

Original article

Sleep in childhood and affecting factors

Hamide Zengin¹, Nursan Cinar^{2*}

- 1- Master Student, Division of Nursing, Institute of Health Science, Sakarya
2- Department of Pediatric Nursing, Division of Nursing, School of Health Sciences, Sakarya University, Sakarya, Turkey.

Corresponding author: Nursan Cinar Email : ndede@sakarya.edu.tr

Abstract

Sleep is the key element in strengthening academic performance and physical growth. Children must have adequate sleep and rest in order to achieve developmental functions. Sleep is important for the child to perform his physical development and duties in the best way. It is seen that sleep deprivation causes daytime sleepiness and carelessness in both children and adolescents. It is stated that the lack of sleep leads to behavioral problems in children. Sleep varies according to age groups. These periods are infancy, toddlerhood, preschool age, school age and adolescence. One of the behaviors that needs to focus on in order to increase the quality of life and improvement of health, psychosocial development, thrive and the process of growth from infancy to adulthood, is the behavior of sleep hygiene. A poor sleep hygiene decreases the quality of sleep, which leads to a poor quality of life. In this review sleep in childhood and affecting factors has been tackled.

Key words: *sleep, childhood, quality of sleep, affecting factors*

Introduction

Sleep is an important factor for health and quality of life in all stages of life (1). "Sleep is the most tranquil journey" says Tevfik FIKRET. Maslow also puts sleep into an important level in his hierarchy of needs; sufficient sleep is a basic need for man (2). Sleep is the state of temporary, partial and periodic loss of communication of the organism with the environment, which is reversible by stimuli with different intensity (3). It is also a process of active renewal which resets the whole body for life. It is one of the essential daily life activities that affect the health and quality of life and it has physiological, psychological and social aspects (1).

Sleep comforts the body and mind in terms of functioning and behaving. It increases the productivity at work (4). Relaxation enables the body, mind and feelings refresh and regenerate (4,5). Sleep has an important role in building hemostatic balance, thermoregulation, tissue reparation, immunization and memory progress (6).

Sleep is the key element in strengthening academic performance and physical growth. Children must have adequate sleep and rest in order to achieve developmental functions. Sleep is important for the child to perform his physical development and duties in the best way. It is seen that sleep deprivation causes daytime sleepiness and carelessness in both children and adolescents. It is stated that the lack of sleep leads to behavioral problems in children (1).

Sleep is an essential life activity in all age groups. People, in average, spend one third of their life asleep (2,7).

Epidemiological studies have demonstrated that there is an association between sleeping well and being healthy. Sleep is sensitive to individual and environmental changes (2,9). In a study by Altun et al., factors affecting sleep are listed in four groups; physical environmental (10), psychological, biological and social factors (11).

Table 1. Sleep requirements according to age

Age	Time
Newborn (1- 2 months old)	10.5-18 hours
Baby (3-11 months old)	9-12 hours at night, 30 min.-2 hours/day 1-4 times napping
Toddlers (1-3 years old)	12-14 hours
Pre-school children (3-5 years old)	11-13 hours
School children (5-12 years old)	10-11 hours
Adolescents (13-17years old)	8.5-9.25 hours

Physical environmental factors are the factors such as the humidity of the bedroom, cigarette smoke in the room, the noise, the color and the flavor of the room, changes in the climate, electric and magnetic fields, being in a different place, the pillow, the bed and the quilt, high pressure, the sound of television or computer, the room light, the room's odour (perfume, moisture, naphthalene, etc.), being on a journey, the room's temperature (9,12) or the air conditioning (11).

Psychological factors can be listed as psychological problems, stress, fear, excitement, anxiety, tension, sorrow, joy, depression, worry, doubt, etc. (8,11). Biological factors are factors such as weight gain, illness, pain, drug use, smoking, alcohol use, excessive coffee and tea consumption, fatigue, vigorous physical activity, chronic disease (itching, asthma, headaches, diabetes, seizures, middle ear infections, colic, reflux, etc.), use of orthopedic appliances (4), overeating, feeling of hunger, loss of weight (11).

Social factors such as familial problems, having trouble with friends, financial stress, problems related with school/work, attendance to social and cultural activities and loneliness affect the quality of sleep (11).

Sleep varies according to age groups. These periods are infancy, toddlerhood, preschool age, school age and adolescence (7).

1. Infancy (0-1 years old)

The need for sleep varies at this age in terms of length, daytime or night's sleeps or frequency (4).

The period of sleeping and staying awake varies for each baby. Although the baby is awake for the first few hours after the delivery, it spends a large part of the day in sleep starting from the second or third day of its birth. It stays awake for only a few hours during the day. After the third day the baby starts to get more interested in its family and it does not have a regular sleep pattern. Within the first month, it does not have a sleep cycle. Duration of sleep varies according to the days and nights (7).

The most important factors affecting sleep in infants between 0-1 years old are night feeding, infantile colic, teething, post-vaccine cases (13), soiling and chronic diseases, etc. (4). Most of the children having sleep problems at night because of nutrition are under two years of age. Some babies need to be fed two or three times a night. Once the baby is three months old, there is no need to feed it more than once if it is fed before sleep. Babies who are fed frequently at night soil due to the excessive fluid intake, which makes them wake up too often (4). Babies who are adequately nourished, burped after feeding and given a daily bath sleep better (7). It is suggested that babies sleep in the same room but in different beds with their parents until they are one year old since this helps breastfeeding (7,14-19) and avoids Sudden Infant Death Syndrome (15-19). It is found out that there is no significant difference between breastfed babies and others in terms of sleep patterns (20-22).

The most important cause of insomnia in the first months is colic. Baby is restless, cries and can not easily calm down. Swinging the baby, rubbing its back or massaging can relieve the baby (4). It was found out in the studies conducted by Cohen et al. that infantile colic is significantly rare in the babies who are breastfed and they sleep longer at night (23). American Pediatrics Acaemia announced that (24) the baby can be given a baby soother until it is 6 months old and when it wants to sleep (18). However, baby soother should be removed after the baby sleeps (15). The baby should be placed in the supine position (18,25,26) and put to sleep in a

non-smoking environment (16,18,27). Dressing the baby with thick and too many clothes, thick duvets and blankets will disturb the baby and its sleep will be impaired (7). The baby shouldn't be overheated so thin clothes should be preferred for it (18). Parents should make sure that the baby's bed is sound, there are no soft objects in the cradle and the bed should not be too soft (16,18,26,27).

Quiet and dim environments, which are safe, have a positive effect on the baby's sleep. The baby should be relieved when it cries and wakes up as a sign of discomfort. Giving a bath or a massage can be more helpful than walking the baby in your lap or in a buggy or swinging it in a cradle (7).

Table 2. The need for sleep varies in childhood.

Month	Total Sleep (hours)	Night's sleep (hours)	Daytime sleep (hours)	The number of daytime sleeps
0-1	16	Differs	Differs	Differs
1	14	Differs	Differs	Differs
3	13	8-8.5	4-4.5	3-4
6	12-13	9	3	2-3
9	12	9	3	2
12	11-12	9-10	1-2	1-2

1. Toddlerhood (1-3 years old)

Most one-year-old children sleep for 12 hours a day, 9-10 hours of this period is a night's sleep. Morning sleep is left, but napping at noon continues. Average sleeping time at the age of two is 11,5 hours a day. The child wakes up quickly during the day (4). After one year the sleeping period shortens but the sleep gets deeper. Thus, they aren't easily disturbed by the noise. However, environmental factors such as falling asleep and the place of sleep are important (7). There should be no televisions, computers and telephones in the child's room. It is suggested that the child should sleep in his/her own room after s/he is one year old (7).

A two or three-year-old child cannot decide when to sleep on his own, s/he does not want to sleep before s/he drops dead. Therefore, the child should be taught regular sleeping habits and to comply with this order. Children should wake up

in the room where they fall asleep and with the same people in that room. They should trust that there will be no changes after they fall asleep. Even though the child has a regular sleeping pattern, this pattern can be disrupted because of some factors such as soiling or wetting (due to the onset of toilet training), teething, sickness, journeys and family problems (4). Playing games with the child, hugging, patting or loving them, reading books or giving a bath can be helpful before sleep (7).

2. Preschool Period (3-5 years old)

Although the period of sleep and rest differs depending on the child in this term, the average time spent for sleep is 12 hours a day. Some children sleep 10 – 11 hours at night, and 1,5 – 2 hours during the day. Particularly nursery or preschool children sleep in the afternoon, which helps them relax during the day. However, some children do not sleep. If they are helped to have a regular sleeping pattern at this term, they will avoid experiencing sleep disturbance in the future (7).

Children may experience fear of darkness, nightmares (7) or wetting their bed in this term (4). To cope with their fear of darkness, parents may put a dim light in their room or leave the door of the room slightly open (4). When they have nightmares, they must be persuaded that these are not real and after being calmed down, they should be put into sleep again (7)

If children wet their bed at night, parents should change their clothes and bed. Recurrence of this event may affect the quality of sleep (4). The reasons for their wetting the bed or clothes (such as genetics, failure to thrive, a small bladder, being unaware of the need to urinate at night, deep sleep, sickness, food sensitivity, emotional factors, the environment or first childhood impressions, etc.) should be found out and the necessary treatment should be given (4). Giving the child a bath, playing games with them, reading stories, having a chat, listening to music may help them sleep easier (7).

3. School Period (6 – 12 years old)

At this term children usually sleep for about 10-12 hours a day. They frequently wake up at night due to the ongoing nightmares. Children generally reflect their stress about starting school

by this way. Wetting the bed may continue, which disrupts their sleep patterns (7).

In the studies by Ebarhim and Babak, it was found out that school children's napping during the day and the school starting hours affect night sleeps (28). Sun et al. carried out a study in China with 734 students and found out that the more homework students had, the less sleep they got (29).

4. Adolescence (13-18 years old)

In the study by Temel et al., conducted with 472 students, it was detected that the pattern and quality of sleep was affected in adolescence by family type (shredded or nuclear family), smoking, poor relationship between the parents, emotional violence in the family, anxiety (in the family, schoolmates, girlfriend / boyfriend, teachers, educational conditions, financial situation, lectures, future anxiety, discomfort, business concerns, sports), exercise level, noise, light, ventilation, heating and bed shape, food and drink consumption half an hour before bedtime (30).

Senol et al., in their studies with 300 high school students, expressed that excessive and heavy eating, chocolate, cola, tea, coffee, inadequate protein intake disturbed the sleep patterns and losing weight shortened the period of sleep while putting on weight prolonged it (1).

In the study conducted by Bülbül et al., it was reported that the students successful at school and doing regular exercise have less sleeping problems while the ones smoking have bigger problems (3). In adolescence, sleeping late and less increases the Body Mass Index (31). Gagua et al. have suggested in their study, conducted among 431 adolescent girls in Georgia, that dysmenorrhea is related with inadequate sleep (32)

Our suggestions for adolescents are:

- to get up every morning at the same time (continuing to sleep in order to rest can disrupt the sleep pattern since it is not a relaxing activity)
- to ensure that they go to bed at the same hours every night
- to leave daytime sleeps
- to do regular aerobic exercises, especially in the afternoon while

avoiding heavy exercise 3-4 hours before bedtime

- to keep the bedroom quiet and ideal in terms of light and temperature
- not to use the bedroom for activities other than sleeping (watching TV, eating, listening to music, studying, etc.)
- not to eat close to bedtime, not going to bed hungry and not to take excessive fluid before going to bed
- to avoid consuming caffeinated, alcoholic, cola beverages and tobacco use at least until 6 hours before bedtime
- not to force themselves to sleep when they are unable to sleep
- to use relaxation techniques such as breathing exercises before bedtime
- to change the beds if they are too hard or soft
- not to go to bed when tired, but when feeling sleepy
- to leave bed if they cannot fall asleep in 15-30 minutes and go to another room (33,34).

Conclusion

One of the behaviors that needs to focus on in order to increase the quality of life and improvement of health, psychosocial development, thrive and the process of growth from infancy to adulthood, is the behavior of sleep hygiene. A poor sleep hygiene decreases the quality of sleep, which leads to a poor quality of life. People with poor sleep quality can benefit significantly when their sleep hygiene is regulated (30). It is essential for the continuation of healthy generations that health staff, family, children and adolescents raise awareness about sleep hygiene, safe sleep and sleep quality.

References

- 1-Senol V, Soyuer F, Peksen Akca R, Argun M. Adölesanlarda uyku kalitesi ve etkileyen faktörler. Kocatepe Tıp Dergisi. 2012;14: 93-102.
- 2-Cinar N, Dede C. Sleep and environment. treatment strategies-respiratory. The Cambridge Research Centre. 2011.

- 3-Bulbul S, Kurt G, Unlu E, Kırılı E. Adolesanlarda uyku sorunları ve etkileyen faktörler. *Çocuk Sağlığı ve Hastalıkları Dergisi*. 2010;53: 204-10.
- 4-Ferber R. *Çocuklarda Uyku Sorunları ve Çözümleri*. Gün Yayıncılık, İstanbul, (Translate: Tuncay O),2011; 29
- 5-Gruber R. Making Room for sleep: The relevance of sleep to psychology and the rationale for development of preventative sleep education programs for children and adolescents in the community. *Canadian Psychology*. 2013;54(1):62-71.
- 6-Qidwai W, Baqir M, Baqir SM, Seerat-uz Zehra. Knowledge, attitude and practices regarding sleep and sleep hygiene among patients presenting to go out-patient and emergency room services at a teaching hospital in Karachi. *Pak J Med Sci*. 2010; 26(3):629-33.
- 7-Yiğit R. *Çocukluk Dönemlerinde Büyüme ve Gelişme*. Sistem Ofset, Ankara. 2009; 102-166.
- 8-Wells MA, Vaughn BV. Poor sleep challenging the health of a nation. *Neurodiagn J*. 2012; 52: 233-49.
- 9-Buguet A. Sleep and extreme environments: Effects of heat and cold exposure, altitude, hyperbaric pressure and microgravity in space. *Journal of the Neurological Sciences*. 2007; 262(1-2): 145-52.
- 10-Fisher A, Van Jaarsveld CH, Llewellyn CH, Wardle J. Genetic and environmental influences on infant sleep. *Pediatrics*. 2012;129(6):1091-6.
- 11-Altun I, Cinar N, Dede C. The Contributing factors to poor sleep experiences in according to the university students: A cross-sectional study. *Journal of Research in Medical Sciences*. 2012; 17:557-61.
- 12-Okamoto MK, Mizuno K. Effects of thermal environment on sleep and circadian rhythm. *Journal of Physiological Anthropology*. 2012;31:14.
- 13-Franck L, Gay CL, Lynch M, Lee KA. Infant sleep after immunization: Randomized controlled trial of prophylactic acetaminophen. *Pediatrics*. 2011;128:1100-8.
- 14-Cinar N, Sozeri C, Dede C, Cevahir R. Anne ve bebeğin aynı odada uyumasının emzirmeye etkisi. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanat Dergisi, Sempozyum Özel Sayısı*. 2010; 235-241.
- 15-Flook DM, Vincze DL. Infant safe sleep: Efforts to improve education and awareness. *Society of Pediatric Nurses*. 2011;12.003: 186-188.
- 16-Matthews R, Moore A. Babies are dying of SIDS. *AJN*. 2013; 2:59-64.
- 17-Technical Report. SIDS and other sleep – related infant deaths. expansion of recommendations for a safe infant sleeping environment. *Pediatrics*. 2011;128(5):e1341-1367.
- 18-Chung M, Rosalind P, Joyner BL, Sims A, Moon RY. Safe infant sleep recommendation on the internet: let's go google it. *The Journal of Pediatrics*. 2012; 161:1080-4.
- 19-Efe E, Inal S, Balyılmaz H, Cetin H, Turan T, Altun E, et al. Nurses' and paediatricians' knowledge about infant sleeping positions and the risk of sudden infant death syndrome in Turkey. *HealthMED*. 2012; 6(1):140-147.
- 20-Kondolot M, Yalcin S, Yurdakok K. Sadece anne sütü alım durumuna etki eden faktörler. *Çocuk Sağlığı ve Hastalıkları Dergisi*. 2009;52: 122-127.
- 21-Demirci JR, Braxter BJ, Chanes E. Breastfeeding and short sleep duration in mothers and 6-11- months-old infants. *Infant Behav Dev*. 2012; 35(4):884-6.
- 22-Galbaly M, Lewis AJ, McEgan K, Scalzo K, Islam FA. Breastfeeding and infant sleep patterns: an australian population study. *J Paediatr Child Health*. 2013;49 (2):E147-52.
- 23-Cohen Engler A, Hadash A, Shehadeh N, Pillar G. Breastfeeding may improve nocturnal sleep and reduce infantile colic: potential role of breast milk melatonin. *Eur J Pediatr*. 2012; 171(4): 729-32.
- 24-Sexton S, Natale R. Risk and benefits of pacifiers. *Am Fam Physician*. 2009;79(8): 681-685.
- 25-Capt Min S. Knowledge, opinions and practices of infant sleep position among parents. *Military Medicine*. 2012;177, 2:235.
- 26-Fu LY, Colson ER, Corwin MJ, Moon RY. Infant sleep location: Associated maternal and infant characteristics with sudden infant death syndrome prevention recommendations. *J Pediatr*. 2008; 153:503-8.
- 27-Schnitzer PG, Covington TM, Dykstra HK. Sudden unexpected infant deaths: sleep

environment and circumstances. *American Journal of Public Health*. 2012; 102(6):1204-12.

28-Ebarhim A, Babak G, Alimohammed A, Shabnam J, Alreza A. High prevalence of sleep problems in school-and preschool-aged children in Tehran: a population based study. *Iranian Journal of Pediatrics*. 2013;23(1):45-52.

29-Sun WQ1, Spruyt K, Chen WJ, Jiang YR, Schonfeld D, Adams R, et al. The relation among sleep duration, homework burden, and sleep hygiene in chinese school-aged children. *Behav Sleep Med*. 2014 Sep 3;12(5):398-411.

30-Temel F, Hancı P, Kasapoglu T, Kısıla RM, Sarıkaya MS, Yılmaz MA, et al. Ankara'da bir meslek lisesi 10. ve 11. sınıf öğrencilerinin uyku kalitesi ve etkileyen faktörler. *Çocuk Sağlığı ve Hastalıkları Dergisi*. 2010;53: 122-131.

31-Kathrotia RG, Rao PV, Paralikar SJ, Shah CJ, Oommen ER. Late sleeping affects sleep duration and body mass index in adolescents. *Iran J Med Sci*. 2010;35(1):57-60.

32-Gagua T, Tkeshelashvili B, Gagua D. Primary dysmenorrhea: prevalence in adolescent population of Tbilisi, Georgia and risk factors. *J Turkish-German Gynecol Assoc*. 2012; 13: 162-8.

33-Pıçak R, İsmailoğulları S, Mazıcıoğlu MM, Üstünbaş HB, Aksu M. Birinci Basamakta uyku bozukluklarına yaklaşım ve öneriler. *TJFMPC*. 2010; 3: 12-22.

34-Yetkin S, Ozgen F. İnsomniler, Kaynak H, Ardic S. *Uyku fizyolojisi ve hastalıkları*, Nobel tıp kitabevi, 2011; 20: 167-73.