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Sleep problems among pre-school children in Hamadan, Iran

Abstract

Background: Sleep issues are one of the principle medical problems raised by families. Consequently, we expected to assess the sleep problem of pre-school youngsters in Hamadan province of Iran.

Methods: Two hundred and fifty children aged 3-6 years were randomly enlisted from 12 kindergartens in the city of Hamadan in Iran. The Iranian version of BEARS (Bedtime problems, Excessive daytime sleepiness, Awakenings during the night, Regularity and duration of sleep and Snoring) and the Children's Sleep Habits questionnaire (CSHQ) were completed by interviewers. Information analysis was performed using SPSS version 18. The data were analyzed with a student's t-test, chi-square and Fisher's tests. In this study, $P<0.05$ was considered as significant.

Results: The study population consisted of 130 boys (52.7%) and 120(47.3%) girls with a mean age of 4.1 years (SD 0.7). The mean body mass index (BMI) of the children was 14(SD 2.1). The average sleep duration among the children was 11:53h/day(SD 00:38). They went to bed late (24:11h SD 00:46) and woke early (08:15h; SD 01:00). Daytime sleepiness was reported by 6.7% of the participants. The incidence of awakening during the night, sleep-disordered breathing and snoring was 12.5%, 1.1% and 3.6%, respectively. Most of the children shared a room with their parents (76%) ($P>0.05$).

Conclusion: The children had sleep-related problems, including a late bedtime, delayed sleep onset, daytime sleepiness, midnight awakening, sleep-disordered breathing, and snoring. Sharing a room was very common among the Hamadan children.

Keywords: sleep, habits, child, preschool, snoring, bedtime problems, excessive daytime sleepiness, awakenings during the night, regularity and duration of sleep, children's sleep habits questionnaire, body mass index

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Introduction

Poor sleep in children may effectively affect their every day working, temperament, conduct, school execution and child rearing level.[1–3] In addition, sleep issues effectively affect personal satisfaction. At times, rest issues (sleep disorders) might be an indication of consideration deficiency/hyperactivity issue.[4,5] Rest issue are one of the fundamental medical problems raised by families, and it is evaluated that over 25% of youngsters experience rest issues amid their adolescence.[2,6] As indicated by the literatures, the commonness of parental-revealed rest issues ranges from 25% to half.[7,8] In a study directed in 2009 in Tehran (Iran),[8] 41.4% of children had rest onset dormancy issues. Nonetheless, a later review, performed in 2010,[9] revealed a figure of 21.9%. A similar research found that 56% of youngsters had a late sleep time (22.00hr or later). Mohammadi et al.,[10] announced that sleep time issues and rest cluttered breathing were basic among 2-6 year-Old Iranian youngsters (56.4% and 17.8%, separately) and among 2-12 year-old American children (16.3% and 13.1%, individually). Wheezing was accounted for in 3-12% of Malaysian preschoolers.[11] In an Assembled States think about,[12] the pervasiveness of sleep issue among 4-5 year-old pre-school children was 4.3%. The commonness of mellow and direct/extreme sleep issues among Australian pre-school youngsters was 19.8% and 13.8%, individually.[3] In a Chinese investigation,[13] the commonness of rest issue areas among Chinese pre-school youngsters shifted in the vicinity of 0.7% and 8.5%. In a similar study, the rest length of 62.4% of Chinese preschoolers was 10-12 hrs. Information on the sleep of healthy children are required to assess sleep problems in clinical practice, and there are limited studies in the literature[8–10,14–16] on the sleep habits and sleep-related problems of Iranian children. The results from other countries cannot be generalized to Iran. Therefore, we investigated the sleep habits and prevalence of sleep disturbances in healthy Iranian preschoolers.

Materials and methods

The study was approved by the research and ethics committee of Hamadan University of Medical Science in Iran. One-stage cluster sampling was used, with the entire population (region) divided into groups, or clusters. A random sample of these clusters was then selected. Hamadan city is divided into three urban districts, with 32 kindergartens. Fifteen kindergarten clusters were randomly selected. Children who were taking any medication treatment or had metabolic or psychological disorders were excluded. The guardians of 275 children signed a consent form. Of these, the questionnaires of 250 children (130 boys and 120 girls) were usable for the data analysis. Iranian versions of two questionnaires, the Children's Sleep Habits questionnaire (CSHQ)[6,8,14,17] and BEARS (Bedtime problems, Excessive daytime sleepiness, Awakenings during the night, Regularity and duration of sleep and Snoring),[18] were completed by the interviewers. Bedtime problems in BEARS include resistance to

going to bed and sleep onset latency (i.e. the time between going to bed and sleeping)>20 minutes.[19] The BEARS sleep screening tool is divided into five major sleep domains, providing a comprehensive screen of the major sleep disorders affecting children aged 2-18 years.[18,20] Each sleep domain has a set of age-appropriate 'trigger questions' for use in the clinical interview. The CSHQ screens common sleep problems in children aged 2-12 years and consists of 33 items and 8 subscales. The items are rated on a 3-scored Likert scale (rarely=0-1 night per week; sometimes=2-4 nights per week; usually=5-7 nights per week). Each question relates to the previous week, and is scored as 0, 1 and 2, respectively. A total score of more than 33 is the cut off and indicates sleep problems and sleep disorders in children.[14,17–19] The data were collected from the mothers and trained questioners in three days. The data analysis was performed using SPSS version 18 (SPSS Inc, Chicago IL, USA). Descriptive statistics were summarized as either the mean and standard deviation or percentages where appropriate. The data were analyzed using the student t test, chi-square and Fisher's exact tests. A probability value *P* of 0.05 or less was considered significant.

Results and discussion

This study showed that sleep problems were prevalent among Iranian preschoolers and that the problems were similar among girls and boys of the same age. Among the sleep problem domains, the most common disorders reported by the mothers were the regularity and the duration of sleep. The boys and girls had similar sleep problems, and the BMI indexes were not significantly different. The mean bedtime of the girls and boys was 24:20h and 23:16hrs, respectively. Jalilolghader et al.[8,15] found a similar (24.05hrs) sleep onset time at night among 3-6 year-old). Mohammadi et al.[10] reported that the bedtime of 2-6 year-old Iranian children was 23.52hrs. In previous studies,[8,9,15] it was demonstrated that Iranian preschoolers have poor sleep habits. The night-time sleep duration of 3-6 year-old (11.18pm) Iranian children living in urban environments was shorter (9:32 SD;1:12hrs) than those living in rural environments, and they had a later sleep onset time (21:00-23:00h).[18] Compared with the existing reports in the literature,[5,6] the 3-6 year-old in the current study had a higher rate of sleep problems, and these were not influenced by gender. In contrast, other studies reported that sleep problems were more common among Dutch[5] girls than among Dutch boys and that American boys slept for shorter periods than American girls slept.[6] We found that 48.2% of the study group experienced problems with the regularity and duration of and that 70.1% had problems with the regularity of morning wakeup (Table 1). In the present study, 76% of the 3-6 year-old shared a bedroom with their parents, in contrast to 44% of 2-7 year-old Swiss children. However, Swiss children who shared a bedroom with their parents had the highest percentage of 'night awakening'.[7] In addition to socio-cultural factors, which affect sleep habits and, probably, cause sleep problems,[13] children aged up to 8 years who shared a bed tended to sleep significantly less than non-bed-sharing children.[17]

Table 1 Frequency and percentages of sleep problems in each domain of BEARS questionnaire and sleep habits in 3-6 year-old children

Domains of BEARS and CSHQ	Girls		Boys		Total		P value, t-/X^2
Bedtime problems	**N**	**%**	**N**	**%**	**N**	**%**	
Resistance to going to bed	39	15.3	46	17.8	85	24.11	0.301, 3.1
Sleep onset latency	18	7.8	19	6	37	6.7	0.427, 5.2
Excessive daytime sleepiness	14	7.7	18	6.8	32	6.9	0.672, 2.6
Awakening during the night	41	14.6	41	13.7	81	8.15	0.602, 11.9
Regularity in bed time sleep	121	46.2	144	53.8	265	48.2	0.372, 3.3
Regularity in afternoon sleep	117	35.2	107	45.2	224	39.5	0.406, 12.8
Regularity in morning wakeup	201	62.6	142	77.5	343	70.1	0.209, 3.9
Duration of sleep (hours/day)*	11:59	00:43 (SD)	11:48	00:31 (SD)	11:53	00:38 (SD)	0.210, 5.7
Sleep disordered breathing	2	0.4	3	1.3	7	1.1	0.262, 2.5
Snoring	5	4.5	7	2	12	3.6	0.805, 4.6
Sharing bed room with parents	95	70.2	66	82.6	161	76	0.059, 3.8

*Student t test used to compare mean (SD).
Chi-squire test used to compare percentage of sleep problems in children.

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Previous studies[8,15] showed that girls had a longer night-time sleep duration than boys, whereas the current study and a Dutch study[5] found no gender difference. The sleep duration was significantly shorter in co-sleepers, night-time walkers and bedtime resisters up to 10 years of age in other studies.[21,22] In addition, bedtime resistance was significantly higher in bedroom sharers.[5] Compared with the existing literature, preschool children in Iran have a higher percentage of sleep problems. The bedtime problems of the Iranian preschoolers in the present study were lower than those of Swiss children[7] but higher than those of Japanese,[23] Australian[3] and American[1,6] children. The rate of bedtime problems seems to be similar among Iranian[8] and Finnish[22] children. Interestingly, the same range of sleep-disordered breathing (7-17%) was reported in studies conducted in China,[13] Finland,[22] Switzerland,[7] Japan[23] and the US.[1,6] The prevalence of sleep-disordered breathing in Dutch 2-13 year-old was 1%,[5] which is the lowest among all the studies. Different percentages of sleep-breathing disorder were reported in Iranian preschoolers. In Tehran, Iran (2007, 2013)[10,16] and the current study, 17.8%, 7.1%, and 3.6% were reported, respectively. Sleep-breathing disorder is most prevalent in 2-6 year-old due to adenotonsillar hypertrophy.[12] In adolescents, the problem may be due to obesity.[12] Obesity was not observed among the Iranian children in the current study. The cited studies did not include information on the weight and obesity of the participants. This study has some limitations. The sampling included only children living in a small city. Therefore, the findings cannot be generalized to the whole country. In addition, the results are based on data obtained from questionnaires and not laboratory sleep studies. Furthermore, we did not compute the glycaemic index of meals or snacks before bedtime. High-glycaemic-index carbohydrate meals shorten sleep onset, improve sleep quality and consequently reduce sleep problems.[24] This might be a confounding factor in the results of the current study. We recommend further studies to assess the effect of different factors, such as geographic area, seasonal changes and diet, including the glycaemic index, on the sleep habits of Iranian children.

Table 2 Comparison of percentage of sleep problems and harmful sleep habits of pre-school children in the literature[a]

Domains of BEARS* and CSHQ Questionnaires	Australia, 2004	Netherlands, Dutch, 2007, 2-13 y	United States, 2-12 y, 2004	Iran, Tehran, 2007	Iran, Tehran 2009, 2-6 y	Iran, Current Study Urban Area, 2012
Bedtime problems (bedtime resistance, sleep onset latency)	12.8	15	16.3	56.4	28.9	24.4
Excessive daytime sleepiness		10	5.6	26.7	64.9	6.9
Awakening during the night	18.1		18.4	13.8	27.7	13.9
Regularity and duration of sleep	–	–	5.7	27.7	29.2	61.7
Sleep disordered Breathing	9.7	1	13.1	17.8	7.1	1.2

aThe years are related to date of study not published article references.3,5,6,10,16

bPercentage of sleep problems (BEARS and CHSQ).

Conclusion

In summarized, different factors affect healthy sleep. The current study showed that Iranian preschoolers have short sleep duration and that they are late sleepers. The late bedtime may result in problems. Not putting children to bed until some hours after they are tired may make them less resistant to sleeping. However, a delayed bedtime may have implications for bed sharing, daytime behavior, daytime sleepiness and morning wake-up times. The high percentage of sleep problems in children highlights the importance of paying attention to sleep in primary care practice.

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Conflict of interest

The author declares no conflict of interest.

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