

Effect of Sleep on Behaviour of Children in Dental Clinic: A Cross-Sectional Study

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ABSTRACT

Background: Children who aren't getting the suggested measure of rest have more troubles with consideration, with enthusiastic control, with thinking, critical thinking, and furthermore have behavioural issues. Present study aimed is to evaluate the after effect of lack of sleep and related factors on conduct of children in a dental facility.

Materials and methods: A cross-sectional study was conducted on 150 healthy children at the time of their initial visit to the dental clinic, ranging from preschoolers to adolescents. Data was acquired by questionnaire. Children's behavior during their preliminary examination was studied and categorized according to Frankl's behavior rating scale. Data was analyzed by linear regression analysis.

Results: Total duration of sleep accounted for a small but significant contribution in behavioral problems of children. Correlation was found between duration of sleep and cooperative behavior in dental clinic. Children who had less total sleep duration had increased behavioral problems in dental clinic.

Conclusion: Decreased sleep have a negative impact on the behavior of children. more research is required to study each factor impacting sleep of children.

Keywords: Children's behavior, dental clinic, sleep apnoea.

INTRODUCTION

Behavioral sleep problems in children include bedtime refusal or resistance, delayed sleep onset, and prolonged night awakenings requiring parental intervention. All of these issues are common in the pediatric population and often

adversely affect the quality of life of both children and caregivers.¹ Often, sleep problems in children are not of the child but of the parents, who may have unwittingly created the problem in the first place, or worry unduly about a relatively minor matter that is inflated out of proportion, or transmit their anxieties to the child. Pedodontists often face

Received: Mar. 19, 2017; Accepted: May. 9, 2017

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problems in treating their child patients due to disruptive behavior. It is estimated in cross-sectional studies that overall 25%–30% of young children are reported to have significant bedtime problems.^[1] Although type may vary in infants, toddlers, preschoolers and adolescents.^[2] In preschool-aged children, sleep problems have been correlated with childhood behavior problems.

Infants and toddlers — Night wakings are one of the most common sleep problems in infants and toddlers; 25 to 50 percent of children over the age of six months continue to awaken during the night. Bedtime resistance is found in 10 to 15 percent of toddlers.

Preschool-aged children — Fifteen to 30 percent of preschool-aged children have difficulties falling asleep or night wakings, and in many cases, these issues coexist in the same child.

Middle childhood — Although previously thought to be rare in middle childhood, more surveys suggest that sleep problems are present in 25 to 40 percent of 4- to 10-year-old children. Fifteen percent of these children have bedtime resistance and almost 11 percent have sleep-related anxiety (psychophysiologic [conditioned] insomnia).

Adolescents — Studies have estimated that 11 percent of adolescents (13 to 16 years of age) have a history of significant insomnia. Children with neurodevelopmental (autism, mental retardation) and psychiatric disorders (depression, anxiety, attention deficit hyperactivity disorder [ADHD]) are at particularly high risk for sleep disturbances.

Sleep needs change according to age.

- 3 months - 1 year need about 14 - 15 hours a day.
- 1 - 3 years should sleep for 12 - 14 hours a day.
- 3 - 5 years need 11 - 12 hours of sleep a day.
- 6 - 12 years require sleep for 10 - 11 hours a day.
- 12 - 18 years should sleep between 8.5 - 9.5 hours a day.

The purpose of this study was to find correlation between total duration of sleep and behavior of children in dental clinic and also to find whether secondary factors such as SES, working of

mother, number of siblings, type of family, presence of sleep habits such as bruxism and use of electronic media at bedtime have an influence on the duration of sleep and hence affecting the behavior of children.

MATERIALS AND METHODS

A cross-sectional study was carried out. 150 healthy children with age range of 3–18 years, who were reporting to the dental clinic for the first time, were selected randomly. Questionnaire was completed by interviewing the accompanying person. Questions were asked by a single investigator in the local language about sleep duration and sleep habit. Questions were also asked about the secondary factors like SES, working of mother, number of siblings, type of family, presence of sleep habits such as bruxism and use of electronic media at bedtime.^[3-4] The diagnosis for age-related total sleep was determined according to the recommended sleep duration by the National Sleep Foundation's sleep time duration recommendations.^[5]

In the dental clinic, child's behavior during his/her preliminary examination was rated according to Frankl's behavior rating scale into definitely negative, negative, positive, and definitely positive.^[6] The following traits were included:

- 1 = Definitely negative (--) : Cries forcefully, refuses treatment, extreme negativism, fearful.
- 2 = Negative (-) : Reluctant to accept treatment, uncooperative, negative attitude but not very pronounced, i.e., sullen, withdrawn.
- 3 = Positive (+) : Acceptance of treatment, at times cautious, willing to comply but at times with reservations, usually follows dentist's directions.
- 4 = Definitely positive (++) : Develops good rapport, takes interest, enjoys the treatment.

RESULTS

Statistical analysis was performed. Linear regression analysis was done to know the relation of child's behavior in dental clinic with total sleep duration and duration of sleep with different variables such as pattern of sleep, type of family, SES, working of mother and electronic media usage.

After that Spearman's correlation was carried out to assess how well the relationship can be explained between the qualitative variables. Correlation was statistically significant for $P < 0.05$.

Out of 150 children who participated in the study, 53% were male and 47% were female and majority of them belonged to low SES. 19% had decreased sleep according to their age and only 12% of the children had sleep habits.

Table 1: Distribution by sleep habits.

Type of sleep habit	Number of children (%)
Sleep talking	8
Bruxism	1
Sleeping with a toy	3
No habit	88

Table 2: Distribution by completion of sleep.

Afternoon sleep	Number of children (%)
completed	56
Not completed	15
Not sure	29

Table 3: Correlation between duration of sleep and behavior of children in dental clinic.

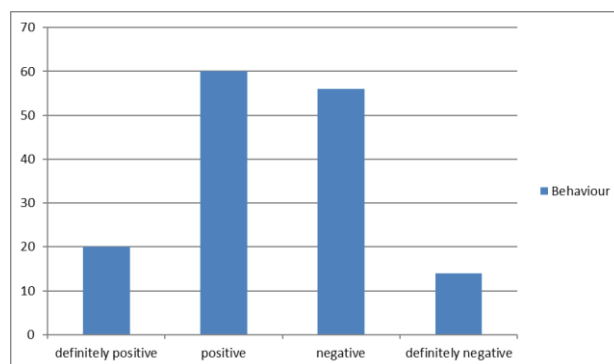
Characteristics	Behavior	Correlation coefficient (R)	Significance (P)
Duration of sleep	Behavior in dental clinic	0.47	0.000

Table 4: Correlation of different factors with duration of sleep.

Characteristic	Effect on sleep duration	Correlation coefficient (R)	Significance (P)
Nuclear family	Duration of sleep	0.083	0.402
Number of sibling	Duration of	-0.356	0.004

	sleep		
Socioeconomic status	Duration of sleep	-0.279	0.022
Daytime naps	Duration of sleep	0.294	0.05
Working of mother	Duration of sleep	-0.118	0.302
Media time	Duration of sleep	-0.176	0.154

Graph 1: Distribution of children according to behaviour.



Linear regression analysis was carried out to analyze the relationship between behavior of children in dental clinic and duration of sleep. According to Spearman's correlation, duration of sleep was positively correlated with cooperative behavior of child in dental clinic, which was highly significant statistically ($P < 0.001$, $R = 0.47$) [Table 3]. However, the duration of sleep was negatively correlated with number of siblings ($P = 0.004$, $R = -0.356$) and SES of the family ($P = 0.022$, $R = -0.279$) [Table 4].

DISCUSSION

This study was conducted to evaluate the correlation between total duration of sleep and behavior of children in dental clinic. children with shorter than recommended sleep duration presented with more negative behavior and duration of sleep was positively correlated with cooperative behavior of child in dental clinic, which was statistically highly significant. The results obtained are supported by some studies and a

correlation was found between difficult sleep and hyperactivity, aggressive behavior and anxiety in children. This not only hinders their process of learning but also may cause inappropriate neurobehavioral functioning.^[7] Dahl in his study found that short sleep may decline cognitive development in children, thus worsening their behavior.^[8] According to a study done by Scharf et al., preschoolers with shorter duration of sleep at night had higher reports for annoying behaviors which may be ignored or misunderstood by the parents as anger, tantrums, and irritability of the child.^[9] Both internal behavior (depression and anxiety) and external behavior (aggression, hyperactivity and tantrums) are seen with children who had problems either getting into sleep or maintaining their sleep. Seifer et al.^[10] and Lavigne et al.^[11] also reported that familial conflicts are related to sleep disturbances in children. This study showed that total sleep duration was decreased with increase in the number of siblings and lower SES; this is similar to the studies done by Mindell et al.^[12] and Buckhault,^[13] which showed the fact that lower SES may increase parental stress and depression affecting the child's sleep and hence the behavior. Owens et al.^[14] stated that behavioral problems are more frequently seen in children who had more than 2 h of media time daily. Higuchi et al.^[15] stated that exposure of bright light during late evenings may suppress the secretion of hormone melatonin and thus delay the circadian rhythm leading to loss of or decrease in sleep. , Seifer et al. and Lavigne et al. also reported that familial conflicts are related to sleep disturbances in children. El-Sheikh et al. and ^[16]Goodnight et al.^[17] found that increased conflicts in family or maternal stress ultimately lead to arousal in children and cause increased chances of behavioral problems. Keeping all these things in mind, a pedodontist may not only facilitate in behavior modification of the child but may also make the parents understand about the its root cause and the factors associated with it.

CONCLUSION

Pediatric sleep disorders increasingly interfere with daily patient and family functioning. Interest in and treatment of sleep disturbances in youth continues to grow, but research lags. This study evaluated that total sleep duration has a

significant effect on behavior of children in dental clinic and total sleep duration is influenced by secondary factors also. Poor sleepers have a higher risk for behavioral problems than normal sleepers. Pedodontists having knowledge about required sleep duration and its effect on behavior help in managing the child in dental clinics but also in better psychological development of children. Further investigation is needed to develop empirically based diagnosis and treatment of pediatric sleep disorders. Although there is increasing knowledge regarding normal sleep and its disorders, its influence on development of behavior remains a little unjustified. Further studies are needed to considering each factor separately.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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