

Sleep Education for Nursing Students

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Abstract

A sleep educational session was conducted with three fourth-year nursing students. The percentages of correct answers to basic sleep quiz items at the beginning and end of the session were 66.6% and 96.7%, respectively. Students chose three sleep hygiene intervention targets to improve their sleep. After 1 week of the intervention, their sleep habits showed improvements such as extended sleep duration and fixed wake times, which resulted in decreased sleepiness during the day and a refreshed feeling in the morning.

Background

Sleep health is important for the maintenance of overall health and quality of life. Unhealthy sleep behaviors have been reported among older adolescents and young adults resulting in insufficient sleep and daytime consequence (Owens, 2014; Forquer, 2008). This is particularly true for college students who are frequently balancing school, work, and social obligations (Owens, 2017). Insufficient sleep in college students has been associated with inattention, poor academic performance, impaired social relationships, and poor health (Owens, 2014). College students may have limited knowledge about sleep hygiene to support sleep health, which may lead to poor sleep hygiene behavior. Healthcare providers working with college students have an opportunity to impact health behaviors including sleep behaviors.

The importance of sleep education and sleep hygiene intervention to improve sleep health in this population has been emphasized, however, systematic reviews have indicated that the success of sleep education programs has thus far been inconsistent, due to the lack of tailored approach that allows for evaluation of

individual difference in behavior patterns (Dietrich, 2016). Self-administered behavioral approach including sleep health education has been proposed as a solution as the entry step of the intervention (Espie, 2009). Targeting of modifiable behavior provides healthcare professionals an opportunity to educate college students about the need for adequate sleep (Owens, 2017).

Objectives

The aims of this study were to conduct an educational session on sleep problems targeting fourth-year nursing school students and to determine how the session affected the students' sleep behavior.

Methods

Seventy-four fourth-year nursing school students at Shikoku University were invited to participate in a survey conducted in August 2019. Students were asked about their interest in joining the sleep educational session. Among the forty-three students who returned the questionnaire (58.1% response rate), six students were interested in joining the educational session. Three of these students, who were studying the midwifery curriculum, attended the sleep educational session in September 2019 (Figure 1).

Before and after the educational session, the students were asked to keep sleep diaries for one week and filled in the sleep questionnaire with items regarding sleep habits ($n = 14$) and sleep problems ($n = 24$). In order to elucidate the sleep pattern of students under nursing school curriculum, sleep diary recording and the sleep education session were conducted when the students are under midwifery practicum. A board-certified sleep specialist conducted the sleep educational session of 60

minutes using “Sleep Management” teaching materials provided by H. Tanaka (Hiroshima International University, Tanaka 2014).

At the beginning of the session, the students were asked to take a 10-item basic sleep quiz (5 minutes, Table 1). A short lecture about the basics of human sleep and strategies to improve sleep hygiene was then given (20 minutes). The lecture include human sleep physiology, favorable and unfavorable sleep hygiene and recommendations to improve sleep quality. After the lecture, the students shared their pre-session sleep diaries and discussed their sleep problems with the sleep specialist (10 minutes). The specialist gave each student individual comments on her sleep habits (5 minutes). The students were then asked to rate sleep hygiene items (Table 2) as “already achieved, ○” “not achieved but achievable, △” or “not achievable, ×” based on their current situations (10 minutes). Then, three “not achieved but achievable” items were selected for each student as targets to improve sleep hygiene (5 minutes). Finally, the same sleep quiz was readministered to determine what the students had learned during the session (5 minutes).

The results of the two sleep quizzes were compared. The students’ rating of sleep hygiene items was analyzed. In addition, changes in sleep habits (bedtime, waketime and sleep duration) and sleep problems (play games or use internet before bedtime, early morning awakenings, unrefreshed feeling in the morning, subjective soundness of sleep and sleepiness during the day) from before to after the sleep education session were described for each student based on the sleep questionnaire filled in by the students. This study was approved by the Institutional Review Board of Shikoku University.

Results

The students answered 66.6% of items on the sleep quiz administered at the beginning of the sleep educational session correctly. More than two students provided incorrect answers to questions 2 (“the human body rhythm is not 24 hours”), 8 (“taking a bath in lukewarm water can make you sleep better”), and 9 (“it is better to stay lying in bed even if you are not able to fall asleep”; Table 1). The percentage of correct answers increased to 96.7% on the quiz administered at the end of the session, with only one student providing an incorrect answer to question 9.

Regarding sleep hygiene, more than two students indicated that they had already achieved items 3 (“eat breakfast regularly every morning”), 4 (“keep in touch actively with others during the day”), 9 (“avoid going to bright places such as convenience stores after 9 pm”), 10 (“avoid eating a nighttime snack after dinner”), 13 (“avoid watching TV or reading in bed”), and 14 (“change clothes from usual wear to nightwear at bedtime”; Table 2). More than two students considered item 11 (“spend some time taking a bath in lukewarm water”) to be unachievable. As targets for sleep improvement, all students selected item 6 (“avoid taking a nap after coming home”), two students selected item 7 (“avoid drinking caffeinated beverages after dinner”), and one student each selected items 1 (“wake up at a fixed time in the morning”), 2 (“get enough sunlight after waking up”), 20 (“go to bed when you become sleepy”), and 21 (“avoid delaying your wake time by more than 2 hours on holidays”).

Student 1 chose items 6, 20, and 21 as sleep intervention targets. Her sleep diary showed delayed bedtime on days with practicum (Figure 2). After the sleep educational session, she extended her sleep duration on weekdays and holidays (Table 3), and reduced the number of days on which she played games or used the internet before bedtime. Her subjective sleepiness during the day decreased after the sleep hygiene intervention.

Student 2 chose items 1, 6, and 7 as sleep intervention targets. After the sleep educational session, she tried to fix her wake time and extended her sleep duration on weekdays by 1 hour (Table 4). After the sleep education session, she extended her sleep duration, but some of the sleep episodes were late in the afternoon (Figure 3). Her early morning awakenings and unrefreshed feeling in the morning decreased after the sleep hygiene intervention.

Student 3 chose items 2, 6, and 7 as sleep intervention targets. Her pre-session sleep diary showed nocturnal awakening for about 2 hours almost every night. After the sleep education session, the frequency of her nocturnal awakening decreased (Figure 4). In addition, her subjective sleep duration on weekdays increased (Table 5). After the educational session, she felt that she slept more soundly and her sleepiness during the day decreased.

Discussion

Nurses must educate patients with medical disorders, and they need to have sufficient knowledge about sleep.

In this study, fourth-year nursing students had insufficient basic knowledge about sleep. Sleep education to improve such knowledge in this population is needed, as sleep problems are known to cause or worsen a variety of medical disorders.

The sleep intervention with “Sleep Management” educational material used in this study is designed to help people try to improve their sleep by choosing intervention targets that they consider to be “achievable” (Tamura, 2016, 2017). Selected targets are issues that participants feel are problematic and that they wish to improve. Although the intervention period was only one week, participants in this study showed some improvement in their behavior and sleep. Although the change in the sleep habits and sleep problems were not directly associated with the selected target of intervention, short term self-administered intervention showed some improvement in sleep.

The limitation of the study was that sleep diary recording and the sleep education session were conducted when the students are under midwifery practicum. Irregular practicum schedule affected their sleep schedule. In addition, the sleep education session was conducted only once. The need for continuous or repeated sleep intervention for the long-term improvement of sleep has been emphasized (Martin, 2017). To enable nursing students to gain sufficient knowledge about sleep earlier, and to acquire good sleep hygiene and health outcomes, sleep interventions for this population need to be initiated earlier and offered continuously.

Conclusion

A sleep educational session with a short-term sleep hygiene intervention improved the sleep behavior of nursing students and resulted in some improvements in sleep and daytime symptoms. The effects of continuous sleep improvement efforts need to be evaluated.

References

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Table 1. Sleep quiz items and numbers of correct answers

If you think the sentence is correct, mark "O" ; if you think it is incorrect, mark "X".

Question (correct answer)	Pre-session	Post-session
1. There is a relationship between sleep and obesity. (O)	2	3
2. The human body rhythm is not 24 hours. (O)	0	3
3. It is better to not open the curtain soon after waking up. (X)	3	3
4. It is better to sleep if you are sleepy after coming home in the late afternoon. (X)	3	3
5. It is better to sleep until the afternoon on holidays. (X)	3	3
6. The body temperature is elevated while sleeping. (X)	2	3
7. Using a cellphone in bed makes you sleep better. (X)	3	3
8. Taking a bath in lukewarm water will make you sleep better. (O)	1	3
9. It is better to stay lying in bed even if you are not able to fall asleep. (X)	0	2
10. It is better not to go to bright places such as convenience stores before bedtime. (O)	3	3

Table 2. Sleep hygiene items and numbers of student responses

	○	△	×
1. Wake up at a fixed time in the morning.	1	2	0
2. Get enough sunlight after waking up.	1	2	0
3. Eat breakfast regularly every morning.	2	1	0
4. Keep in touch actively with others during the day.	2	1	0
5. Enjoy hobbies and group activities actively.	1	1	1
6. Avoid taking a nap after coming home.	0	3	0
7. Avoid drinking caffeinated beverages after dinner.	1	2	0
8. Finish taking meals two hours before bedtime.	0	3	0
9. Avoid going to bright places such as convenience stores after 9 pm.	3	0	0
10. Avoid eating a nighttime snack after dinner.	2	1	0
11. Spend some time taking a bath in lukewarm water.	0	1	2
12. Keep the cellphone away from the bed or turn it off at bedtime.	0	2	1
13. Avoid watching TV or reading in bed.	2	1	0
14. Change clothes from usual wear to nightwear at bedtime.	3	0	0
15. Make your bedroom a comfortable space.	1	2	0
16. Try to relax your brain and body before bedtime.	0	3	0
17. Avoid irregular bedtimes.	0	3	0
18. Go to bed before midnight (12 pm).	0	3	0
19. Avoid worrying about things in bed.	0	2	1
20. Go to bed when you become sleepy.	0	3	0
21. Avoid delaying your wake time for more than 2 hours on holidays.	1	2	0
22. Avoid irregular sleep durations.	0	2	0

Note: Students were asked to rate the items based on their current situations; ○, already achieved; △, not achieved but achievable; ×, not achievable.

Table 3. Student 1's sleep habits before and after the sleep educational session

	Pre-session	Post-session
Bedtime on weekdays	24:00	24:00
Bedtime on holidays	24:00	24:00
Wake time on weekdays	7:50	8:00
Wake time on holidays	8:30	9:00
Sleep duration on weekdays	6 hours	7 hours
Sleep duration on holidays	7 hours	8 hours

Table 4. Student 2's sleep habits before and after the sleep educational session

	Pre-session	Post-session
Bedtime on weekdays	24:00	24:00
Bedtime on holidays	24:00	25:00
Wake time on weekdays	4:00	5:00
Wake time on holidays	5:00	6:00
Sleep duration on weekdays	4 hours	5 hours
Sleep duration on holidays	5 hours	5 hours

Table 5. Student 3's sleep habits before and after the sleep educational session

	Pre-session	Post-session
Bedtime on weekdays	24:00	24:00
Bedtime on holidays	24:00	24:00
Wake time on weekdays	5:00	7:00
Wake time on holidays	9:00	9:00
Sleep duration on weekdays (hours)	5 hours	7 hours
Sleep duration on holidays (hours)	9 hours	9 hours

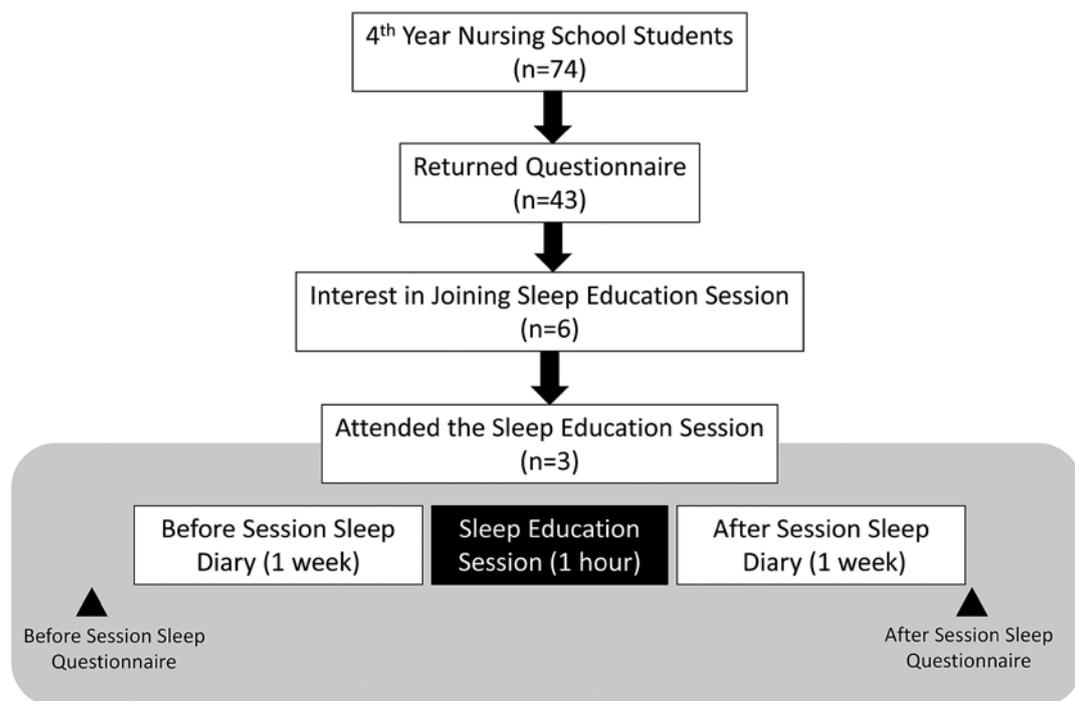


Figure 1. Diagram of Study Design and Participants
Number of participant of the study and the timing of evaluation before and after sleep education session.

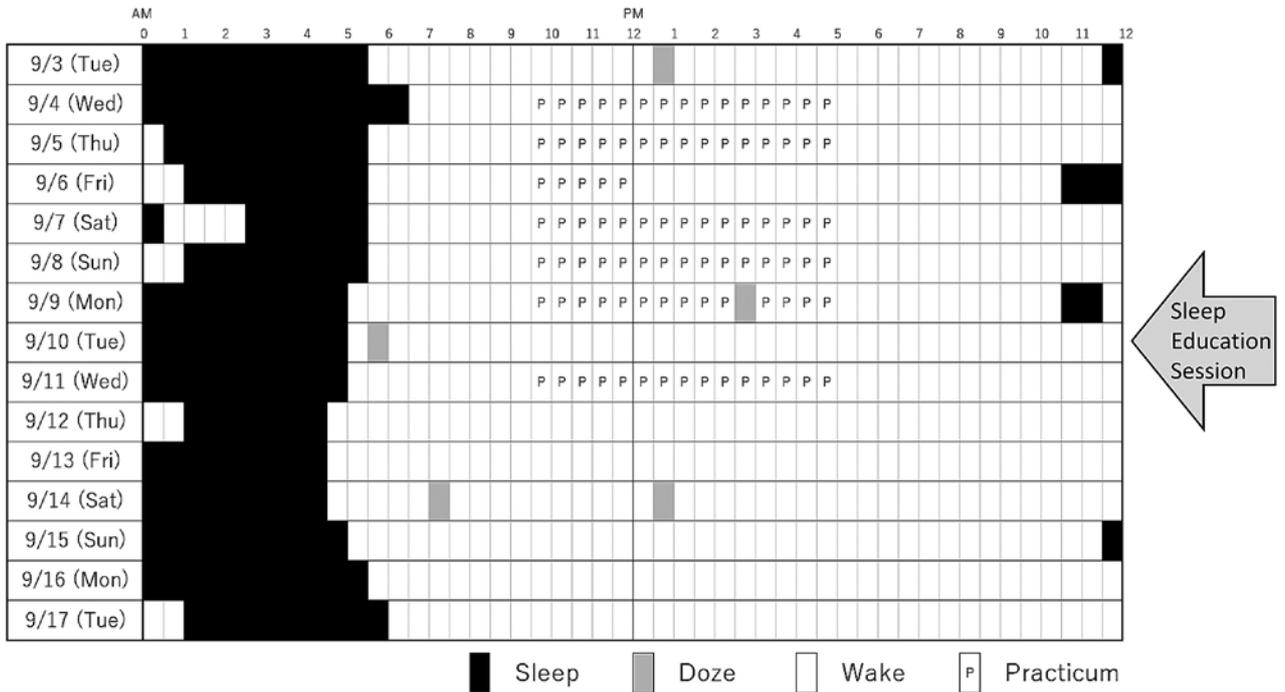


Figure 2. Student 1's sleep diary before and after the sleep educational session

Delayed bedtime on days with practicum.

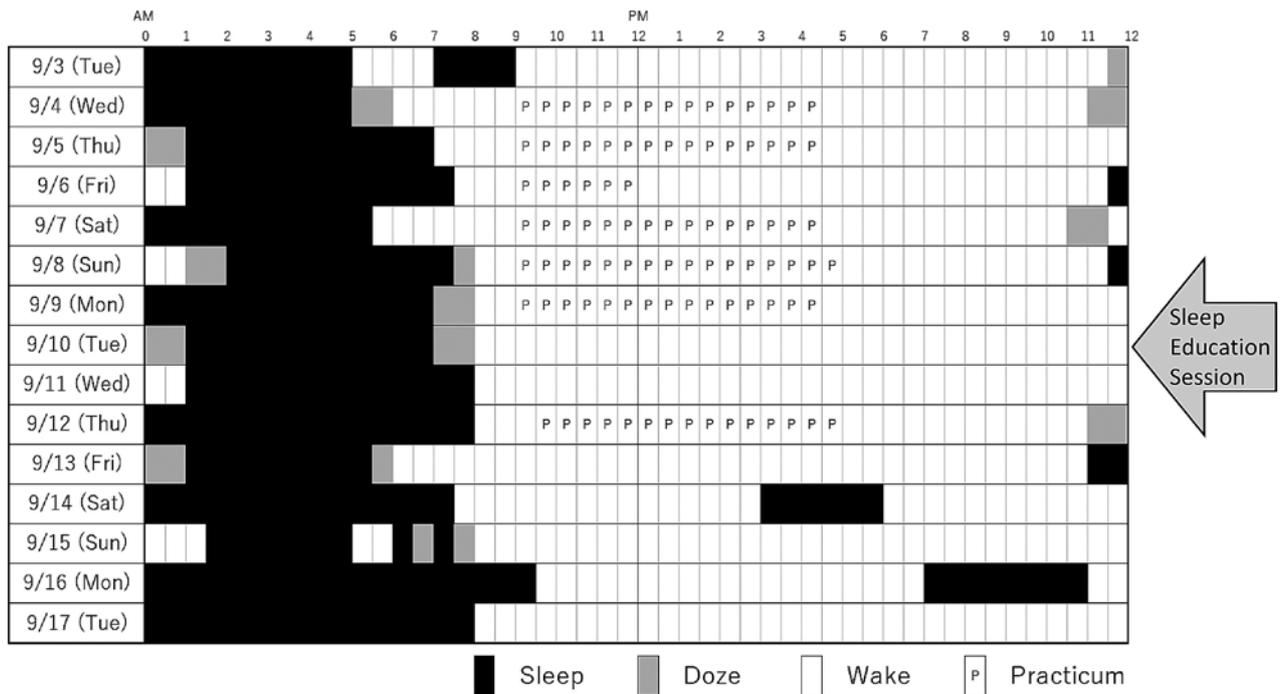


Figure 3. Student 2's sleep diary before and after the sleep educational session

Sleep duration was extended after the sleep education session, but some of the sleep episodes were in the afternoon.

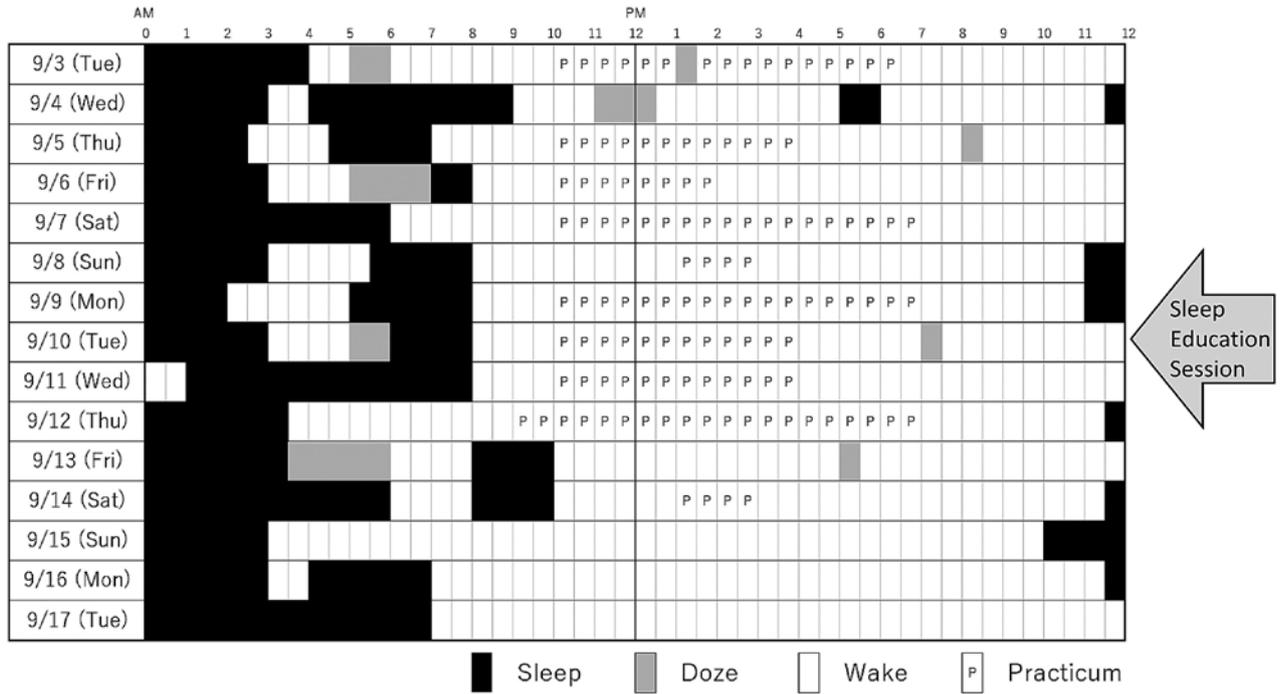


Figure 4. Student 3's sleep diary before and after the sleep educational session

Awakening in the middle of the night was less prominent after the session.

