

Relationship Between Headache and Lifestyle Among Children and Adolescents

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Submission Date : 29 April 2025
Accepted Date : 28 May 2025
Published Date : 30 September 2025
DOI: <https://doi.org/10.3329/jrjpmc.v10i2.85665>

Introduction:

Headaches in children and adolescents are common and can cause significant distress and disability for both the affected individuals and their families.¹ The two most prevalent types of primary headaches are migraine and tension-type headaches (TTH).² Studies show that 4-11% of children aged 7-11 years, and 8-23% of those aged

Abstract

Background:

Headaches are a common issue among children, affecting their daily functioning and quality of life.

Objective:

This study aimed to explore the distribution of headaches in children, examining factors such as age, sex, BMI, dietary habits, sleep patterns, and potential triggers.

Methods:

A cross-sectional study was conducted on 245 children aged 7 to <18 years, including 120 diagnosed with Migraine or Tension-Type Headache (TTH) at pediatric OPD of National Institute of Neurosciences and Hospital, Dhaka, and 125 age-matched healthy siblings. Headache diagnoses followed ICHD-3 criteria. A structured questionnaire was administered to gather data on lifestyle factors such as sleep patterns, dietary habits, leisure activities, BMI, environmental triggers, academic stress, and family dynamics. Data collection was carried out through face-to-face interviews with parents and children, after obtaining informed consent. SPSS software was used for data analysis.

Results:

Among the headache group, 45% of children with Migraine and 66.7% of those with TTH were in the 10-12 years age group. The study revealed a significant relationship between abnormal sleep patterns (sleep latency >30 minutes, <8 hours sleep duration, TV/mobile usage before sleep, and daytime naps) and the occurrence of headaches ($p < 0.05$). However, no significant associations were found with other lifestyle factors like diet, physical activity, or obesity.

Conclusion:

The findings suggest a significant relationship between sleep disturbances and headaches in children. Given the impact on quality of life, further research is needed to explore the broader lifestyle influences on headache prevalence among children and adolescents.

Keywords: Children, Adolescents, Headache, Lifestyle

Citation: Hussain S, Hosain A, Jasmine T, Mamun AA, Happy RA, Rashid MA, et al. Relationship Between Headache and Lifestyle Among Children and Adolescents. J Rang Med Col. 2025 Sep;10(2):103-108. doi: <https://doi.org/10.3329/jrjpmc.v10i2.85665>

11-15 years, experience migraines, while 10- 24% suffer from TTH.³ The prevalence of headaches increases with age, affecting both sexes equally.⁴ Changes in children's lifestyles have been suggested as possible contributors to this rise.⁵ Research has demonstrated a link between headaches and various lifestyle factors, including diet and habits.⁶⁻⁹ Certain lifestyle factors, known

as "triggers," play a significant role in the onset of headaches in predisposed individuals. These triggers can be categorized as behavioral, environmental, dietary, chemical, hormonal, or related to infections.¹⁰ Identifying these triggers is an essential component of non-pharmacological management strategies for both migraine and TTH.¹¹ Effective lifestyle strategies, such as proper diet, exercise, and sleep habits, are recommended to manage headaches.¹²

Dietary factors linked to headaches include missed meals, irregular breakfast, inadequate fruit and vegetable intake, dehydration, and the consumption or withdrawal of caffeine.^{8,13-20} Other dietary triggers include spicy foods, cheese, chocolate, citrus fruits, and caffeinated beverages.^{18,20-22} Inadequate sleep patterns, such as shorter sleep duration and irregular sleeping habits, have also been strongly associated with headaches.^{9,15,18,23-25} Children with headaches often experience sleep disturbances, including insomnia and daytime sleepiness.^{23,24} Moreover, lower physical activity levels and higher BMI are correlated with headaches.^{6,15,25} Children with migraine, in particular, tend to avoid photophobia sources like television and the internet.¹⁸ Additionally, environmental factors such as mental stress, sunlight exposure, and noise have been identified as triggers.²⁶⁻³⁰ In Bangladesh, limited data exists on the lifestyle patterns and triggering factors of headaches in children, highlighting the importance of this study.

Methods:

This cross-sectional study was conducted at the Pediatric Neurology Outpatient Department (OPD) of the National Institute of Neurosciences and Hospital (NINS & H) in Dhaka, Bangladesh, from January 2020 to July 2020. The study population included children aged 7 to <18 years diagnosed with migraine or tension-type headache (TTH), along with their age-matched siblings (maximum two siblings per family) who were free from headaches or chronic illnesses. The sample was drawn using consecutive sampling, with a total of 60 participants for both the migraine and TTH groups, and 125 participants in the non-headache group. Inclusion criteria for the headache group required participants to have been diagnosed with migraine or TTH for at least six months, with or without prophylactic therapy. Exclusion criteria

included children with primary or secondary chronic headaches, as well as those suffering from chronic illnesses such as epilepsy, asthma, or rheumatological disorders. All participants were screened through a thorough clinical history, assessment, and body mass index (BMI) measurement. Nutritional status was determined based on BMI (weight in kg/height in m²). Diagnosis of migraine and TTH followed the International Classification of Headache Disorders (ICHD-III) criteria.³¹ Data collection was carried out through face-to-face interviews with parents and children, after obtaining informed consent. Data were analyzed using SPSS version 26, with continuous variables shown as mean±SD and categorical variables as frequencies. Chi-squared test and Anova were used for analysis.

Nutritional status based on BMI (weight in kg/height in m²)

BMI (weight in kg/height in m ²) Percentile range	Weight status category
Less than the 5 th percentile	Underweight
5 th to less than the 85 th percentile	Healthy Weight
85 th to less than the 95 th percentile	Overweight
95 th percentile or greater	Obesity

Results:

Significant age difference across groups ($p < 0.05$) with a predominance of children under 10 years in the non-headache group. Males were more common in the non-headache and migraine groups, while females predominated in the TTH group, though the gender difference was not statistically significant (Table-I)

Table-I: Distribution of the respondents by age and sex (N=245)

Characteristic	Non-headache Group (n=125)	Migraine Group (n=60)	TTH Group (n=60)	p-value
Age Group (Years) no. (%)				
7-9	53(42.4)	20(33.3)	6(10)	0.001
10-12	45(36)	27(45)	40(66.7)	
13-15	27(21.6)	13(21.7)	14(23.3)	
Mean±SD	10.2±2.1	10.7±2.3	11.4±1.6	0.001
Gender no. (%)				
Male	73(58.3)	33(55)	26(43.3)	0.154
Female	52(41.6)	27(45)	34(56.7)	

Chi-squared test revealed no significant difference in BMI ($p>0.05$) and dietary habits ($p>0.05$) between the two groups. The majority of children had a normal BMI.

Table-II: Distribution of espondents by BMI and dietary habits (N=245)

Category	Headache Group (n=120)	Non-Headache Group (n=125)	p-value
Body mass index (BMI) no. (%)			
Underweight	10.4	10.4	0.223
Normal BMI	68.3	70.4	
Overweight	9.2	6.4	
Obese	11.7	12.8	
Dietary habits no. (%)			
Regular breakfast	68.3	68	0.992
Takes tiffin/break meals	86.7	80	0.334
Regular meal intake	77.5	75.2	0.773
Fruits/vegetables (Every day)	21.7	32	0.099
Tea/coffee (Daily)	25.8	30.4	0.356
Soft drink (Every day)	5	1.6	0.304
Water intake >0.5 L	76.7	88.8	0.502

No significant differences in sleep patterns were found between the two groups ($p>0.05$). However, the headache group had significantly fewer hours of sleep <8h, more trouble falling asleep, and higher screen time before bed. They also took more day naps (Table-III).

Table-III: Distribution of respondents by sleep pattern (N=245)

Category	Headache Group (n=120)	Non-Headache Group (n=125)	p-value
Sleep Pattern no. (%)			
Same Bedtime	96(80)	101(80.8)	0.368
Same Awakening Time	103(85.8)	108(86.4)	0.488
Hours of Sleep per Night	<8h: 62(51.6)	38(30.4)	0.002
	8-10h: 37(30.8)	49(39.2)	
	>10h: 21(17.5)	38(30.4)	
Falls Asleep within 30 Minutes	38(31.6)	65(52)	0.002
Frequent Night Awakenings			
(≥2 times/night)	11(9.2)	6(4.8)	0.076
Watching TV/Mobile Before no. (%)			
Sleep	52(43.3)	31(24.8)	0.009
Day Naps	39(32.5)	18(14.4)	0.004

Physical exercise and missing meals were more frequent headache triggers in the migraine group compared to the TTH group ($p < 0.05$). Other triggers were similar between the two groups (Table-IV).

Table-IV: Distribution of children with headache by trigger factors (n=120)

Triggers for headache	Migraine Group (n=60) no. (%)	TTH Group (n=60) no. (%)	p-value
Environmental/ climatic	50(83.3)	47(78.3)	0.470
Visual stimuli	29(48.3)	27(45)	0.402
Stresses	44(73.3)	49(81.6)	0.574
Sleep disturbance	47(78.3)	41(68.3)	0.660
Physical exercise	28(46.7)	11(18.3)	0.027
Missing meals	21(35)	8(13.3)	0.031
Car/bus journeys	41(68.3)	39(65)	0.694
Behavioral	27(45)	30(50)	0.580
Menstruation	3(5)	4(6.7)	0.117

Discussion:

This study examined 120 children with headaches and 125 without, revealing significant findings related to age, sex, BMI, dietary habits, sleep patterns, and headache triggers. The majority of children with headaches were in the 10-12 years age group, with 45% in the migraine group and 66.7% in the TTH group, which aligns with previous studies indicating higher prevalence of migraines and TTH in children aged 10-15 years Hoque et al.²⁶ Gender distribution was similar across both groups, consistent with Tavasoli et al 's findings.³² Though not statistically significant, a slightly higher proportion of males experienced migraines, a trend seen in previous studies from Bangladesh and other countries³³⁻³⁵, although other studies report a predominance of migraine in females.^{15,18,30}

Regarding BMI and dietary habits, the majority of children in the headache group (68.3%) had a normal BMI, which corroborates previous research.⁹ Most children with headaches in this study had regular meals, which contrasts with findings suggesting a link between irregular meal patterns and headaches.^{9,15,18} No significant difference was found between the groups

regarding fruit and vegetable intake, caffeine consumption, or fluid intake.^{8,9} However, 61.7% of children with headaches consumed less than 1L of fluid per day, though this did not reach statistical significance, consistent with Milde-Busch A et al.'s findings.⁸

In terms of sleep patterns, children with headaches had similar bedtime, waking time, and frequency of night awakenings compared to those without headaches ($p > 0.05$), in line with findings by Bruni O et al.²⁵ However, children with headaches exhibited longer sleep latency (>30 minutes) and shorter sleep duration (<8 hours), a result similar to previous studies.^{15,18,24,25} Regarding headache triggers, the study found similar patterns across migraine and TTH groups, with physical exercise and missed meals being more frequent triggers in the migraine group ($p < 0.05$), consistent with previous literature.^{15,18} Environmental factors, visual stimuli, stress, and sleep disturbances were common triggers for both groups, as reported in other studies.^{10,21,26,29,30,32}

Conclusion:

This study highlights a significant association between headaches and disrupted sleep patterns, including prolonged sleep latency, insufficient sleep duration, and increased screen time before bed. However, no substantial link was found between headaches and other lifestyle factors such as leisure activities or dietary habits. Future research should focus on the broader lifestyle factors influencing headaches in children and adolescents to better understand their impact on quality of life. Healthcare professionals should prioritize sleep hygiene and reduce screen time for children with headaches. Further research is needed on lifestyle factors affecting headache prevalence in children. Awareness campaigns on sleep patterns and lifestyle impact are recommended.

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