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Association between Effects of Sleep Pattern Behaviour of Children During Dental Treatment

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Abstract

Introduction : Young children have sleep alterations due to various social and cultural reasons which result in behavioural changes .Providing dental care for such children becomes a tedious task for practitioners The children tend to be indifferent towards treatment thus hampering the prognosis of the best provided treatment .

Materials and Methods : 100 children between the age of 5 and 14 were included in the study. Demographic data and family status was recorded. They were then assessed on the basis of their behavior in the dental clinic using Frankls behaviour scale.

Results : The results showed that sleep was a major factor that influenced the child's behavior. Mothers occupation , type of family and number of siblings were also closely associated with the altered behavior of the child.

Conclusion : Sleep must be given equal importance as food and water. It is a very important factor that is required for growing children .

Key words *- paediatric care, sleep pattern, behaviour management, child cooperation , pedodontic procedures, child control methods*

Introduction

Children have highly altered sleep patterns and habits. When such type of children visit a clinic for dental treatment, it becomes tedious for the dentist to perform treatment. Establishing a standard relation between child's sleep pattern and their behaviour at the clinic gives a better insight to the dentist while handling such children.

Managing a child is very different from the clinical and technical aspects of the established procedures due to psychological state of the child [1,2]. Verbal or non verbal communication modes of communication are used in paediatric dental care for establishment of a rapport with the young children coming for treatment. There are many factors which can hamper the communication between the dentist and child patient including but not limited to psychic, emotional, family or social character. Thus it is essential for the patient to understand the dentists instructions . [3,4]

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It is most often noticed that children do not cooperate during dental procedures . The difficulties are not associated with the treatment but with the child's emotional status. Fear and anxiety are two most common features of emotion exhibited by a child at the Dental operatory. [5]

Pediatric dental practitioners strive hard to treat their child patients, their uncooperative nature in the clinics act as a barrier in effective delivery of the treatment. Approximately 20-30% of young children have bedtime issue or sleeping habits like sleep walking. [6-8]. These sleep habits vary or differ with age Mostly toddlers have issues falling asleep and preschoolers on the other hand show traits of bruxism, enuresis ,somnambulism . Adolescents present with problems associated with insomnia and daytime sleepiness .[9] It is reported that children who have less total sleep duration are at a higher risk for developing behavioral problems such as anger, anxiety, overactivity, tantrums, and aggression.[10] Shorter duration of sleep may be due to missing afternoon naps, late night sleeping etc.[11]

The hours of sleep needed by children vary based on their age. Newborn 0-3 months 14–17 hours, Infant 4–12 months, 12–16 hours per 24 hours (including naps) Toddler 1–2 years 11–14 hours per 24 hours (including naps) Preschool 3–5 years 10–13 hours per 24 hours (including naps) School Age 6–12 years 9–12 hours per 24 hours Teen 13–18 years 8–10 hours per 24 hours[12] Researchers have proved that sleep being insufficient does not only have a toll on the behaviour but may also influence the skills of the child. [12-13]

Sleep which alters behavior, has been widely influenced by external factors such as cultural and environmental factors, family disputes, attention provided by the mother, and socioeconomic status.[14-16]

Materials and Methods

In this study , children between 5 years to 14 years of age were chosen. A sample size of 100 children were selected. Special Children and children with other health problems comprising mental state were excluded from this study. A questionnaire was provided to obtain information pertaining to sleep habits.It also included a set of questions which help gather information about the family of child, socioeconomic status using Kupusamy scale, as sleep alone cannot alter the behavior of a child . The children were then assessed in the dental operatory unit on the basis of cooperation , acceptance and patience for any procedure.The child was shown a pictorial representation of the state of emotion as fearful and fearless. He/she was asked to choose their state of emotion from the chart. They were also shown a visual analogue scale, and were asked to rate their anxiety level. In the dental operatory, child's behavior and cooperativeness during his/her preliminary examination and treatment was rated according to Frankl's behavior rating scale into definitely negative, negative, positive, and definitely positive.[17]

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.

Using Pearsons Chi square test, the statical analysis was done .

Results

From the statistical data collected, each of the questions put forth to the child was carefully analysed. The pediatric patients were subdivided into two categories based on age and the results were determined. The age groups chosen ranged from 5 to 9 years and 10 to 14 years, with 50 children in each category.

Based on their dentist visit to the clinic, it was determined that both groups had majority of the children visiting the clinic for the second time . This indicates

that the child patients had already been exposed to their fear or behavior pattern previously and have a sense of what would be done on the clinical set up. On an average nearly 30% of the children had visited the Dental clinic for the first time. The remaining 70% of the children had a first time experience.

Most children taken into consideration in this study were all single children with an average of 72% . The rest had younger or older siblings.

The occupation of the mother plays a key factor on the behaviour of a child. The more quality time spent between the child and mother, the child tends to be more well behaved .74% of the mothers accompanying theses children were home makers. This indicates that children have more attention at home and tend to be more well behaved. In certain cases, the excess attention they get can take a toll on behavior and the child may be highly adamant .

Another factor altering behavior of child may be the type of family. Children growing in a secure family atmosphere makes them stronger and brave. Children coming from broken families tend to be very scared and frightened. The children included in this study come mostly from nuclear families 89% and the remaining 11% come from joint families. None of the children came from a broken family.

Based on the Kuppusamy scale, the socioeconomic status of the child's family was assessed. Children between 5 to 9 years of age module belonged to the lower middle class with the next highest percentage pertaining to 10% of lower class and 7% of upper middle class. On the other hand children aged 10 to 15 years, belonged to lower middle class with 18% and the upper lower class with 17%. The socio economic status has an indirect impact on the children. At times, children coming from a lower background, tend to value money and be more understanding . These children show some traits of good behavior. Also the same children, can turn out to be very stubborn. This happens when they want materialistic things and are not able to acquire them.

When media usage by children was analysed ,it was seen that children between 10 and 14 years have nearly 62% of them who watch tv for less than one hour . And children between 5- 9 years watch tv for more time with nearly 44% watching tv regularly for 1- 2 hours . Only 5% of both age groups have the habit of watching tv for 3 to 5 hours.

Only 28% of the children were afternoon sleepers with 18% of them having night talking habits and 50% waking up in the middle of the night. There were no habits like bruxism and sleep walking. Only 23% of the children, were habit free and had the ability to have a sound sleep.

Table 1 Association of sleep with behaviour of child in the dental office for children between 5 to 9 years of age

	Less than 5 hours	6 to 8 hours	9 to 11 hours
Definitely negative	53.8	14.8	20
Negative	15.4	22.2	10
Positive	30.8	55.6	20
Definitely positive	0	7.4	50

From the table 1 its is clear that children between 5 to 9 years of age have shown definitely negative behavior when they had less than 5 hours of sleep. There was only 30.8 % of children who showed positive behavior. Whereas when these children had about 6 to 8 hours of sleep, 55.6% showed positive behavior in the dental office. However there was a slight incline to negative behavior too. But children who had 9 to 11 hours of sleep in this category were considered well behaved due to their result.50% of the children fell in frankls behavior scale of definitely positive.

Table 2 Association of sleep with behaviour of child in the dental office for children between 10 to 15 years of age

	Less than 5 hours	6 to 8 hours	9 to 11 hours
Definitely negative	6.5	0	0
Negative	22.6	37.5	33.3
Positive	54.8	43.8	66.7
Definitely positive	16.1	18.8	0

10 to 15 years of children tend to be more matured. These children have the ability to control their behavior to an extent . From the table 2 we see that children irrespective of sleep exhibit positive behaviour. Definitely negative behavior is not seen at all for children getting more than 6 hours of sleep. However 6.5% of childen with decreased sleep had definitely negative behavior. It is observed that a paid tube and negative behaviour is equally seen in the children under this category.

It is thus inferred from the results that sleep influences behavior of the child. Having suffient amount of sleep is important for the child well being . This was indirectly beneficial to the dentist while treating children.

Discussion

Child anxiety has always been present when treatment is performed on the child. To avoid parental anxiety , the dental practitioner must educate the parents about the treatment and provide assurance to them. A pre visit appointment is essential . This will greatly influence the child's behavior .[18]

It is evident from the study that children who had more number of hours of sleep were well behaved when compared to those with less sleep. This also hinders their process of learning and can also result in inappropriate neurobehavioral function. [11]

When information is provided that child has had decreased number of hours of sleep and there is difficulty in assessing the behavior of child, projection methods can be adopted . It's a method in which the child is allowed to draw any picture form his mind. Images drawn with negative features depicts fear in children.

According to a study done by Scharf et al., [19] a group of preschoolers with decreased amount of sleep appeared highly irritable and disturbed. This was misinterpreted by their parents as bad behavior like arrogance, obstinate nature and throwing tantrums. Dahl [11] who was a part of this study, discovered that, these children with reduced hour of sleep may have poor cognitive development which directly affects the behavior of the child.

In a recent study, researchers at Tel Aviv University (TAU) identified that heightened activation of the amygdala is responsible for presenting a disturbing emotion regulation and increasing anxiety due to lack of sleep. The researchers found that even a single night

of sleeplessness changes the ability to regulate emotions and allocate brain resources necessary for objective cognitive processing.[24]

Alfano in his study says studying the link between sleep disruption and maladaptive emotional processing in childhood is vital because that's when sleep and emotion regulatory systems develop. The increased need for sleep and greater brain plasticity in childhood suggests this period for early intervention as if let untreated these behavioral changes can elevate risk for depression and an overall poorer quality of life.[25]

Visiting the dentist creates a great deal of stress and anxiety in patients .The common triggering factors for this fear and anxiety are the use of needles and syringes. In some children, the buzzing noise of the hand piece may also provoke a high level of anxiety. [21] For such type of patients , behavior management techniques must be adopted.

Using Norman Corahs scale, a study showed that female children between 12 to 15 years of Age are more anxious than males in a Dental operatory. The study showed that a significant percentage (34%) of middle school children suffered from high and severe dental anxiety.[25] The fear and anxiety levels calculated in this study had no association with sleep pattern to assess behavior.

In a similar study conducted abroad, linear regression analysis was carried out to determine the relationship between behavior of children in dental operatory and duration of sleep. According to Spearman's correlation, duration of sleep was positively correlated with cooperative behavior of child in dental operatory, and gave a statistically significant value in the above study. [23]

Conclusion

From this study we can conclude that sleep and behavior of child are associated with one and another . The more sleep a child has, the better behavior the child posses. An emphasis and awareness should be made among parents the negative effect even a single days loss of sleep can do to a child to help in guiding the child to have a healthy sleeping practice.

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