher knowledge and better headache management practices than their male counterparts—a trend echoed in studies across Arab populations [20]. Educational attainment was also positively associated with knowledge scores, reinforcing the value of academic exposure. Future awareness efforts should particularly target parents with lower formal education levels to bridge these knowledge gaps [21].

Interestingly, although knowledge was shaped by gender and education, attitudes remained unaffected by these variables. This suggests that cultural beliefs may exert a stronger influence than formal education in shaping how caregivers perceive and respond to pediatric headaches [22]. Prior research corroborates this view, highlighting the role of sociocultural context in healthcare decision-making [23]. As such, culturally tailored interventions are essential for achieving sustainable behavior change.

Stronger parental knowledge was positively correlated with improved attitudes and practices, emphasizing the importance of information accessibility and educational outreach. Caregivers who understood headache triggers and management options were more likely to seek timely professional care, validating the need for strategic educational initiatives to elevate public health literacy in this domain.

Nevertheless, the study is not without limitations. Self-reported responses may be subject to bias, with participants potentially overstating their awareness or aligning answers with perceived expectations. Additionally, the online nature of the survey excluded parents without internet access, thereby narrowing the study's representativeness. The cross-sectional design also restricts causal inferences, and regional specificity to Al-Baha limits the generalizability of findings across Saudi Arabia [24].

4.1. Clinical Implications and Future Research

The findings highlight a critical opportunity to develop structured educational programs that enhance parental understanding of pediatric headache types [25], management strategies, and the nutritional components influencing headache prevalence. Healthcare providers, including pediatricians and school health personnel, should incorporate headache education into regular health visits. Schools serve as strategic platforms for engaging both children and caregivers in awareness sessions.

Emerging technologies such as mobile applications and digital health platforms can further extend the reach of these programs, especially in remote or underserved regions. Future research should focus on evaluating the efficacy of such interventions through longitudinal studies [26] and assess whether improvements in parental knowledge translate into measurable health outcomes for children. Special attention should be paid to nutrition, both as a modifiable risk factor and as an intervention point in pediatric headache prevention.

CONCLUSION

This research provides valuable insights into parental understanding and management of childhood headaches in Al-Baha, Saudi Arabia. While many parents demonstrated a basic awareness of common headache types and triggers, knowledge regarding less familiar forms and appropriate treatment strategies remained limited. Notably, higher levels of knowledge were positively associated with more proactive

attitudes and practices in headache management. Given the significant impact of headaches on children's quality of life, there is an urgent need for comprehensive awareness campaigns and targeted educational initiatives to bridge existing knowledge gaps. Future efforts should ensure equitable access to accurate information and practical resources for all parents, regardless of gender or educational background, to enhance early recognition and appropriate care for childhood headaches.

DECLARATIONS

AUTHORS' CONTRIBUTIONS

Mohammed Hassan M. Alzahrani (MHA), Abdullah S. Alghamdi (ASA), and Mohammed Ibrahim A. Al-Shaikh (MIA) conceptualized and designed the study. Data acquisition was carried out by MHA, Waleed Saeed M. Alghamdi (WSA), Adel Abdulrahman M. Alghamdi (AAM), Ziyad Farouq M. Alghamdi (ZFA), and Rayan Tawfiq M. Alghamdi (RTA). All authors contributed to data analysis and participated in manuscript revision and editing. Data interpretation was primarily conducted by Khalid Alawad A. Mohammed (KAM) and Elfatih Mirghani M. Salih (EMS). Project administration was led by MHA and KAM. The original draft was written by MHA, ASA, MIA, WSA, AAM, ZFA, RTA, and KAM. All authors reviewed and approved the final manuscript and agreed to be accountable for all aspects of the work in accordance with ICMJE guidelines.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ETHICS

This study was approved by the Institutional Review Board (IRB) of Al-Baha University, Faculty of Medicine, Kingdom of Saudi Arabia (Approval No. IRB/PEA/BU-FM/2024/128), dated 27 November 2024, with an expiry date of 30 November 2026. All participants gave informed consent via an online consent form before participating. The study was conducted by the ethical principles outlined in the Declaration of Helsinki.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

REFERENCES

[1] Wander A, Meena AK, Choudhary PK, Peer S, Singh R. Pediatric Headache: A Comprehensive Review. Ann Child Neurol 2024; 32(4): 207-18. https://doi.org/10.26815/acn.2024.00521

[2] Al-Gethami H, Alrifai MT, AlRumayyan A, AlTuwaijri W, Baarmah D. The comorbidity of headaches in pediatric epilepsy patients: How common and what types? Neurosciences (Riyadh) 2019; 24(4): 284-9. https://doi.org/10.17712/nsj.2019.4.20190043

[3] Straube A, Heinen F, Ebinger F, Kries RV. Headache in School Children. Dtsch Arztebl Int 2013. https://doi.org/10.3238/arztebl.2013.0811

[4] Dhafar MK, Bahakeem FY, Alsehli AH, Kofyah RS, Hamad RE, Faraj WI, *et al*. Parental awareness of headaches among elementary school-aged children in Makkah, Saudi Arabia: A Cross-Sectional Study. Cureus 2023. https://doi.org/10.7759/cureus.44331

[5] Lakshmikantha KM, Nallasamy K. Child with Headache. Indian J Pediatr 2018; 85(1): 66-70. https://doi.org/10.1007/s12098-017-2437-7

[6] Altwaijri WA, Almazyad TA, Abuzaid YA, Alkhater JN, Ashmawi DM, Alnami GK, *et al*. Parental awareness of headaches among elementary school-aged children in Riyadh, Saudi Arabia: A cross-sectional study. J Family Med Prim Care 2021; 10(4): 1773-9. https://doi.org/10.4103/jfmpc.jfmpc_2280_20

[7] Blume HK. Childhood Headache: A Brief Review. Pediatr Ann 2017; 46(4). https://doi.org/10.3928/19382359-20170321-02

[8] Kim S. Pediatric headache: a narrative review. J Yeungnam Med Sci 2022; 39(4): 278-84. https://doi.org/10.12701/jyms.2022.00528

[9] Ahmed SF, Al-Hashel J, Alroughani R. Prevalence and burden of primary headache disorders in Kuwaiti children and adolescents. Neurology 2018; 90(15 Suppl): P3.142. https://doi.org/10.1212/WNL.90.15_supplement.P3.142

[10] El-Metwally A, Toivola P, AlAhmary K, Bahkali S, AlKhathaami A, Al Ammar SA, *et al*. The epidemiology of migraine headache in Arab countries: A systematic review. Sci World J 2020; 2020: 1-11. https://doi.org/10.1155/2020/4790254

[11] Irwin SL, Greene KA, Pavitt SJ, Ross AC. Headache in the pediatric population: Focus on migraine. Semin Neurol 2022; 42(4): 479-88. https://doi.org/10.1055/s-0042-1757927

[12] Wöber-Bingöl Ç. Epidemiology of migraine and headache in children and adolescents. Curr Pain Headache Rep 2013; 17(6): 341. https://doi.org/10.1007/s11916-013-0341-z

[13] Park EG, Han SB, Lee J, Kim JM, Han JY. Headaches in pediatric patients during the past decade: Comparative analysis by age group from a multicenter study in Korea. Brain Sci 2024; 14(10): 951. https://doi.org/10.3390/brainsci14100951

[14] Whitehouse WP, Agrawal S. Management of children and young people with headache. Arch Dis Child Educ Pract Ed 2017; 102(2): 58-65. https://doi.org/10.1136/archdischild-2016-311803

[15] Orr SL, O'Sullivan L, Zemek R, Ward NM, McMillan HJ. Family perspectives on visiting the pediatric emergency department for migraine: A qualitative study. Pediatr Emerg Care 2020; 36(6): e310-7. https://doi.org/10.1097/PEC.0000000000001285

[16] Koonalintip P, Phillips K, Wakerley BR. Medication-overuse headache: Update on management. life (Basel) 2024; 14(9): 1146. https://doi.org/10.3390/life14091146

[17] Sinha R, Meena A, Uniyal M, Singh S, Upadhyay A. Assessment of knowledge, attitudes, and practices of parents/caregivers towards migraine in children: A cross-sectional observational study. Ann Child Neurol 2023. https://doi.org/10.26815/acn.2023.00262

[18] Alhashem R, Byrne S, Hall D. Fifteen-minute consultation: Diagnosing serious pathology in children with headaches presenting to the emergency department. Arch Dis Child Educ Pract Ed 2023; 108(6): 401-5. https://doi.org/10.1136/archdischild-2021-323329

[19] Al-Yateem N, Lajam AMA, Othman MMG, Ahmed MAA, Ibrahim S, Halimi A, *et al*. The impact of cultural healthcare practices on children's health in the United Arab Emirates: A qualitative study of traditional remedies and implications. Front Public Health 2023; 11. https://doi.org/10.3389/fpubh.2023.1266742

[20] Saigh FI, Saigh ZI. Mothers' involvement in pediatric postoperative pain care in a tertiary healthcare setting in Saudi Arabia. Cureus 2023; 15(2): e34967. https://doi.org/10.7759/cureus.34967

[21] Kristjansdottir O, McGrath PJ, Finley GA, Kristjansdottir G, Siripul P, Mackinnon SP, *et al*. Cultural influences on parental responses to children's pain. Pain 2018; 159(10): 2035-49. https://doi.org/10.1097/j.pain.0000000000001289

[22] Seth S, Dubey AK, Maheshwari N. Parent-directed use of over-the-counter medications and complementary and alternative medicine therapies among pediatric patients: A cross-sectional study. J Res Pharm Pract 2022; 11(4): 151-61. https://doi.org/10.4103/jrpp.jrpp_15_23

[23] Shuaibi S, AlAshqar A, Ahmed SF, Alroughani R, AlThufairi H, Owayed S, *et al*. Primary headache disorder among school students in Kuwait. Front Neurol 2021; 12. https://doi.org/10.3389/fneur.2021.621017

[24] Oh S-Y, Kang J-J, Park H-K, Cho S-J, Hong Y, Kang M-K, *et al*. Three-month treatment outcome of medication-overuse headache according to classes of overused medications, use of acute medications, and preventive treatments. Sci Rep 2024; 14(1): 16013. https://doi.org/10.1038/s41598-024-66906-0

[25] Buckland A, Pilley E. Primary headaches in children. InnovAiT 2025; 18(1): 32-9. https://doi.org/10.1177/17557380241288830

[26] Smith AM, Schefter ZJ, Rogan H. Aligning with patients and families: exploring youth and caregiver openness to pediatric headache interventions. Children (Basel) 2022; 9(12): 1956. https://doi.org/10.3390/children9121956

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