



A CLINICAL STUDY ON SLEEP PATTERN AND SLEEP PROBLEMS IN SCHOOL GOING CHILDREN

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ABSTRACT

INTRODUCTION-School aged children need at least 10 hours sleep for their physical and mental health. Sleep deprivation is associated with decreased memory, lack of concentration and poor health. Our current states of knowledge regarding epidemiology and nature of sleep problems in school children are very poor. Children who get enough sleep are less prone to behavioral problems and moodiness. **OBJECTIVE**-To assess the sleep habits and sleep problems of primary school going children (6 – 12 years). **METHOD**-A preliminary questionnaire survey was carried out from parents of children aged 6 – 12 years attending OPD for minor illness and immunization and was analyzed by the investigator. **PERIOD OF STUDY**- 2010 November 1 – 2011 April 30. **RESULTS**- Out of the 400 children aged 6 – 12 years who attended pediatric OPD Govt.T.D.Medical College, Alappuzha for minor illness and immunization. 72% of children had inadequate sleep 49.5% of children have at least 1 sleep problems. **CONCLUSION**- Majority of the primary school going children has inadequate sleep and many sleep problems.

KEYWORDS : Sleep pattern, Sleep Problem.

Introduction

Sleep is defined as a natural periodic state-of rest for the mind and for the sound mental and physical health adequate sleep is essential. Children who get enough sleep are less prone to behavioral problems and moodiness. They often develop better memory, concentration and longer attention spans. Growth spurts are accelerated during sleep, as the human growth hormone is released during sleep. Behavioural problems can even result from lack of sleep.

School aged children need at least 10 hours sleep for their physical and mental health. Last few decades have witnessed a renaissance of sleep research particularly about basic science, epidemiology and disorders of sleep in children^{1,2}. Our current knowledge in understanding the epidemiology and nature of sleep problems in school children take remedial measures for physical, psychological and academic consequences of sleep problems in children^{4,5}.

Normal duration of sleep needed varies with Age. New born and infants up to 3 months need 16-20hrs of sleep. Usually 1- 4 hour sleep periods followed by 1-2 hour awake periods. Infants after three months need 14-15hrs of sleep daily. Toddlers (1-3 years) need 12-14 hr total sleep daily. Preschoolers (3-6 years) need 11-12 hr sleep daily. Middle childhood children (primary school going and Preadolescents need 10 hours sleep daily. Adolescent need 9 hours sleep ideally, at least 7. hours.

Sleep Disturbances-Sleep disturbances are one of the most common issues raised by parents during health visit and it is estimated that more than 25% of the children experience a significant sleep problem at some point during childhood.

Most sleep problems in children can be broadly conceptualized as resulting from either inadequate duration of sleep for age (insufficient sleep quantity) or disruption and fragmentation of sleep (poor sleep quality). Insufficient sleep is usually the result of difficulty in initiating (delayed sleep onset) and / or maintaining sleep (prolonged night wakings), whereas sleep fragmentation most often results from frequent, repetitive and brief arousals during sleep. The underlying causes of sleep onset delay / prolonged night wakings or sleep fragmentations may in turn be related to primarily behavioural factors (eg: bed.time resistance resulting in shortened sleep duration) and / or medical causes eg:- obstructive sleep apnea) causing frequent brief arousals².

As in adults, both insufficient quantity and poor quality of sleep in children normally results in excessive day time sleepiness and decreased day time alertness levels. In adolescents, it may present as drowsiness and yawning. In children, instead it often takes the form mood disturbances, behavioural problems such as hyper activity and poor impulse control and neurocognitive dysfunction including inattention and impaired vigilance that, overtime, may ultimately results in significant social, school, and learning problems².

Certain pediatric populations are more vulnerable to sleep problems These include children with medical problems and acute illnesses such as otitis media, children on medications that have stimulant (eg:-methyl phenidate), sleep disrupting (eg :- some asthma medications) or day time sedating (eg:- some anticonvulsants); hospitalized children; and children with variety of psychiatric disorders (ADHD, depression and anxiety disorders.) Children with neurologic disorders may be more prone to nocturnal seizures as well as other sleep disruptions and children with blindness and developmental delay syndrome (eg :- autism, - pervasive developmental delay) are at increased risk for severe sleep onset difficulty and night waking as well as circadian rhythm disturbances.

Materials & Methods

Inclusion criteria: School going children between 6 - 12 years during their visit to the OPD of MCH Vandanam for minor illnesses and for routine immunization.

Exclusion criteria: 1. Children with chronic illnesses. 2. Children on long term medications. 3. Children having neurological and endocrine illness associated 4. mental retardation.

The study was conducted in Gov: T.D. Medical College Alappuzha. A preliminary questionnaire survey was carried out from parents of children aged 6 to 12 yrs attending OPD for minor illness and immunization excluding those with chronic illness, long term medication, neurological disorders and mental retardation. Data collected by the investigator after seeing and examining the child from parents and the child itself and analyzed by the investigator. Children having multiple problems were advised and sent to the child guidance clinic. Study was approved by the Institutional Ethics Committee.

Results-The study included 400 children who attended Pediatric OPD MCH Vandanam for minor illnesses and for routine immunization in the age group 6-12 years.

Out of the 400 children who were included in the study 236(59%) were males and 164(41%) were females.

Table 1 - Duration of sleep in children

NO	Duration of sleep in Hrs	Incidence	Percentage
1	>6-7	2	0.5%
2	>7-8	24	12%
3	>8-9	124	31%
4	>9-10	138	34.5%
5	>10-11	92	23%
6	>11-12	18	4.5%
7	>12	2	0.5%

Mean duration of sleep in children in the study group was 9.085 Hrs. Among males it was 9.18Hrs and in females it was 8.95 Hrs. 72 % (288) children had sleep deprivation. Severe sleep deprivation (< 8 Hrs/Day) was seen in 6% and mild to moderate sleep deprivation (8-10 Hrs/Day) was seen in 66%. 14.75% children showed problems on awakening. 73.57% children were sharing bed room with their parents while 14% with grandmother and 6.75% with siblings.

Socioeconomic status of the children in the study group classified by the modified Kuppuswami scale. 70.5% of the children of the study group are from the low socioeconomic status. 220 (55%) children in the study group are from joint family. 180 (45%) children are from nuclear family.

Table 2: Academic performance in the study group-116 children had poor scholastic performance in this study groups

No	Performance	Total number	Percentage
1	Very good	66	16.5%
2	Average	218	54.5%
3	Below Average	100	25%
4	Very Poor	16	4%

Table 3: Sleep on holidays- Total children who showed change in pattern of sleep on holidays are 206(51.5%)

No	Change in sleep on holiday	Incidence	Percentage
1	Normal sleep	194	48.5%
2	Increase in sleep	168	42%
3	Decrease in sleep	38	9.5%

Table: 4- Problems on awakening-59 children {14.75%} children showed problems on awakening.

No	Problems on awakening	Incidence	Percentage
1	Resist to bath	42	10.5%
2	Resist to go to school	19	4.75%
3	Number of school days lost	5	1.25%
4	Cranky mood	10	2.5%

Table: 5- Bed routines-96 (24.5%) children showed at least one bed routine.

No	Bed routine	Incidence	Percentage
1	Bed time story	48	12%
2	Soft pillow	34	8.5%
3	Music	16	4%

4	Pinching	6	1.5%
5	Thumb sucking	6	1.5%
6	Lies on floor for getting sleep	1	0.25%
7	Reading	3	0.75%
8	Cuddling toys	2	0.5%

Table:6- Sharing bed room

No	Sharing bed	Incidence	Percentage
1	With parents	336	84%
2	Sibling	27	6.75%
3	Grand parents	14	3.5%

Table : 7- Sleep fears- Total number of children in the study group having sleep fears was 200(50%)

No	Sleep fears	Incidence	Percentage
1	Refused to sleep alone	162	40.5%
2	Refused to sleep without parents	126	31.5%
3	Refused to sleep when light is off	40	10%
4	Refused to sleep alone when door is closed	7	1.75%
5	Refused to sleep alone when door is open	1	0.25%

Table:8- SLEEP PROBLEMS

No	Sleep problems	Number	Percentage
1	Sleep Talking	72	18%
2	Bruxism	70	17.5%
3	Snoring	46	11.5%
4	Night Terror	32	8%
5	Nocturnal Enuresis	32	8%
6	Nightmares	33	8.25%
7	Sleepwalking	13	3.25%
8	Narcolepsy	1	0.25%

108(27%) children had single sleep problem. 56 (14%) children had two sleep problems. 34(8.5%) children had more than two sleep problems. Poor academic performance was seen in 35.5% of children having at least one sleep problem.

DISCUSSION

School aged children are traditionally assumed to be good sleepers, but evidence from recent surveys as well as our study doesn't support this assumption. Sleep problems are actually a sleep pattern that is unsatisfactory to the parent child or physician.

The mean duration of sleep in this study group is 9.085 hours. Mean duration of sleep is slightly more in male children (9.18 hours) than female children (8.95 hrs). The recommended daily sleep duration of school going children is 10 hours. So sleep deprivation does exist in our community. On similar study of PGI Chandigarh by Bhavaneeth Bharati et al¹ showed total sleep duration of 9.24 hours. The result is almost consistent with our study. Only 6% of the study group showed severe reduction of sleep duration. 69.76% of the study group having mild to moderate sleep deprivation is first born.

The study have showed that the incidence of sleep deprivation among boys and girls in the study group does not differ much. In Bharati³⁴ et al study also revealed not much variation of sleep deprivation among both sexes. 72.8% of males among study group showed sleep deprivation where as 70.73% of females among study group showed sleep deprivation

Table 3 showed 47.5% of the children in the study-group showed change in sleep pattern on holidays. Bharati et al study at PGI Chandigarh showed 34% of the children had reported changing the sleep schedule during the week ends. The difference may be due to that study included children between 3-6 years also. Judith A Owens recommends no change in sleep on holidays recommended to school going children².

18% of the parents of children reported for having difficulty in awakening the child in the morning. In Bharati et al study 40% of the children showed difficulty in awaking.

Only one (0.25%) child showed regular day time nap lasts only for one hour not associated with delay in the onset of sleep. 5 children (2.25%) showed day time naps on holidays. Duration ranges from. 2 hours- to 4 hours, not associated with delay in sleeping at night and any mood change. Day time nap does not significantly seen in our study group. Bharati et al showed 28.2% regular day time naps. This may be due to the inclusion of 3 - 6 years old children in that study group where day time napping is advocated in Mindell JA¹⁵.

14.75% of the children in the study group showed problems on awakening. In Bharathi et al³⁴ study showed 40% of the children having similar problem. It may be due to the inclusion of 3 - 6 years old children too in that study group.

Co-sleeping is seen in 84% of the study group. 73.75% shares bed room with parents, 6.75% with sibling and 3.5% with grand mothers. Bharati et al in his study showed 93% co sleeping. Lozoff B et al on his study described more than 68% co sleeping⁶. In developed countries co-sleeping is between 5-52%¹⁵ but in Indian culture co sleeping is higher.

The study have shows that the 74.74% of the children having sleep problem is from low socioeconomic status. In this study group as a whole incidence of Low socioeconomic status is 70.5%. Bharati et al on his study showed high incidence of sleep problem in children from low socioeconomic status. Results are comparable.

Table 2 show that there is a direct relation between sleep problem and poor- academic performance. 35.35% of the children in the study group having one sleep abnormality showed poor academic performance. 35.55% of the children in the study group having more than one sleep abnormality showed poor academic performance. Incidence of poor academic performance in the study group as a whole is 29%. So sleep problem is found to affect academic performances badly.

CONCLUSIONS

School aged children showed sleep deprivation. Mean duration of sleep is 9.085 hours. Most of the sleep deprivations are mild to moderate. 6% showed severe sleep deprivation. Around half of the children showed a change in sleep pattern on -holidays: 94% of the children are able to get sleep early after going to bed. 6%, showed delay in sleep after going to bed. Around 15% of the children showed some problems on awakening. Most of them resists bath. More incidence of sleep problem was seen in nuclear family. Around % of the children having sleep problems are coming from low socioeconomic group.

To conclude though this study may not be generalized to all populations, the overall prevalence of sleep related problem in our study sample is enough to caution the pediatricians about_ the need to sort through sleep problems in the office settings.

RECOMENDATIONS

1. Educate the parents and children during well child visit about the strategies to prevent sleep problems; if the child does not have sleep problem, and to prevent the already existing sleep problem becoming chronic. Educate basic principles of sleep hygiene.

2. Have a set bed time and bed routine for the child.

3. Bed time and wake up time should be about the same time on school nights and non school nights. - There should not be more than about an hour difference from one day to another.

4. Make the hour before bed shared quiet time: avoid such high energy activities as rough play and stimulating activities such as watching TV or playing computer game just before bed.

5. Avoid products containing caffeine for at least several hours before bed time.

6. Advise parents to make sure the child spends time outside every day whenever possible and is involved in regular exercise.

7. Don't send the child to bed hungry. A light snack is preferred. Heavy meal within an hour or two of bed time may interfere with sleep.

8. Keep the child's bed room quiet and dark. A low level night light is acceptable for children who find completely dark rooms frightening.

9. Keep the child's bed room at a comfortable temperature during the night, less than 75°F

10. Does not child's bed room for time out or punishment

11. Keep the television set out of child's bed room.

12. In older children, use the bed for sleeping only, not for studying, reading, listening to music or watching TV

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