

## Chapter 3

### SAFE SLEEP FOR BABIES AND NURSING PRACTICES

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#### INTRODUCTION

Sleep is defined as the temporary, partial and periodic loss of the organism's communication with the environment due to stimuli of varying intensity. The sleep and wake cycle in humans is regulated by cyclical and homeostatic factors. Sleep is one of the most important needs of a healthy life. Sleep is an activity that enables people to grow, develop, learn and rest from birth, and prepares people for the next day in a healthy way (Guglietta, 2015).

Sleep is very important for infancy. Many systems such as growth and development, emotional development, strengthening of the immune system, release of some hormones (melatonin, growth hormone), regulation of metabolism work more actively during sleep. During sleep, the body balances itself, develops and prepares for a new day. Having a baby's sleep patterns is important for their health and development (Zhou & et al., 2015). This chapter current information about safe sleep in children and contributions of pediatric nurses are discussed.

#### THE IMPORTANCE OF SLEEP IN BABIES

Sleep is one of the basic needs of human beings and is an activity of daily living. A large part of the newborn and early childhood period is spent in sleep. Sleep is very important for the growth of the newborn, who spends most of the day sleeping (Törüner & Büyükgöneç, 2022). Growth hormone is released during sleep. The release of growth hormone supports the growth and development of the baby. It is important to establish a healthy sleep pattern by lying in a suitable position in order to maintain the functional functions of all other systems, especially the Central Nervous System (CNS), and to ensure growth and development of newborn babies. Positioning the baby can affect the baby's body systems both positively and negatively (Ustabaş & Gözen, 2011).

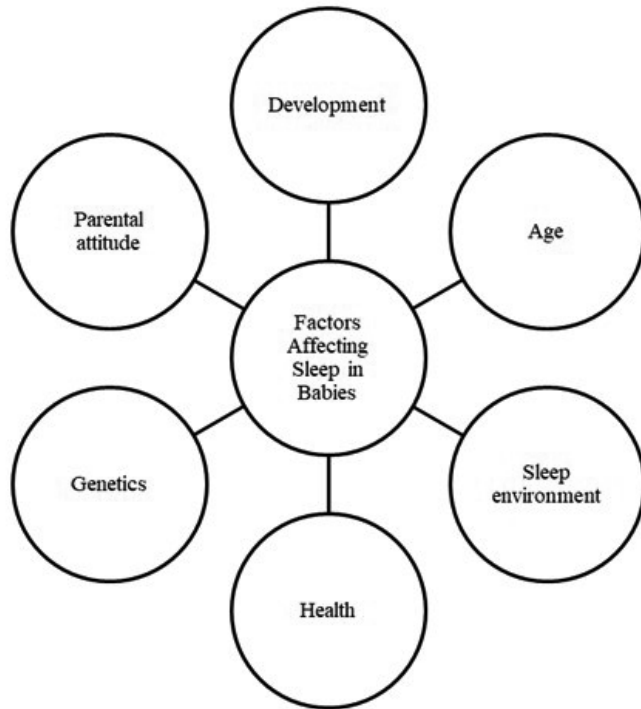
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Growth hormone is released most during sleep. In addition to supporting growth and development, sleep is a factor that accelerates mental development, helps improve health and ensures positive communication between the family and the baby. The sleep-wake system in babies is regulated by the development of the central nervous system. The active (REM) period of sleep is under the influence of intense stimuli. Thus, neurological development is provided. As the infant develops, REM sleep decreases and NREM sleep duration increases (Akça Ay, 2011; Guyton & Hall, 2007). Babies sleep time varies from each other. Every baby has a unique sleep pattern. Factors such as the baby's developmental level, age, sleeping environment, room temperature, illness status, and family's attitudes and behaviors can have an impact on babies' sleep patterns (Çevik & Arıkan, 2014; Güneş, 2018).

Sleep period and sleep quality affect the development of children. Among the factors affecting sleep pattern and quality are nutrition, sleeping positions of babies after feeding, and behaviors during preparation for sleep (Koturoğlu & et al., 2004). Newborn babies sleep an average of 16-20 hours a day. As babies get older, their sleeping time decreases. Since the circadian rhythm is not yet present in newborn babies, they cannot perceive the difference between day and night. The circadian rhythm develops when the baby is 2-3 months old (Bathory & et al., 2017; Guyton & Hall, 2007).

If babies do not sleep enough, symptoms such as restlessness, inability to respond to stimuli, increased sensitivity to pain and agitation are seen (Evliyaoğlu, 2007). The disruption of the baby's sleep pattern also affects the sleep pattern of the family. Due to this influence, changes occur in the daily lives of families. Since sleep pattern affects the attention level, school success, social development and physical abilities of children in later ages, a healthy sleep pattern should be established from the newborn period (Evliyaoğlu, 2007; Kostak & et al., 2016).



**Figure 1.** Factors Affecting Sleep in Babies

## **SLEEP-WAKE CYCLE AND SLEEP PERIODS IN BABIES**

The sleep organization of babies is shaped in the first months. In the first months, the light and dark cycles begin to take shape with social cues. While the periods of uninterrupted sleep are 3-4 hours in the first three months, 6-hour uninterrupted sleep begins from the 6th month, extending into the night hours. Around the age of one, while sleeping a few times during the daytime, at the second age, daytime sleep decreases to once with the regulation of melatonin secretion. Daytime and afternoon naps can continue throughout life. While the sleep duration of babies is 50-60 minutes and 50% REM sleep in the first months, this rate reaches 20% REM and 90 minutes sleep time around the age of 3 years (Hirshkowitz & et al., 2015; Kaynak, 2011).

Sleep patterns change depending on development and age. While sleep stages increase from birth to two years of age, daytime sleep time gradually decreases (Galland & et al., 2012). While a newborn baby spends a total of 16 hours of sleep,

of which 8-10 hours of 24 hours constitute night sleep, this period decreases to 10 hours in the first three months. Children's need for sleep decreases as they get older. A one-year-old baby's sleep time has been reduced to 13 hours, with 11 hours of nighttime sleep and two hours of daytime sleep (Galland & et al., 2012; Hirshkowitz & et al., 2015).

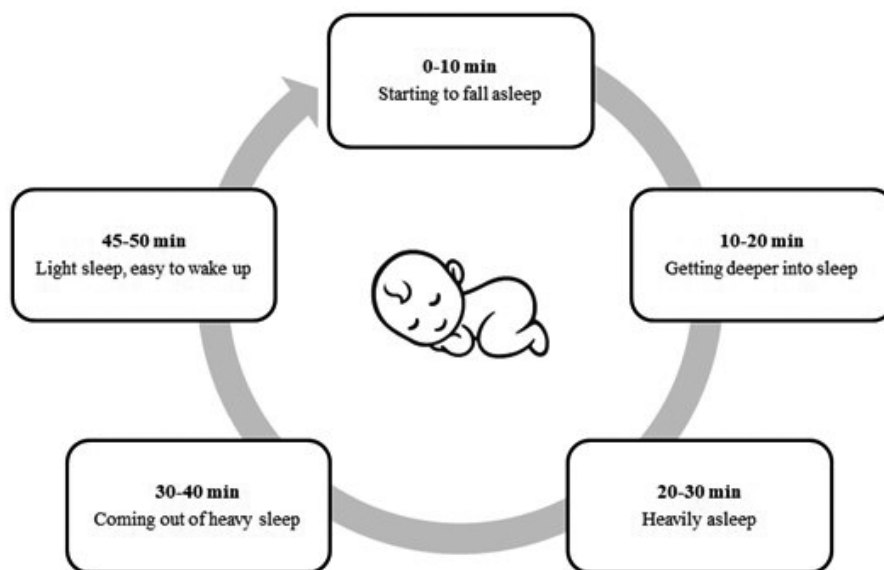


Figure 2. Baby's Sleep Cycle Every 45 Minutes

American Academy of Pediatrics (AAP) sleep times; It has been reported as 12-16 hours for babies aged 4-13 months and 11-14 hours for babies aged 1-2 years. The sleep durations of the infants by age are shown in Table 1.

Table 1: Sleep duration of babies by age	
Age	Sleep Time
0-2 months	5-7 hours during the day, 8-10 hours at night, a total of 14-17 hours a day
3-5 months	4-5 hours during the day, 10-11 hours at night, a total of 12-15 hours a day
6-8 months	3-4 hours during the day, 10-11 hours at night, a total of 12-15 hours a day
9-12 months	2-3 hours during the day, 10-11 hours at night, a total of 12-15 hours a day

The duration of awakening of infants by age is shown in Table 2.

<b>Age</b>	<b>Awake Time</b>
1-4 weeks	40-60 dk.
1-2 months	40-80 dk.
3-5 months	1.5 hours-2.15 minutes.
6-8 months	2-3 hours
9-12 months	3-4 hours

## **REASONS FOR BABIES TO WAKE UP FROM SLEEP**

In the first month of life in babies, the sleep pattern has not yet fully developed and the circadian rhythm has not yet been formed. For this reason, babies in this age period sleep irregularly. This disorder is not considered a sleep problem (Paruthi & et al., 2016). Sleep duration and night awakenings gradually decrease from birth to 2 years of age (Galland & et al., 2012).

Getting up from sleep is part of the normal sleep process for babies. Baby-related factors, parental factors and environmental factors play a role in the awakening of babies from sleep (Blunden & et al., 2011). Reasons for babies waking up from sleep are:

**Hungry:** There is a strong relationship between nutrition and sleep. While babies with a hungry stomach have sleep problems, babies with a full stomach can go to sleep in a shorter time. Babies' eating habits have an impact on babies' sleep patterns (Ustabaş & Gözen, 2011).

**Wet Diaper:** Babies' diapers are wet, which is uncomfortable for babies. This can cause babies to wake up from sleep. While some babies continue to sleep without feeling uncomfortable because their bottoms are wet, some babies may wake up from sleep. Families should not turn on the room light too much while changing the baby's diaper at night and should not communicate much verbally with the baby. After the baby's bottom is cleaned, it is necessary to lay him back in his bed to ensure the transition to sleep (Tajin, Mongan & Dandekar, 2020).

**Habits:** Babies learn through repetition. If there are adapters that families use while putting the baby to sleep, the same behavior patterns should be applied when the baby wakes up at night. These behaviors and movements have a reconciling feature for the baby who is accustomed to sleep by breastfeeding, shaking,

giving a bottle, being carried on his lap, and singing a lullaby. When babies wake up at night, they want to fall asleep with the adapters they are used to. After the first months of babies are completed, it is necessary to teach babies how to fall asleep (Counterline & Teti, 2010; Çevik & Arıkan, 2014; Mindell, Sadeh, & Kohyama, 2010; Sadeh, Tikotzky, & Scher, 2010).

**Duration and Timing of Daytime Sleep:** Babies spend most of the day sleeping. The duration and quality of daytime sleep of infants have an impact on nighttime sleep. If the baby's daytime sleep is longer or shorter than necessary, it may cause the baby to decrease in night sleep or prolong the time of falling asleep at night, and may cause the baby to wake up early in the morning (Yılmaz & Gürakan, 2002)

**Sleeping in the Same Room with the Baby:** Families generally prefer to sleep in the same room or in the same bed with their baby after the baby is born. It may be beneficial to sleep in the same room with the baby, as there is a lot of nighttime breastfeeding in the first months. However, it is necessary to prepare babies for the habit of sleeping in a different room after the 3rd month (Ball, 2002).

**Baby's Physical Development:** For babies, the first year is a period in which physical development is very rapid. During this period when babies acquire motor skills such as turning, sitting, crawling, and walking, the amount of energy they spend increases. Babies in the rapid development period may have problems waking up at night by expending energy and feeling more hunger (Törüner & Büyükgönenç, 2022).

**Intervening Early in the Baby's Sleep Process:** Babies exhibit behaviors such as smiling, groaning, teeth grinding, grunting while they sleep. Sometimes, when they wake up, they can talk to themselves and fall asleep again. The fact that families enter the baby's room and intervene early in the baby's sleep-wake process affects the sleeping patterns of babies (Aybaş & Sonmaz, 2004; Counterline & Teti, 2010)

**Teething:** Teething period for babies is a very difficult period. Babies in this period may experience disruptions in their nighttime sleep patterns. After completing the difficult teething process, babies can naturally return to their old sleep patterns (Yılmaz & Gürakan, 2002).

**Transition to Solid Food:** During the transition to solid food after the intake of breast milk and liquid foods, different reactions may be experienced on the digestive system. Generally, babies experiencing colic-like pain during this period can cause changes in their sleep patterns (Weissbluth, 2015).

**Non-Routine Activities and Days:** Many situations can affect babies mentally and physically, such as families traveling, mother starting work, a new babysitter starting to care for the baby, crowded guest groups coming home, intense weekend activities. Sudden changes in daily life can affect the sleep process of babies and cause them to wake up at night (Yılmaz & Gürakan, 2002).

## **CAUSES OF SLEEP PROBLEMS IN BABIES**

Babies' sleep patterns are more affected by environmental factors after the third month. Babies are very sensitive to external stimuli during this period, and their sleep may be disrupted. Unrest in the family, the stress level of the mother is effective on the sleep of the babies. Sleep disturbances may occur in the baby due to environmental factors (Daşdemir, 2012).

Many of the sleep problems seen in infancy are due to separation anxiety. Babies aged 7-9 months have disruptions in sleep patterns due to separation from their mothers. This situation can develop more especially in babies of working mothers. Babies of working mothers experience restlessness because they are separated from their mothers during the day, they perceive the sleep period as a second separation and their sleep patterns are disrupted. In addition, sleep problems in children affect the sleep patterns of parents negatively. Experiencing similar sleep problems causes labor loss in parents (Counterline & Teti, 2010; Özmert, 2006).

Factors such as physical discomfort, gastrointestinal complaints, and pain also affect the sleep quality of babies. Abnormal sleep process can be observed in pituitary tumors affecting the hypothalamus. By creating a safe environment and giving the baby a planned sleep habit, sleep disorders in babies get better spontaneously (Blunden & et al., 2011; Hiscock et al., 2017)

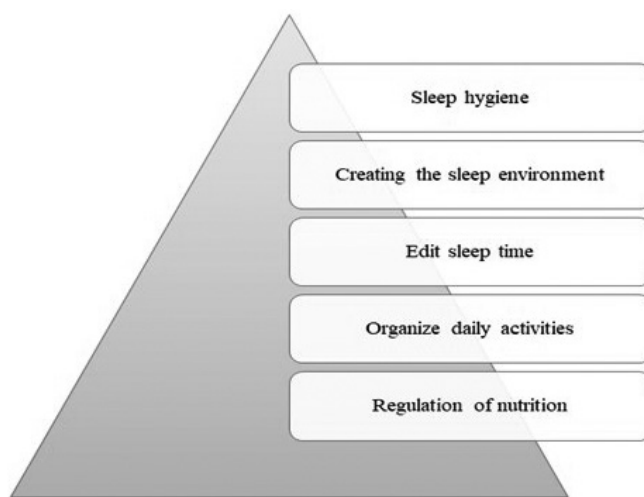
If the foundations of sleep problems in infants are not based on a pathological factor, they can be corrected with the behavioral approaches of families. Softly sung songs, lullabies, listening to light music, a room with regulated heat and lighting, and any sleep object are methods that can be used in behavioral approaches (Güneş, 2010; Özgen, 2001).

## **SAFE SLEEP AND COMPONENTS**

Safe sleep is defined as a sleep environment in which the baby lies in the supine position, on a hard surface, there are no soft objects in the sleeping environment, and the sleep environment of the baby is arranged in a way that protects it from

the risk of Sudden Infant Death Syndrome (SIDS) (AAP, 2016). Creating a safe sleep environment has an important place in reducing sleep-related infant deaths (Patton & et al., 2015).

Many studies have been carried out from the past to the present in order to prevent deaths caused by SIDS and to eliminate risk factors. In 2016, the American Academy of Pediatrics (AAP) published the “Safe Sleep Environment Report for Babies” in order to prevent the misinformation of health professionals and parents after the increase in SIDS cases and to provide a scientific, standard, evidence-based practice area (AAP, 2016). However, many studies related to safe sleep have begun to be conducted (Ball & Volpe, 2013; Hunt & Hauck, 2014; Newberry, 2019).



**Figure 3.** Components of Safe Sleep

The American Academy of Pediatrics (AAP) has published guidelines to reduce the risk of SIDS. These guidelines include recommendations for reducing the risk of SIDS and emphasize the creation of a safe sleeping environment (Moon & et al., 2022). Components of safe sleep; providing sleep hygiene, regulation of sleep environment, sleep time, daily activities and nutrition (Halperin & et al., 2014; İşsever & et al., 2021; Newberry, 2019). Sudden Infant Death Syndrome in babies can be prevented or injuries can be prevented by creating a safe sleeping environment. Safe sleeping environment; While making parents prepare a safe sleeping environment against SIDS, it also contributes positively to the baby’s sleep process (AAP, 2016; Ayyıldız & et al., 2020)



**Table 3: Safe sleep guidelines from the American Academy of Pediatrics (2022)**

<b>A level recommendations</b>
Back to sleep for every sleep
Use a firm, flat, noninclined sleep surface to reduce the risk of suffocation or wedging/entrapment
It is recommended that infants sleep in the parents' room, close to the parents' bed, but on a separate surface designed for infants, ideally for at least the first 6 mo.
Keep soft objects, such as pillows, pillow-like toys, quilts, comforters, mattress toppers, fur-like materials, and loose bedding, such as blankets and nonfitted sheets, away from the infant's sleep area to reduce the risk of SIDS, suffocation, entrapment/wedging, and strangulation.
Avoid smoke and nicotine exposure during pregnancy and after birth
Avoid overheating and head covering in infants
It is recommended that infants be immunized in accordance with guidelines from the AAP and CDC.
It is essential that physicians, nonphysician clinicians, hospital staff, and child care providers endorse and model safe infant sleep guidelines from the beginning of pregnancy.
It is advised that media and manufacturers follow safe sleep guidelines in their messaging and advertising to promote safe sleep practices as the social norm.
Continue the NICHD "Safe to Sleep" campaign, focusing on ways to reduce the risk of all sleep-related deaths. Pediatricians and other maternal and child health providers can serve as key promoters of the campaign messages
<b>B level recommendations</b>
Avoid the use of commercial devices that are inconsistent with safe sleep recommendations
<b>C level recommendations</b>
There is no evidence to recommend swaddling as a strategy to reduce the risk of SIDS.
Continue research and surveillance on the risk factors, causes, and pathophysiological mechanisms of sleep-related deaths, with the ultimate goal of eliminating these deaths entirely.

## ESTABLISHING GOOD SLEEP HABITS

Sleep factor in infants may show biological predisposition. While some babies love to sleep, some babies do not like to sleep. Waking up babies is part of their normal sleep cycle. The fact that babies cannot fall asleep on their own after waking up can create a problem. Parents have to teach babies when and how to fall asleep. The sleep routine that will be prepared for babies before putting them to sleep facilitates the transition of babies to sleep. The baby's personality characteristics and wishes are very important in the process of preparing babies for the pre-sleep routine. When families notice the sleep signals in babies, they need to start practicing their sleep routines. Some babies do not like extended sleep routines, while others like extended sleep routines (Karabekiroğlu, 2013).

A sleep routine can be created by applying the swaddling method to babies. For babies younger than three or four months, swaddling can be used during night and day sleep. This activity can wake them up, as small babies move their arms and legs involuntarily. For the baby, who is accustomed to living in a narrow

space in the mother's womb, swaddling gives the baby a sense of security in the mother's womb and allows him to sleep more comfortably (Eğri & Gölbaşı, 2007).

The sleep routine in babies should be specific to the baby and always the same. As the baby grows and develops, changes in sleep routines should be made and the baby's wishes and needs should be included. In time, lullabies may be replaced by fairy tales and conversations. Sleep routines should not contain frightening or distressing elements (Karabekiroğlu, 2013).

The time babies need to sleep deeply: Children's sleep needs vary according to the period they are in. The newborn period is the period when you need the most sleep. Growth hormone is released at its highest level around 10 pm. Babies and children should be in deep sleep at this time (Aybaş & Sonmaz, 2004).

Families act according to children's sleep patterns: There is a direct relationship between the child's sleep pattern and regular nutrition. The fact that babies have a certain feeding and sleeping pattern makes them happy babies. Families need to create a suitable feeding and sleeping pattern for their babies and act accordingly (Mindell et al., 2009)

Baby sleeping by himself: Scientific studies argue that "teaching the baby to sleep by himself" is necessary. The same conditions must be provided so that the baby, who is accustomed to sleep with a bottle by shaking, can fall back to sleep when the night's sleep is interrupted (Türkbay & Söhmen, 2001).

Night feedings should not be done in excessive amounts. In this context, formula-fed babies should not be fed at night after the 10th month. Night feedings can also cause problems such as reflux, upper respiratory tract, middle ear infections, as well as frequent waking in babies. Children should stop feeding one hour before bedtime. It is the family's responsibility to provide the baby with a sleep pattern. Parents should establish a regular and conscious sleep pattern for their babies (Özmert, 2006; Yıldız & Kurt, 2010).

## **HELP YOUR BABY SLEEP BETTER**

The practices that can be done to ensure that babies sleep comfortably are as follows;

- During the day, the baby should be prevented from being disturbed by too many stimuli (such as excessive noise, movement, heat, cold).
- The baby should not be fed just before bedtime.
- With the relaxing effect of the bath, the transition process of babies to sleep is accelerated. The baths applied during the day should be transferred to the evening hours.

- Keeping their baby's bottom wet and damp is an uncomfortable situation for them. The baby's bottom should not be left damp and wet at night.
- The room where babies sleep should be ventilated, clean and dimly lit.
- While putting babies to sleep, their daily clothes should be changed and sleeping clothes should be put on. Babies' sleeping clothes should not be too tight or loose and should not make the baby sweat (Newberry, 2019; Weissbluth, 2015).

## **THE ROLE OF THE NURSE IN ESTABLISHING SAFE SLEEP**

Health professionals and nurses have an important role in creating a safe sleep environment. In order to reduce sleep-related deaths, it is necessary to create a safe sleep environment in the hospital environment and at home. Nurses are role models of parents in creating a safe sleeping environment (AAP, 2016; Andreotta & et al., 2015; Patton & et al., 2015).

Nurses should primarily take a holistic approach in determining sleep problems in infants. Providing a holistic approach is achieved by questioning ecological and sociological factors and taking a good sleep history. Nurses tell families who the person who puts the baby to sleep is, his nutritional status, his behavior after and after waking up, where he sleeps, the characteristics of the bed he sleeps in, his sleeping position, the behavior of the parents before going to sleep and the rituals applied. sleep pattern, day and night sleep duration, routine sleep bedtime. Ask questions to identify habits and sleep problems (Berberoğlu & Çalışır 2020; Mindell & Owens 2015; Weissbluth, 2015).

Establishing evidence-based hospital policies on the creation of safe sleeping environments, conducting in-service training on the subject and ensuring the continuity of these trainings enable nurses to adopt safe sleeping environments. It is very important for nurses to inform parents about SIDS, its risks, prevention and prevention methods and provide supportive care within the scope of their educational roles. Evidence-based practices should be used to create safe sleeping environments. Nurses should prepare their educational content in line with evidence-based information and practices (Doğan & Yılmaz, 2020; Naugler & DiCarlo, 2018).

Nurses need to provide training to families within the scope of their educational role in the creation and development of a healthy sleep pattern. Nurses will reduce the stress of the family, improve the coping skills of the family and increase their adaptation by their role in developing the child's sleep habits (Ustabaş & Gözen, 2011; Çevik & Arıkan, 2014).

While providing counseling to the family, the structure of the family, the culture of the family, the child's need for sleep and environmental factors should be evaluated together and the planning should be done by taking these conditions into account. A good education about sleep, compliance with sleep rituals and hygiene can create safe sleeping areas and meet the sleep needs of children in a healthy way (İşsever & et al., 2021). Nurses recommend parents to sleep on their back on a non-soft bed, not to have soft objects such as toys, blankets, pillows in the baby's bed, to sleep in the same room but in different beds, not to expose the baby to cigarette smoke, not to smoke the mother during pregnancy and after birth, not to breastfeed the baby, not to overheat the baby. They should support the creation of a safe sleeping environment by providing information on issues such as providing (Çevik & Arıkan, 2014; Doğan & Yılmaz, 2020; Erdoğan, & Turan, 2018; Moon & et al., 2022).

## CONCLUSIONS

Sleep is very important for the growth and development of babies. Creating a safe sleep environment for babies positively affects the sleep processes of babies. Pediatric nurses and parents have important roles to create safe sleeping areas for babies. Pediatric nurses can advise families on safe sleep. Nurses can improve parents' behaviors towards safe sleep practices with informational trainings.

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