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Exploring Sleep Health Among Occupational Therapy Students

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Abstract

A substantial number of health-professional graduate students do not follow the national recommendation of obtaining at least seven hours of sleep per day. Decreased sleep duration and quality are strongly associated with daytime sleepiness and dysfunction, academic burnout, low academic performance, and mental health symptoms and disorders. However, limited research exists on sleep health among occupational therapy (OT) graduate students. Thus, the purpose of this study was to explore OT graduate student perspectives on sleep and to measure their sleep duration, quality, and practices to inform sleep promotion strategies for increased student well-being. A mixed-method study with a cross-sectional design was conducted. Occupational therapy graduate student participants engaged in a focus group and completed the Sleep Practices and Attitudes Questionnaire (SPAQ) along with a survey of demographic characteristics. Nineteen participants completed all aspects of the study. Participants slept an average of 6.75 hours per weekday night and rated their sleep quality an average of 3.47 out of 5 on a Likert scale (1: restless; 5: restful). The majority of participants (68.4%; n=13) reported feeling unrefreshed upon waking, and 78.9% (n=15) reported tiredness during the day. Three major themes emerged from the focus group data: 1) *sleep prioritization and practice*, 2) *sleep knowledge versus action*, and 3) *occupational balance*. This study is one of the first to assess sleep health among OT graduate students. Findings contribute to sleep health literature and may guide programming in sleep health promotion and graduate student well-being.

Keywords

Occupational therapy, graduate students, sleep, well-being

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ABSTRACT

A substantial number of health-professional graduate students do not follow the national recommendation of obtaining at least seven hours of sleep per day. Decreased sleep duration and quality are strongly associated with daytime sleepiness and dysfunction, academic burnout, low academic performance, and mental health symptoms and disorders. However, limited research exists on sleep health among occupational therapy (OT) graduate students. Thus, the purpose of this study was to explore OT graduate student perspectives on sleep and to measure their sleep duration, quality, and practices to inform sleep promotion strategies for increased student well-being. A mixed-method study with a cross-sectional design was conducted. Occupational therapy graduate student participants engaged in a focus group and completed the Sleep Practices and Attitudes Questionnaire (SPAQ) along with a survey of demographic characteristics. Nineteen participants completed all aspects of the study. Participants slept an average of 6.75 hours per weekday night and rated their sleep quality an average of 3.47 out of 5 on a Likert scale (1: restless; 5: restful). The majority of participants (68.4%; n=13) reported feeling unrefreshed upon waking, and 78.9% (n=15) reported tiredness during the day. Three major themes emerged from the focus group data: 1) *sleep prioritization and practice*, 2) *sleep knowledge versus action*, and 3) *occupational balance*. This study is one of the first to assess sleep health among OT graduate students. Findings contribute to sleep health literature and may guide programming in sleep health promotion and graduate student well-being.

BACKGROUND

People spend about one-third of their lives sleeping or attempting to sleep (United States [U.S.] Bureau of Labor Statistics, 2015), a life-sustaining activity that is critical for health and well-being (Institute of Medicine, 2006). Research shows that sleep affects immune function, metabolism, memory, learning, mood, behavior, and performance (Division of Sleep Medicine at Harvard Medical School, 2007; Doyle & Zakrajsek, 2013;

Shepard et al., 2005). Adults who sleep less than the seven recommended hours per day are more likely to suffer from chronic illness such as heart attack, stroke, chronic obstructive pulmonary disease, cancer, depression, and diabetes (Centers for Disease Control and Prevention, 2014). The cumulative effects of sleep deprivation are also associated with an increased risk of overall mortality and injuries, costing hundreds of billions of dollars on direct medical costs related to sleep problems (Institute of Medicine, 2006). Since 50 to 70 million adults suffer from a sleep or wakefulness disorder in the U.S., the Institute of Medicine (2006) named sleep disorders and sleep deprivation a major public health issue. This prompted the Centers for Disease Control and Prevention (2015) to declare insufficient sleep as a public health epidemic.

Health-professional graduate students are a part of the general population at risk for insufficient sleep. Data reveal that a substantial number of students do not follow the American Academy of Sleep Medicine and Sleep Research Society's recommendation which suggests that adults ages 18 to 60 obtain at least seven hours of sleep per night (Alsaggaf, Wali, Merdad, & Merdad, 2016; Watson et al., 2015; Zeek et al., 2015). Studies also demonstrate that inadequate sleep is strongly associated with academic burnout (Arbabisarjou et al., 2016), mental health disorders and symptoms (Augner, 2011; Concepcion et al., 2014; Gobin, Banks, Fins, & Tartar, 2015; Haregu et al., 2015; Nyer et al., 2013; Rose et al., 2015), and low academic performance (BaHamman, Alaseem, Alzakri, Almeneessier, & Sharif, 2012; Gaultney, 2010; Hershner & Chervin, 2014; Mirghani, Mohammed, Almurtadha, & Ahmed, 2015; Zeek et al., 2015) among undergraduate and health-professional graduate students. Clearly, there is a need for sleep health education and guidance in sleep health behavior change among a population that will become future leaders in healthcare.

Additionally, studies have found that the majority of graduate medical students have poor sleep quality, which is strongly associated with daytime sleepiness and dysfunction (Preisegolaviciute, Leskauskas, & Adomaitiene, 2010; Zailinawati et al., 2009). Medical students' sleep quality is also found to be significantly worse than a healthy adult normative sample (Brick, Seely, & Palermo, 2010). Globally, there is a high prevalence of sleep problems as well as insufficient self-awareness of sleep and general sleep health knowledge among undergraduate medical students (Azad et al., 2015). Despite clear evidence on the associations between sleep and academic performance, health, and well-being, students generally do not express immediate urgency in taking action on improving their sleep health habits (Coveney, 2013). Thus, the high prevalence of sleep deprivation, lack of sleep health awareness and education, and low prioritization of sleep health due to cultural attitudes and values (Coveney, 2013) among health-professional graduate students suggest a need for change.

Occupational therapists (OTs) are well-positioned to address sleep as the guiding framework for the profession explicitly identifies sleep as an important occupation (American Occupational Therapy Association [AOTA], 2014). In OT, sleep is a foundational activity that directly affects performance, participation, and engagement in waking occupations (AOTA, 2017). The emerging field of sleep health which focuses on promoting sleep-wakefulness patterns adapted to individual, social, and environmental

demands to promote well-being (Buysse, 2014), aligns with OT's philosophy to achieve health and well-being through engagement in occupation (AOTA, 2014). As such, sleep quality satisfaction, sleeping at appropriate times within the day, following the total recommended amount of sleep per day, falling asleep easily, and maintaining attentiveness when awake (Buysse, 2014) are all areas of sleep health in which OTs can assess and intervene.

Despite sleep health's relevance for future clinical practice and student learning, health, and well-being, there is a gap in the sleep health literature among OT graduate students. Therefore, the purpose of the study was to 1) gather and assess baseline information on OT graduate students' views on sleep and 2) measure their sleep duration, quality, and practices as a preliminary phase in promoting sleep health to increase OT student well-being, contribute to the sleep health literature, and address the current public health epidemic.

METHOD

Theoretical Framework

The study was based on the Health Belief Model (HBM; Glanz & Bishop, 2010) and the Person-Environment-Occupation-Performance (PEOP) Model (Christiansen, Baum, & Bass, 2015). The HBM is a widely recognized health behavior theory asserting that people's beliefs about whether they are at risk for a disease or health problem, and their perceptions of the benefits of taking action to avoid it, influence their readiness to take action (Glanz & Bishop, 2010). It has been applied most often for health concerns that are preventable (Glanz & Bishop, 2010), which is appropriate for this study, as this project sought to promote sleep health and well-being by informing future health behavior interventions that may prevent poor sleep behaviors. The study also identified individual perceptions and modifying factors, and likelihood of action (Glanz & Bishop, 2010) in order to design health behavior interventions related to sleep behaviors.

The PEOP Model is a model for OT practice focusing on three domains: 1) person factors, which involve an individual's cognition, physiology, sensorimotor abilities, spirituality, and psychology; 2) environment factors, which involve culture, social determinants, education, social capital, technology, and the physical and natural environment; and 3) occupations, which involve activities, tasks, and roles, all of which influence performance, participation, and well-being of individuals, organizations, and populations (Christiansen et al., 2015). Perception, meaning, attitudes, and motivations behind an individual's personal narrative (Christiansen et al., 2015) are taken into account in addition to the three domains; thus, the study identified participant narratives and assessed person and environment factors as they relate to the occupation of sleep in order to increase well-being.

Study Design

The study used a mixed-methods cross-sectional design. A qualitative component involving focus group methodology was conducted, and a quantitative component involving questionnaires was utilized.

Participants

Participants were self-selected first, second, and third-year students recruited from a Midwestern OT program via email during the month of September 2018. To be included in the study, participants had to be enrolled, full-time in the OT graduate program. Students who were part of the primary student researcher's laboratory were excluded from the study.

INSTRUMENTS

Demographic Questionnaire

A demographic questionnaire was distributed via online survey to all participants to collect participant characteristics including age, gender, race/ethnicity, and class year. Questions included whether participants had ever been diagnosed with a sleep disorder, and whether or not participants had ever discussed their sleep with a healthcare provider.

Focus Groups

Ten open-ended focus group questions (see Table 1) were designed by the primary student researcher to identify and discuss attitudes, beliefs, and values of sleep. The questions were developed based upon the HBM and PEOP Model, project goals, current literature, and feedback from the research team. Focus groups incorporated questions that directly connected the concept of sleep health to occupation, such as, "Do you believe your waking occupations are hindered due to lack of sleep and/or poor quality of sleep? And if so, what are the barriers?"

Table 1

Focus Group Questions

Focus Group Questions
1. Do you prioritize sleep in your daily life? Why or why not?
2. Describe your typical sleep routine.
3. Do you believe your waking occupations are hindered due to lack of sleep and/or poor quality of sleep? And if so, what are the barriers?
4. Have your sleep habits changed since starting graduate school? If so, what factors contributed to that change?
5. Do you think sleep impacts your learning and role as a student? Please elaborate.
6. How have you experienced the effects of sleep health, whether good or poor, on your physical and mental health?
7. What do you think could improve your sleep health?
8. What factors impact your sleep health both positively and negatively?
9. Do you think culture and society plays a role in how you view and prioritize sleep? Please elaborate.
10. Would you participate in health behavior change interventions targeting sleep health? Do you think it is needed? Please explain.

Sleep Practices and Attitudes Questionnaire (SPAQ)

To supplement and triangulate focus group responses, the Sleep Practices and Attitudes Questionnaire (SPAQ; Grandner, Jackson, Gooneratne, & Patel, 2013) was used to quantitatively assess sleep attitudes and practices. The SPAQ was developed to capture how and why people sleep the way they do in the real world and was built around health behavior theory (Grandner et al., 2013). It is a comprehensive rating instrument with 151 individual items across 16 subscales that includes 1) sleep duration, 2) sleep debt, 3) sleep quality, 4) sleepiness/tiredness, 5) coping with sleepiness, 6) coping with acute insomnia, 7) coping with chronic insomnia, 8) activities in bed, 9) sleep environment, 10) knowledge, 11) importance, 12) impact on sleep, 13) impact of sleep, 14) self-efficacy, 15) sleep and health, and 16) social norms. The scale is designed to be descriptive and modular; therefore, items deemed not relevant to the study may be eliminated. Most subscales in the SPAQ demonstrate moderate to high internal consistency, and it takes ten minutes to complete (Grandner et al., 2013).

Procedures

The study was approved by the Institutional Review Board affiliated with the study site prior to recruiting students through email. Participants were separated into four focus groups, with four to six participants in each group. Copies of the SPAQ were distributed at each of the focus group sessions. Participants signed a letter of consent at the beginning of the session. Participants then completed the SPAQ prior to the focus group discussion. Each focus group session lasted one hour. The primary student researcher served as the moderator and was responsible for facilitating discussion using the prepared questions, prompting participants to speak, and taking notes that informed potential emergent questions (Onwuegbuzie, Dickison, Leech, & Zoran, 2009). A note-taker was present, and the discussion was recorded, then manually transcribed verbatim. Participants were sent a link to the demographic questionnaire that was completed following the focus group discussion.

Data Analysis

Transcript-based analysis was used to assess each focus group discussion. Transcripts were analyzed alongside field notes taken by the moderator. Constant comparison analysis was used to code the data in three major stages: 1) data was chunked into small units, and a descriptor (code) was attached to each of the units, 2) codes were grouped into categories, and 3) themes were developed to express the content of each category (Onwuegbuzie et al., 2009). Methodological triangulation was used to enhance the reliability and validity of collected data and reduce systematic bias; this involved multiple readings by three different coders, including the primary student researcher and two additional faculty members, all of whom have been trained in qualitative data analysis. An audit trail was developed to track decisions made during the process of identifying codes, categories, patterns, and themes from the data so as to ensure consistency between the data and findings (Letts et al., 2007).

Participant characteristics were summarized using descriptive statistics. Mean sleep duration was calculated, and frequency distributions in the form of percentages were used to express sleep quality and practices from the SPAQ. SPAQ items directly related

to sleep practices, quality, duration, and values were analyzed. Data were analyzed using IBM Statistical Package for the Social Sciences (IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.).

RESULTS

Participant Characteristics

Table 2 shows the characteristics of the study population. A total of 19 participants, aged 22 to 33 years old (25.58 ± 3.20), participated in this study. The majority of participants were white females. Of the participants, more than half (57.9%) were on the Master's of Occupational Therapy (MSOT) track and in their third year of school or second-year students on clinical rotations. In addition, 42.1% of participants reported having discussed sleep with a healthcare provider in the past, and 10.5% reported having a sleep disorder diagnosis, either presently or in the past.

Table 2

Participant Characteristics

Characteristic	*M* (*SD*)	*n* (%)
Age (years)	**25.58** (3.20)	
22-33		
Gender		
Female		16 (**84.2**)
Male		3 (15.8)
Race/ethnicity		
Asian (Central, East, South)		1 (5.3)
Black/African-American		1 (5.3)
White/Caucasian		17 (**89.5**)
Degree		
Master's (MSOT)		11 (**57.9**)
Clinical Doctorate (OTD)		8 (42.1)
School year		
1st		2 (10.5)
2nd		6 (31.6)
3rd		11 (**57.9**)
Have you ever discussed sleep with a healthcare provider?		
No		11 (**57.9**)
Yes		8 (42.1)
Have you ever been diagnosed with a sleep disorder?		
No		17 (**89.5**)
Yes		2 (10.5)

Note. Third-year students included those who were on fieldwork at the time of the study.

SPAQ Data

Table 3 shows students' self-reported rating of sleep quality in the past week, sleep duration during weekdays and weekends in the past week, and how much sleep participants think they need each night. The mean quality of sleep among participants was 3.47, or slightly more restful than restless. Participants cited sleeping an average of 6.75 hours per night during weekdays/workdays and an average of 7.97 hours per night on weekends/vacation days during the past week. In addition, when asked how many hours of sleep are needed per night, the average sleep duration was 7.74 hours.

Table 3

Sleep Quality and Duration

SPAQ Item	Min	Max	*M* (*SD*)
During the past week, how was the quality of your sleep? (1: Restless – 5: Restful)	2	5	**3.47** (0.96)
Hours of sleep each night on weekdays/workdays during the past week	5.5	8.5	**6.75** (0.89)
Hours of sleep per night on weekends/vacation days during the past week	7	9	**7.97** (0.72)
Hours of sleep you think is needed per night?	6	8.5	**7.74** (0.69)

Table 4 shows the percentage of students' perceptions of daytime wakefulness/ sleepiness, current bedsharing practices, and whether or not their family emphasized the importance of sleep. The majority of students (68.4%) reported feeling unrefreshed in the morning, and 78.9% reported feeling tired during the day, with 36.8% falling asleep sometimes during the day. Most students sleep alone (73.7%), and more than half of participants (57.9%) reported that their parents emphasized the importance of sleep.

Table 4

Daytime Effects, Bedsharing Practices, and Family Values

SPAQ Item	Yes *n* (%)	No *n* (%)
In the morning, do you usually feel refreshed?	6 (31.6)	13 (**68.4**)
Are you usually tired during the day?	15 (**78.9**)	4 (21.1)
Do you sometimes fall asleep during the day?	7 (36.8)	12 (**63.2**)
Regularly share your bed with your spouse/partner?	6 (31.6)	13 (**68.4**)
Do you regularly share your bed with your pet(s)?	4 (21.1)	15 (**78.9**)
Do you regularly sleep alone?	14 (**73.7**)	5 (26.3)
Growing up, did your parents emphasize the importance of sleep?	11 (**57.9**)	8 (42.1)

Table 5 shows how strongly participants agreed that they practice sleep hygiene behaviors. The majority (89.5%) of students agreed that they tried to sleep more or better at night and engaged in physical activity (63.2%) if they felt sleepy during the day. There were mixed views about napping, and most participants (78.9%) reported caffeine intake as a result of feeling sleepy. If students were having trouble falling asleep, the majority (84.2%) agreed they would try staying in bed, and almost all agreed they would avoid substance use. If students were having trouble falling asleep over a period of time, all students reported they would try going to bed at an appropriate time, and most would change their sleep schedule, modify their sleeping environment, or make sleep a priority. Lastly, students reported that they practiced various occupations other than sleep in bed, such as reading or spending time worrying or thinking.

Table 5

Sleep Practices

SPAQ Item	**Agree**	**Unsure**	**Disagree**
I try to do the following if I am feeling sleepy during the day:	**n (%)**	**n (%)**	**n (%)**
Sleep more/sleep better	**17 (89.5)**	1 (5.3)	1 (5.3)
Nap during the day	8 (42.1)	1 (5.3)	**10 (52.6)**
Caffeine	**15 (78.9)**	--	4(21.1)
Exercise/physical activity	**12 (63.2)**	4 (21.1)	3 (15.8)
I never feel sleepy	2 (10.5)	1 (5.3)	**16 (84.2)**
I would try the following if I have trouble sleeping tonight:			
Stay in bed and get some rest	**16 (84.2)**	2 (10.5)	1 (5.3)
Do something in bed (e.g. read)	**11 (57.9)**	1 (5.3)	7 (36.8)
Get up and read or watch TV	4 (21.1)	4 (21.1)	11 (57.9)
Eat or drink something	5 (26.3)	1 (5.3)	13 (68.4)
Drink alcohol	--	1 (5.3)	**18 (94.7)**
Smoke a cigarette	--	--	**19 (100)**
Drink a caffeinated beverage	2 (10.5)	--	**17 (89.5)**
Get up and start the day	4 (21.1)	3 (15.8)	**11 (57.9)**
I would try the following if I were having trouble sleeping over a period of time:			
Take sleep medication	**10 (52.6)**	4 (21.1)	5 (26.3)
Ensure mattress is comfortable	**7 (36.8)**	6 (31.6)	6 (31.6)
Go to bed at a good time	**19 (100)**	--	--
Adjust bedroom lighting	**15 (78.9)**	2 (10.5)	2 (10.5)
Adjust bedroom temperature	**18 (94.7)**	1 (5.3)	--
Change my sleep schedule	**17 (89.5)**	1 (5.3)	1 (5.3)
Reduce my caffeine intake	**11 (57.9)**	1 (5.3)	7 (36.8)
Make sleep a priority	**14 (73.7)**	3 (15.8)	2 (10.5)

Table 5 Continued SPAQ Item	Agree	Unsure	Disagree
Read	**15 (78.9)**	--	4 (21.1)
Watch TV	**10 (52.6)**	--	9 (47.4)
Eat or drink	7 (36.8)	1 (5.3)	**11 (57.9)**
Worry or spend time thinking	**16 (84.2)**	1 (5.3)	2 (10.5)
Argue or be angry	4 (21.1)	4 (21.1)	**11 (57.9)**
Do work	**11 (57.9)**	1 (5.3)	7 (36.8)

Focus Group Data

Three main themes emerged from the data: 1) *sleep prioritization and practice*, 2) *sleep knowledge versus action*, and 3) *occupational balance*. Each theme contained two subthemes, described in Table 6, and is supported with participant exemplars. A recurrent emphasis on the impact of the environmental context on sleep occurred across all themes.

Sleep prioritization and practice. How highly participants prioritized their sleep and performed good sleep practices depended upon their daily context. Two subthemes emerged: 1) *immediate consequences* and 2) *environmental context*.

1) *Immediate consequences.* Immediate consequences were related to the direct effect lack of sleep had on daytime functioning and how the severity of those consequences influenced sleep prioritization. For some participants, lack of sleep was not perceived as a factor that affected occupational performance, and thus, was not heavily prioritized: “I need my sleep, but I’m not to the point where... like I have never fallen asleep at the wheel driving or other things like that where I definitely see like, “Oh, I need sleep.” Others, did perceive poor sleep to be detrimental enough in their daily lives to warrant prioritization: “I prioritize sleep, because I’m one of those people that does not function well without sleep.”

2) *Environmental context.* Context was a major factor in shaping sleep prioritization and practice. Participants attributed the social, work, school, cultural, and temporal contexts as playing a large role in their sleep values and daily practices.

Social context. The influence of significant others, friends, family, and other people within participants’ lives heavily affected sleep prioritization. Participants frequently stated that spending time with loved ones and socializing was an important part of their daily lives that sometimes cut into time for sleep: “...I have my family that I wanna spend time with, and we get into conversation, and then things get pushed back, and I... yeah, go to sleep later.” In addition, for those with sleeping partners, partner sleep habits often influenced participant sleep.

Productivity context. The school and work contexts often shaped participant perceptions on the importance of sleep in their daily lives as well as their practice: “So I often times work at night. I babysit for my extra income, and so my sleep schedule is very dependent on when parents will get home... they could book me up till 11:30, 12 o’clock

at night, and that's when I get home..." Various financial situations required some participants to include more employment opportunities in their daily schedules, which included night time. Additionally, school assignments and studying were very important occupations that most participants wanted to complete first before going to sleep.

Cultural context. Societal expectations regarding the importance of sleep and academic cultural perceptions on the nature of graduate student life were overarching influences on sleep attitudes and practices: "'Sleep is for the weak' I feel like gets said, or, 'I'll sleep when I'm dead'... that somehow getting a lot of sleep is not tied to living a rich and full life full of experiences..." Participants were aware of implicit and explicit messages on productivity equaling success and shared examples of how family members, peers, and schools promoted the idea of striving for more productivity rather than communicating or modeling success as one that incorporates balance. It was noted that U.S. culture, in particular, heavily praised economic productivity while some other countries also valued rest, such as including time for napping during the middle of the work day.

Temporal context. It is also important to note that participants were in a unique stage of life as graduate students, and thus, viewed their context through a life transition perspective: "...sleep remains a priority, but I guess it's lower than the priority of getting things prepared for the next day. And I'm currently in a new season of my life for a few weeks where there's a lot of prep for the next day." Participants highlighted the fact that graduate school was an important milestone in their lives which, along with its temporariness, influenced their mindset of attending to present, school-related tasks first and considering the importance of rest once they have moved on to the next life milestone. Many participants commented on the transition from undergraduate or work to graduate school as a strong factor in managing sleep habits—time elapsed between college and graduate school were discussed as time to develop healthier habits that could carry over into graduate school life.

Sleep knowledge versus action. Participants were aware that sleep was objectively important for their daily functioning but did not necessarily put that knowledge into action. Two subthemes emerged: 1) *sleep knowledge* and 2) *health behavior change*.

1) *Sleep knowledge.* Participants had basic sleep knowledge and understood how sleep affected their functioning, especially as it related to their student role and occupations: "...the ability to pay attention during class and like student role things I feel really, for me, get impacted if I don't get enough sleep." There was general awareness about sleep hygiene, appropriate sleep duration, and personal understanding in changes in sleep quality. In particular, participants underscored changes in cognition, mood, ability to handle stress, engagement, and academic performance when not having adequate sleep in their daily lives: "...when I don't get enough sleep, I have a hard time remembering things and sustaining attention, so it affects my ability to participate in group projects or complete an assignment and pay attention in class..."

2) *Health behavior change.* Sleep knowledge and ways to improve sleep were not always reflected in practice despite their desire to implement changes: “I would like [sleep] to be a priority, and I’ve tried to sort of institute a sleep schedule.” Though there was a general understanding about the benefits of consistent sleep schedules, environmental changes, and other strategies, participants did not necessarily incorporate those changes into their daily lives, or they incorporated changes sometime but not consistently enough to change their sleep habits. Overall, most participants expressed challenges in practicing sustainable and optimal sleep routines.

Occupational balance. Daily occupations were not considered to be well-balanced, and thus, impacted how much time was devoted to sleep. Two subthemes emerged, including: 1) *impact of a structured schedule* and 2) *perception of time use*.

1) *Impact of a structured schedule*. Stark contrasts were noted among participants regarding differences in consistent sleep on days with little structure versus days with a set schedule: “I’m trying to sleep more now, and I think having more of a structured day, I don’t feel as tired throughout the day as I did during classes when classes were not always the same type of schedule.” In addition, participants noted differences with their sleep with a classroom schedule versus with a fieldwork schedule; classroom schedules varied throughout the week which tended to make sleep schedules inconsistent, whereas fieldwork schedules were more structured, and therefore, helped participants schedule their sleep. When daily activities were allotted specific times, participants were more in tune with scheduling wellness-related occupations, such as sleep, to create some balance into each day.

2) *Perception of time use.* When a day’s worth of time was perceived to have been spent mostly on productivity-related activities, participants felt less occupationally balanced, and therefore, felt that they did not have enough time to make room for sleep in their daily schedule: “I’ve had a lot of conversations recently with people about just balance in this program and having the time for your leisure activities that make you feel whole. And then also enjoying and being well-focused in the program is difficult to do that and also sleep...” Participants simply felt there were not enough hours in a day devoted to taking care of their mental and emotional needs through intrinsically enjoyable activities on top of ensuring a proficient amount of sleep each night.

Table 6

Themes, Subthemes, and Thematic Exemplars

Theme	Subtheme	Exemplar listed by participant number
Sleep prioritization and practice	Immediate consequences	**03:** "I just value my day too much...I don't wanna be groggy. I wanna be able to remember things. I wanna be there and present..." **15:** "I have a health condition that can be exacerbated if I don't keep a regular sleep schedule..." **05:** "[I don't prioritize sleep], because I found out over the last several years that I'm exceptionally good at performing my daily life with little sleep... or at least less than the recommended."
Environmental context	Social context	**01:** "... the social communication with my long-distance fiance is a barrier, because he is two hours behind, and we don't talk during the day, so I feel like I have that relationship obligation to communicate with him... that precious window of time that we can communicate is small..."
	Productivity context	**06:** "I feel like it really depends on how stressful the week is, because generally, I prioritize sleep, but when we have a lot of tests that week or something, I tend to prioritize studying or preparing myself for the test more so than the sleep." **01:** "I don't have a [sleep] routine, because of just the variability of I could work..."
	Cultural context	**01:** "...being a first-year grad school student... 'This is the culture' like, 'I have to do all this stuff like it's rigorous' you know, and like, 'Because of that you're gonna sleep less,' you know, 'We're technically in a med school,' you know, so like things like that where you have that... I wish someone would've told me that last year like, 'It's okay. You don't have to do that. You can sleep instead.'"

	Temporal context	**01:** "I'm in this transitional season where I'm in school, and this is what's required of me, and so, 'This is what grad school students do. They don't sleep very much.' And so I'm writing off the sleep that I need..."
Sleep knowledge versus action	Sleep knowledge	**04:** "... I have blackout curtains, I have figuring out what I need to not have my sleep be interrupted by early morning sunlight or neighbors walking around or those kinds of things ..." **18:** "Routine would help for me. Just like having a routine and actually sticking to it every night." **14:** "...my mom specifically always emphasizing how important sleep is and how it helps with your immune system and your mental and physical health. I know there's research out there about how lack of sleep can be correlated to gaining weight and other chronic diseases."
	Health behavior change	**04:** "It's that piece between knowing and believing [sleep health] applies to you, or knowing and believing that you can do it or prioritize it."
Occupational balance	Impact of a structured schedule	**09:** "...when I had two 8 o'clock mornings, and a 10:30 morning, and, you know, all over the place, then it was really hard to have a regular exercise routine in the morning or to eat well often enough in the morning, and other things that that might also affect my health, because I'm prioritizing sleep on those days when it's only gonna leave me this much room between getting up and taking a quick shower and having a cup a coffee, get in the car, go to school. Then my sleep then affects other aspects of my health and routine. Which probably in turn affects my sleep quality..."

	Perception of time use	**09:** "...sometimes when I've worked until 9, then I'll feel cheated out of my leisure time, and so maybe even though I should go to bed, 'cause then I would get all the sleep I needed, I will go ahead and spend an hour or two doing leisure activity that I want to do just 'cause I really want to do it. Because it does make me feel normal, it's enjoyable or relaxing at that time even if it eats into my sleep time."

DISCUSSION

This study explored attitudes and practices surrounding sleep health among OT graduate students. Focus group results suggest that OT graduate students prioritize sleep based on their situational context, have a basic understanding of sleep and effects of sleep on daily occupations, and experience occupational imbalance which makes time for sleep challenging. These findings are reflected in the SPAQ data: daytime occupations are affected by sleep, and OT graduate students display knowledge on sleep hygiene strategies to improve their sleep health, though less than half reported trying to prioritize sleep as a strategy to improve sleep. In addition, although the majority reported attempting to improve sleep through various sleep hygiene practices, quantitative data show areas in which sleep hygiene was not practiced at the time.

As such, findings from this study provide insight on the complex factors involved in sleep prioritization and practice. Similar to U.S. undergraduate and graduate level health-professional students from around the world in previous studies (Alsaggaf et al., 2016; Gaultney, 2010; Watson et al., 2015; Zeek et al., 2015), the majority of OT students did not consistently meet national sleep recommendations of at least seven hours of sleep per night, experienced daytime sleepiness that may impact occupational performance and participation, and experienced changes in mood and cognition from lack of sleep. In addition, the majority of students from this study reported inconsistencies with sleep prioritization in their daily lives due to competing interests in maintaining a work-school-life balance, which is in line with qualitative research from Coveney (2013) in which environmental context largely shapes student attitudes on sleep prioritization.

Contrasted with undergraduate and graduate medical students, OT graduate students seemed to have less sleep problems, more sleep knowledge, and better sleep quality based on the results of this study. For example, there is a high prevalence of sleep problems as well as insufficient self-awareness on sleep knowledge among undergraduate medical students around the world (Azad et al., 2015), whereas this study found a 10.5% prevalence of sleep disorders and a basic understanding of sleep hygiene principles among OT graduate students, indicating less prevalence of sleep problems and more sufficient sleep knowledge among this population compared with undergraduate medical students. Likewise, studies have found that the majority of graduate medical students have poor sleep quality (Preisegolaviciute, Leskauskas &

Adomaitiene, 2010; Zailinawati et al., 2009). Our findings suggest that OT graduate students experience fair, but not necessarily good sleep quality, indicating better subjective sleep quality than those of graduate medical students.

Despite some evidence of better sleep heath indicators relative to other health-professional students (Azad et al., 2015; Preisegolaviciute et al, 2010; Zailinawati et al., 2009), there are still many aspects of sleep health that could be improved among OT graduate students, namely sleep duration, sleep quality, and consistent sleep hygiene behaviors. However, based upon qualitative results, sleep duration, quality, and hygiene practices are largely determined by individual attitudes and perceptions on the importance of sleep and awareness of sleep's effects on daytime performance, participation, and quality of life. Therefore, sleep strategies and recommendations need to be realistic given that a knowledge gap is not the main challenge, rather the issue is related to actual and perceived demands on one's time in addition to the individual's unique situational context. Understanding the subjective experience of sleep and its relationship with the objective measures of sleep duration, quality, and practices will greatly inform effective sleep health behavior change to improve OT graduate student learning, health and well-being.

Limitations and Future Research

A few limitations existed within this study. First, the sample size of the study is relatively small compared with sample sizes of participants in previous research addressing sleep. Second, the sample population only reflects the views and nature of sleep health within one OT program which may not reflect the perspectives and sleep practices of the OT student population at large. Additionally, the cross-sectional design of the study captures the sleep duration and quality in a one-week time frame as opposed to assessing sleep over a longer period. Furthermore, the focus groups were conducted by the lead author which may have introduced bias into the qualitative results. Lastly, all instruments generated self-reported data; therefore, sleep quality and duration are the subjective experiences of students. As such, future research would benefit from larger scale studies that incorporate a variety of measurement tools, including objective measures of actual sleep obtained, and that analyze relationships between variables to generate an even greater understanding of the factors associated with sleep health and well-being among OT graduate students. These may include research analyzing any correlative relationships between student sleep, stress, exercise, and nutrition.

Implications for Occupational Therapy Education

Since OT is a profession that includes sleep as part of its scope of practice (AOTA, 2014), it is important that OT graduate students practice good sleep health and understand its implications for their learning, health, and well-being as well as their future clinical practice. Increased awareness and education on sleep as an occupational domain should be incorporated more explicitly in OT graduate school curriculum to highlight its contribution to health and well-being. This may include increasing opportunities to gain knowledge, skills and experience in sleep and wellness areas such as opportunities for research and incorporating evidence on sleep's impact on daytime functioning and learning in curriculum development, instructional design, and learning

activities. A combination of adding explicit content about sleep into OT education and learning experiences that seek to bridge the gap between theory and sleep behavioral change among OT graduate students could greatly impact how sleep knowledge is transferred outside the classroom. Evidence-based and occupation-centered sleep education provided to future clients when students enter the professional workforce may involve client and caregiver education, professional and educational leadership, and interprofessional education to improve public health and well-being, quality of life, and participation.

CONCLUSION

To our knowledge, this study is one of the first to explore the nature of sleep health among graduate level OT students. Optimal sleep health is complex and not well understood due to the influence and interactions of personal and environmental factors (Matricciani et al., 2017). Sleep health clearly cannot be effectively addressed without addressing the values, attitudes, and practices surrounding it and using a holistic and occupation-based approach to interventions. Therefore, it is important to consider students' sleep health within the context of their specific situation, particularly the social, cultural, and academic contexts, and how those factors influence the attitudes and health behaviors that serve to promote or hinder the occupation of sleep. Though this was a small study that may not be generalizable to the OT graduate student population, findings from the study set the stage for an innovative educational model that includes a focus on student health and wellness to promote OT graduate student well-being. Additionally, adding to the sleep literature will only serve to create opportunities for various healthcare disciplines to find effective ways to collaboratively address an issue that impacts all populations.

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