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# Prevalence of Sleep Disorders among Primary School Children

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## Abstract

**Introduction:** Aim: Prevalence of sleep disorders among primary school children. **Methods:** Five hundred eighty school children age ranged 8- 14 years of either gender were selected. Childhood sleep habit questionnaire (CSHQ) was used for recording sleep disorders. The responses are categorized on a three- point Likert's scale— Usually, sometimes and rarely. **Results:** Age group 8-10 years comprised of 110 boys and 140 girls and age group 11-14 years had 90 boys and 240 girls. In age group 8-10 years, 24 (9.6%) and in age group 11-14 years had 40 (2.1%) sleep disorders. Overall prevalence found to be 11%. Various parasomnia activities recorded were bedwetting in 32, teeth grinding in 12, sleep talking in 4, night terrors in 10, sleep walking in 2 and bad dreams in 4. Symptoms of obstructive sleep apnea was snoring seen in 45%, sleeps on stomach in 10%, wakes up to get breathe in 6%, stop breathing during sleep in 19%, sweats at night in 8% and drools saliva on pillow in 12%. A significant difference was observed (P< 0.05). **Conclusion:** Symptoms of sleep disorders were prevalent among primary school children. Common disorders were parasomnia and obstructive sleep apnea.

**Key Words:** Children, sleep disorders, obstructive sleep apnea.

## INTRODUCTION

Sleep disorders are not uncommon among children and may range from sleep disturbances, insomnia, and parasomnia to sleep disordered breathing. 81 to 100 percent of parents believed that their children had good sleep habits.[1] Information available about the prevalence of sleep problems and factors affecting healthy sleep habits in toddlers especially in children who do not attend childcare centers such as preschool- is incomplete.[2] Most studies have focused on students' sleep habits and neglected to examine sleep patterns of children younger than 4 years - which could have serious consequences for future physical and mental health.[3] These studies have included children from varying age groups and have included the sample from various places e.g., hospital, community, children center and schools. It is reported that sleep apnea, difficulty with sleep initiation or maintenance, parasomnia and excessive daytime sleepiness were common among children with varying prevalence for each disorder.[4]

Recognition of sleep disorders is important among children as they adversely affect the academic performance, cardiovascular health and cognitive functions.[5] In addition, sleep disorders among children have been found to be associated with metabolic complications, obesity and psychiatric disorders e.g., self-harm and attention deficit hyperactivity disorder.[6]

Sleep changes considerably during the first few years of life and parallels physical maturation and development.[7] New borns require the greatest total sleep time and have a fragmented sleep-wake pattern.[8] Starting at five months of age, infants have the ability to sleep for longer periods. At six months of age, children are able to go without night time feedings, but significant variation exists. Additionally, breastfeeding infants have more frequent awakenings, shorter sleep periods, and slightly shorter total sleep times.[9] Considering this, we selected present study to assess prevalence of sleep disorders among primary school children.

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## MATERIALS AND METHODS

A total of five hundred eighty school children age ranged 8- 14 years of either gender were selected in this study. Parental consent was obtained for the study. Institutional review and ethical committee approved the study after explain them the benefits and positive outcomes.

Demographic characteristics of each enrolled school children was entered in case history proforma. Childhood sleep habit questionnaire (CSHQ) was used for recording sleep disorders. The responses are categorized on a three- point Likert's scale— Usually, sometimes and rarely. Results of the present study after recording all relevant data were subjected for statistical inferences using chi- square test. The level of significance was significant if p value is below 0.05 and highly significant if it is less than 0.01.

## RESULTS

**Table 1: Age and gender distribution**

| Age groups (years) | Boys | Girls | Total |
|---|---|---|---|
| 8-10 | 110 | 140 | 250 |
| 11-14 | 90 | 240 | 330 |
| Total | 200 | 380 | 580 |

**Table 2: Prevalence of sleep disorders**

| Age groups (years) | Total | Prevalence | Percentage |
|---|---|---|---|
| 8-10 | 250 | 24 | 9.6% |
| 11-14 | 330 | 40 | 12.1% |
| Total | 580 | 64 | 11% |

Age group 8-10 years comprised of 110 boys and 140 girls and age group 11-14 years had 90 boys and 240 girls [Table 1].
In age group 8-10 years, 24 (9.6%) and in age group 11-14 years had 40 (2.1%) sleep disorders. Overall prevalence found to be 11% [Table 2].

**Table 3: Prevalence of parasomnia among children**

| Parasomnia | Number | P value |
|---|---|---|
| Bedwetting | 32 | <0.05 |
| Teeth grinding | 12 | |
| Sleep talking | 4 | |
| Night terrors | 10 | |
| Sleep walking | 2 | |
| Bad dreams | 4 | |

Various parasomnia activities recorded were bedwetting in 32, teeth grinding in 12, sleep talking in 4, night terrors in 10, sleep walking in 2 and bad dreams in 4. A significant difference was observed (P< 0.05) [Table 3, Figure 1].

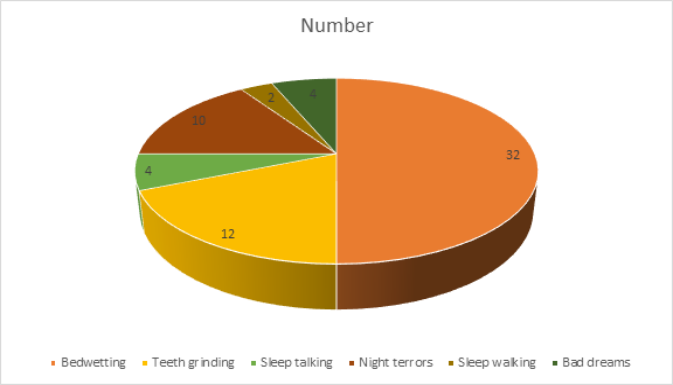


**Figure 1: ?**

**Table 4: Prevalence of symptoms of obstructive sleep apnea**

| Symptoms | Percentage | P value |
|---|---|---|
| Snoring | 45% | <0.05 |
| Sleeps on stomach | 10% | |
| Wakes up to get breathe | 6% | |
| Stop breathing during sleep | 19% | |
| Sweats at night | 8% | |
| Drools saliva on pillow | 12% | |

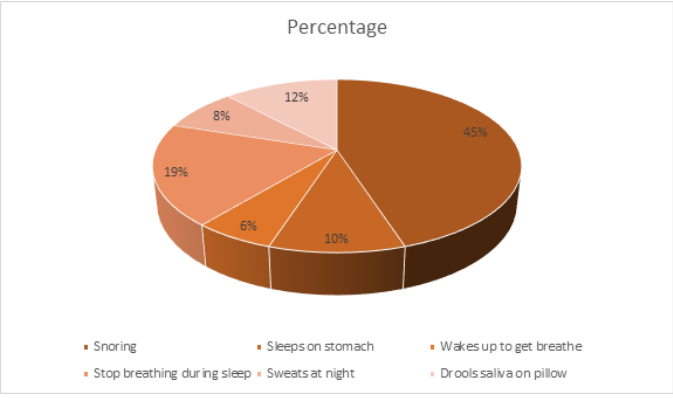


**Figure 2: ?**

Symptoms of obstructive sleep apnea was snoring seen in 45%, sleeps on stomach in 10%, wakes up to get breathe in 6%, stop breathing during sleep in 19%, sweats at night in 8% and drools saliva on pillow in 12%. A significant difference was observed (P< 0.05) [Table 4, Figure 2].

## DISCUSSION

Sleep is an opportunity for the body to conserve energy, restore its normal processes, promote physical growth, and support mental development.[10] The most recognized consequence of inadequate sleep is daytime sleepiness.[11] However, sleepiness in children commonly manifests as irritability, behavioral problems, learning difficulties, motor vehicle crashes in teenagers, and poor academic performance.[12] Distinguishing significant sleep disruptions from normal age-related changes can be challenging and can ultimately delay treatment. Sleep changes considerably during the first few years of life and parallels physical maturation and development. Newborns require the greatest total sleep time and have a fragmented sleep-wake pattern. Starting at five months of age, infants have the ability to sleep for longer periods.[13] At six months of age, children are able to go without night time feedings, but significant variation exists.[14] Additionally, breastfeeding infants have more frequent awakenings, shorter sleep periods, and slightly shorter total sleep times. As children age, sleep periods gradually lengthen and total sleep time decreases.[15] In present study, the prevalence of sleep disorders among primary school children was recorded.

Our study showed that Age group 8-10 years comprised of 110 boys and 140 girls and age group 11-14 years had 90 boys and 240 girls. Gupta et al,[16] screened symptoms of sleep disorders among primary school children. Mean age of the subjects included in this study was 8.9 ± 1.5 y. Boys and girls were equally distributed, however, rural sample was smaller. More than one awakening each night was found in 12.2 % children. In the whole group, prevalence of bed-wetting was 8.7 %, sleep-talking 20.9 %, sleep-walking 3.2 %, teeth grinding 15.4 % and night terrors 8.4 %. Daytime sleepiness was reported by 25.5 % and napping by 56.4 %. 17.3 % used to fall asleep in unusual circumstances and the teacher or the friend in 6.9 % students noticed it. Snoring was reported by 11.4 % children, and 6.3 % reportedly struggled to breathe during sleep. Domicile and gender did not affect prevalence of parasomnia, however, symptoms of sleep apnea were more frequent among rural children. Daytime sleepiness was more common among rural children as compared to urban.

We found that in age group 8-10 years, 24 (9.6%) and in age group 11-14 years had 40 (2.1%) sleep disorders. Overall prevalence found to be 11%. OSA is characterized by upper airway obstruction, despite respiratory effort, that disrupts normal sleep patterns and ventilation. OSA can be associated with obesity, excessive soft tissue in the upper airway, decreased upper airway lumen size, or failure of pharyngeal dilator muscles. However, in children, the obstruction is primarily due to enlarged tonsils and adenoids.[17] Onset usually occurs between two and eight years of age, coinciding with peak tonsil growth, but the condition can manifest at any age. The overall prevalence in children is 1% to 5%. It occurs equally among males and females, but is more common in ethnic minorities.

Snoring and witnessed apneas are the classic symptoms of OSA, but not all snorers have the condition. The prevalence of habitual snoring in children is as high as 27%, which can complicate the recognition of OSA. Other common symptoms include unusual sleeping positions (e.g., hyperextended neck, seated with open mouth), sleep-related paradoxical breathing, night time diaphoresis or enuresis, morning headaches, and excessive daytime sleepiness. However, children are less likely than adults to present with daytime sleepiness. Sleepiness in children is more likely to manifest as depressed mood, poor concentration, decreased attention, or behavioral issues.[18]

## CONCLUSION

Our study showed that symptoms of sleep disorders were prevalent among primary school children. Common disorders were parasomnia and obstructive sleep apnea.

## REFERENCES


1. Ren Z, Qiu A. Sleep-related breathing disorder is associated with hyperactivity in preschoolers. Singap Med J. 2014;55:257–60.
2. Murthy CLS, Bharti B, Malhi P, Khadwal A. Sleep habits and sleep problems in healthy preschoolers. Indian J Pediatr. 2015;82:606–11.
3. Sahin U, Ozturk O, Ozturk M, Songur N, Bircan A, Akkaya A. Habitual snoring in primary school children: prevalence and association with sleep-related disorders and school performance. Med Princ Pract. 2009;18:458–65.
4. Owens JA, Spirito A, McGuinn M. The Children's sleep habits questionnaire (CSHQ): psychometric properties of a survey instrument for school-aged children. Sleep. 2000;23:1043–51.
5. Narendhran R, Bharti B, Malhi P. Children sleep habits questionnaire (CSHQ): psychometric validation in Indian school children. Indian J Sleep Med. 2008;3:102–6.
6. Li S, Jin X, Shen X, et al. Development and psychometric properties of the Chinese version of Children's sleep habits questionnaire. Zhonghua Er Ke Za Zhi. 2007;45:176–80.
7. Waumans RC, Terwee CB, Van den Berg G, Knol DL, Van Litsenburg RRL, Gemke RJBJ. Sleep and sleep disturbance in children: reliability and validity of the Dutch version of the child sleep habits questionnaire. Sleep. 2010;33:841–5.
8. Silva FG, Silva CR, Braga LB, Neto AS. Portuguese Children's sleep habits questionnaire - validation and cross-cultural comparison. J Pediatr. 2014;90:78–84.
9. Markovich AN, Gendron MA, Corkum PV. Validating the Children's sleep habits questionnaire against polysomnography and actigraphy in school-aged children. Front psychiatry. 2014;5:188.
10. Li L, Ren J, Shi L, et al. Frequent nocturnal awakening in children: prevalence, risk factors, and associations with subjective sleep perception and daytime sleepiness. BMC Psychiatry. 2014;14:204.
11. Smedje H, Broman JE, Hetta J. Short-term prospective study of sleep disturbances in 5-8-year-old children. Acta Paediatr. 2001;90:1456–63.
12. Aishworiya R, Chan P, Kiing J, Chong SC, Laino AG, Tay SK. Sleep behaviour in a sample of preschool children in Singapore. Ann Acad Med Singap. 2012;41:99–104.
13. Liu X, Ma Y, Wang Y, et al. Brief report: an epidemiologic survey of the prevalence of sleep disorders among children 2 to 12 years old in Beijing, China. Pediatrics. 2005;115:266–8.
14. Baweja R, Calhoun S, Singareddy R. Sleep problems in children. Minerva Pediatr. 2013;65:457–72.
15. Bharti B, Malhi P, Kashyap S. Patterns and problems of sleep in school going children. Indian Pediatr. 2006;43:35–8.
16. Gupta R, Goel D, Kandpal SD, Mittal N, Dhyani M, Mittal M. Prevalence of sleep disorders among primary school children. The Indian Journal of Pediatrics. 2016 Nov;83(11):1232-6.
17. Ravikiran SR, Jagadeesh Kumar PM, Latha KS. Sleep problems in preschool and school aged rural Indian children. Indian Pediatr. 2011;48:221–3.
18. Tan H-L, Gozal D, Kheirandish-Gozal L. Obstructive sleep apnea in children: a critical update. Nat Sci Sleep. 2013;5: 109–23