THE CLINICAL REASONING BEHIND THE APPLICATION OF SLEEP ASSESSMENTS AND INTERVENTIONS IN OCCUPATIONAL THERAPY

A Thesis submitted to the faculty at Stanbridge University in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy

by

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Certification of Approval

I certify that I have read The Clinical Reasoning Behind the Application of Sleep Assessments and Interventions in Occupational Therapy by Kathleen Apostol, Kanika Eng, Patricia Librea, and Thong Vo, and in my opinion, this work meets the criteria for approving a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Occupational Therapy at Stanbridge University.

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Dedication

We dedicate our thesis project to: The Occupational Therapists who continue to advocate and inspire every day; The Occupational Therapy students who strive to become compassionate practitioners who will give meaning to lives; And the individuals who are struggling and yet, persevering—you are the reason why we are pursuing this occupation. You renew our commitment to become a capable practitioner and a better version of ourselves.

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Abstract

Sleep disruptions may impact an individual's participation and performance in many areas of occupation. Occupational therapists (OTs) can address sleep by utilizing various sleep assessments and interventions. The aim of this study was to determine and understand the clinical reasoning and the decision-making process behind how OTs select and use sleep assessments and interventions in their practice. We also sought to identify any challenges that OTs encounter in addressing sleep. We surveyed 124 participants to obtain a detailed understanding of how and why OTs select sleep assessments and interventions. The results revealed that OTs select and utilize specific sleep assessments and intervention based on convenience, environmental factors, knowledge and education, values, and client-centeredness. This study implies that there is a need for a standardized guideline for how to select sleep assessments and interventions that are reliable and valid. Furthermore, sleep assessments that are specific to the field of Occupational Therapy may assist in obtaining information to select the most appropriate sleep interventions.

Key words: sleep, sleep assessment(s), sleep intervention(s), occupational therapy, clinical reasoning, decision making, sleep disorders

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The Clinical Reasoning Behind the Application of Sleep Assessments and Interventions in Occupational Therapy

Similar to oxygen, food, and water, adequate sleep plays an essential role in sustaining physiological functions. Any disruption or insufficiency in sleep may increase one's susceptibility to brain deterioration and other health conditions as sleep influences cognitive performance, behavior, and health. Occupational therapists (OTs) can address sleep deficits with their clients by creating behavioral or environmental changes that can facilitate effective sleep routine and habits, and therefore providing a foundation for effective occupational performance.

Despite the growing research on sleep and occupational participation, sleep deprivation is an epidemic in our modern society. According to the Centers for Disease Control and Prevention ([CDC], 2015), most adults require about seven to eight hours of sleep each night. It is estimated that over one third of the adult population in the United States gets less sleep than the recommended seven-hour nightly minimum (CDC, 2015). Occupational therapy (OT) is not the sole discipline that can address sleep. Primary care physicians, neurologists, psychologists, psychiatrists, and those who specialize in sleep medicine can also aid in the treatment and/or management of sleep dysfunction (Healthline, 2016). Current research supports the direct correlation between sleep deprivation and increased risks for health disorders, decreased quality of life, and a lower lifespan **(**Perry, Patil, & Presley-Cantrell, 2013).

In 2002, sleep was acknowledged as an activity of daily living (ADL) by the American Occupational Therapy Association (AOTA). After acknowledging its significance and impact on occupational participation, rest and sleep was reclassified as a

separate entity of occupational domain in the *Occupational Therapy Practice Framework: Domain and Processes* in 2008 (Tester & Foss, 2018). This shift requires practicing OTs to view and address sleep as an individual occupation.

Statement of the Problem

Due to the significant effects of inadequate sleep on health and occupational participation, sleep difficulties are assessed and treated within the scope of OT. Because there are no specific assessments or tools for OTs to assess sleep, OTs utilize standardized and non-standardized tools from other disciplines. Despite the presence of numerous articles describing the utilization, efficiency, and effectiveness of varied sleep assessments and interventions, the reasoning behind OTs' selection and application of sleep assessments and interventions is unclear (Ganjikia & Gansor, 2015; Gutman et al., 2017; Hanish, Lin-Dyken, & Han, 2017; Leland, Marcione, Schepens Niemec, Kelkar, & Folgerberg, 2014; Mitchell, Gehrman, Perlis, & Umscheid, 2012; Saberi, Comfort, Sheon, & Johnson, 2013; Smallfield & Molitor, 2018; Tester & Foss, 2018, Wang, Chair, Ling Wong, & Li, 2016; Yeager, 2019). The lack of standardized sleep assessments in OT may contribute to the inconsistency of the process of how and why OTs choose and use sleep instruments.

The purpose of our study was to explore how OTs address sleep. Our goal was to determine and better understand the clinical reasoning and decision-making process behind the ways OTs utilize sleep assessments and interventions in their practice.

Literature Review

Social Significance

Adolf Meyer (1922), one of the earliest psychologists who supported OT as a profession, made a connection between the importance of sleep in maintaining optimal well-being and participation in purposeful activities. In order to have an occupational balance, an individual must be able to balance work, play, rest, and sleep. Sleep problems such as sleep insufficiency and disruptions are significantly linked to various physiological changes, affecting one's physical, emotional, and cognitive functioning. Short and long-term health consequences of sleep disruption include stress, somatic pain, hypertension, diabetes, and weight-related issues (Medic, Wille, & Hemels, 2017).

OT sleep assessments and interventions can promote better health, work productivity, and success among the student and working population. Hui and Grandner (2015) found that disturbance in sleep correlates with a higher rate of work absenteeism, lower work performance, and higher health care expenditure. In addition, according to Hafner, Stepanek, Taylor, Troxel, and Stolk (20l7), lack of sleep in the workforce affects labor productivity, which can negatively affect a nation's gross domestic product. Sleep interventions that focus on sleep hygiene education and on the development of healthier sleeping habits are found to improve sleep quality, reduce absenteeism, and enhance the overall quality of life of individuals in the workplace (Redeker et al., 2019). Furthermore, sleep deprivation is also highly prevalent in college students. Because sleep dysfunctions are related to impaired academic performance, unsafe driving, and poorer mood regulation, sleep education and cognitive behavioral interventions can be provided to

foster better sleep quality and to promote positive cognitive and behavioral outcomes among students (Hershner and Chervin, 2014).

As sleep quality promotes optimal performance in areas of self-care, work, and leisure, OTs should ensure that adequate sleep is achieved so clients can successfully participate in these meaningful occupations (Ho & Siu, 2018). Although utilizing a valid and reliable assessment is crucial, there is no known standardized sleep assessment specific to OT. As a result, OTs have adopted standardized sleep assessments from other disciplines or rely on non-standardized sleep assessments (Tester & Foss, 2018; Ganjikia & Gansor, 2015). While sleep assessments from the other practice areas provide valuable information about the clients' sleep, it can be a challenge for OTs to address sleep due to the lack of an assessment that aligns with OT's holistic approach.

Common Themes

Assessments. Sleep assessments allow OTs to gather and collect specific information affecting a person's quality of sleep such as daytime sleepiness, alertness, and functional impairments. Although the goal of a sleep assessment is to showcase outcomes before and after a sleep intervention, structural differences provide varying measurements between assessment tools. There are a wide number of sleep assessments currently used within OT including Patient Reported Outcomes Measurement Information System (PROMIS) and the Pittsburgh Sleep Quality Index (PSQI). Several articles mentioned OTs utilizing sleep assessments to improve sleep performance with their clients; however, none of the articles provided an explanation about why the selected sleep assessment was appropriate (Chen et al., 2010; Falloon, Elley, Fernando, Lee, & Arroll, 2015; Gebhart, Erlacher, & Schredl, 2011; Gutman et al., 2017; Ho & Siu,

2018; Hanish et al., 2017; Leland et al., 2014; Liu et al., 2016; Mitchell et al., 2012; Saberi et al., 2013; Smallfield & Molitor, 2018; Wang et al., 2016).

Much of the literature mentioned the use of PSQI as the sole sleep assessment tool for their study (Wang et al., 2016; Mitchell et al., 2012). The PSQI utilizes a Likert scale of 0-3 to help determine the level of difficulty experienced while falling asleep and gathering information about the number of hours slept and time awake (Gutman et al., 2017). Out of the 22 articles that we were able to review, three mentioned the use of the PSQI in addition to other sleep assessments (Falloon et al., 2015; Gebhart et al., 2011; Gutman et al., 2017). Alternatively, the PROMIS sleep assessments have individual sleep assessments that can be used to analyze different aspects of sleep than the PSQI. For example, the PROMIS Sleep Disturbance analyzes perceived issues with falling asleep and staying asleep while the PROMIS Sleep-Related Impairment measures self-reported tiredness, sleepiness, alertness. These subjective measurements gathered from sleep assessments like PROMIS can be paired with PSQI to better understand reasons for sleep disruptions. Lastly, 3 out of 22 articles mentioned the use of multiple sleep assessments or an actigraphy to obtain objective sleep measurements such as total sleep time, number of nighttime awakenings, and length of time required to fall asleep (Chen et al., 2010; Hanish et al., 2017; Smallfield & Molitor, 2018).

Although the articles reviewed identified which assessments were used, none provided detailed selection analysis to include important factors such as reliability, validity, and dimensionality. There is literature supporting the validity and reliability of sleep assessments like the PSQI, but few articles explain the dimensionality which analyzes the internal effectiveness of the assessment on how accurately it measures a

client's sleep experience (Manzar et al., 2018). Additionally, researchers have analyzed the appropriateness of sleep assessments across different populations, but these factors are not detailed in OT sleep intervention studies (Hanish et al., 2017). Therefore, OTs may not be able to accurately measure sleep interventions outcomes because the selected sleep assessment was not intended for that particular setting.

Interventions. There were various effective interventions that can be implemented when addressing sleep dysfunctions. These interventions included simplified sleep restriction (SSR), sleep hygiene education (Falloon et al., 2015; Gutman et al., 2017; Wang et al., 2016), and relaxation interventions that included guided imagery, listening to music, which have all demonstrated improvements on one's emotional well-being (Yeager, 2018). SSR is a component of a sleep intervention for patients with insomnia. This intervention involved reducing the amount of time spent on one's bed to induce sleep deprivation and ultimately, increase the desire to sleep (Falloon et al., 2015). On the other hand, Ho and Siu (2018) identified the use of assistive devices and equipment as the most popular sleep intervention as compared to mind-body activities, cognitive behavioral therapy (CBT) for insomnia, and lifestyle intervention for managing sleep difficulties. In the study, assistive devices and equipment comprised of weighted blankets, Dreampad pillows, eye masks, ear plugs, and white noise machines were used to aid in creating a sleep-inducing environment, as well as mind-body activities such as meditation, yoga, and breathing techniques to increase sleep duration. In the study, CBT was used for insomnia with the aim of improving sleep difficulties by identifying dysfunctional thoughts and behaviors related to sleep. The researchers emphasized the importance of sleep to community-dwelling older people through

lifestyle interventions, such as promoting healthy sleeping habits, activity rescheduling, and education (Ho & Sui, 2018).

CBT remains the primary intervention that is utilized across different disciplines when addressing sleep (Leland et al., 2014; Smallfield & Molitor, 2018; Ho & Siu, 2018). Leland et al. (2014) illustrated how CBT can be used to address insomnia. CBT for insomnia in the reorganization of dysfunctional perceptions regarding sleep and the management of disruptive sleep behaviors, such as restricting bedtime activities to sleep or sexual activities. Implementing these sleep restrictions has been found to alleviate symptoms of insomnia and improve patients' subjective sleep quality and sleep efficiency when compared to providing sleep hygiene education alone (Falloon et al., 2015).

In a systematic review, Smallfield and Molitor (2018) reviewed 13 articles that found strong evidence supporting the use of cognitive behavioral interventions with other sleep-related interventions. These sleep interventions include cognitive computer training or educational sessions, sleep hygiene education, progressive muscle relaxation, goal setting, development of a sleep schedule, use of a sleep diary, self-relaxation, meditation, and physical exercise. Cognitive computer training or educational sessions consisted of individualized rehabilitative training focused on improving cognitive functions, such as memory, attention, and speed of processing. Sleep hygiene education aimed to promote healthy routines that enhanced nighttime sleep. These routines include minimizing the consumption of caffeine later in the day and relaxing before bedtime (Falloon et al., 2015). In contrast, another research study examined the effectiveness of combining different sleep interventions without CBT (Gebhart et al, 2011). The researchers demonstrated that combining moderate physical exercise and sleep education had

comparable positive effects to CBT intervention studies in improving sleep quality, daytime mood, and energy. In the study, the intervention group produced significant effects on sleep quality wherein participants needed less time to fall asleep, experienced a longer sleep duration, and reported an overall improvement in sleep efficiency.

Clinical Significance

Any changes in sleep quality may cause detrimental effects on an individual's well-being and overall quality of life. Despite this knowledge, sleep deprivation receives considerably less attention in clinical settings than other behavioral and lifestyle factors such as smoking, excessive alcohol consumption, and obesity (Perry et al., 2013; Sorscher, 2008). Sleep assessments can be used by health care practitioners, including OTs, as instruments to explore a client's current well-being and promote ideal health and behavior.

Furthermore, assessing and treating sleep problems such as insomnia can improve one's mental health. Trockel, Karlin, Taylor, Brown, and Johnson (2015) discovered that sleep interventions like CBT can reduce insomnia severity and suicidal ideation among veterans by decreasing depressive symptoms. OTs can use interventions that alleviate sleep problems and lower the risk for suicide of individuals with a mental health condition such as depression.

From the clinical perspective, a valid and reliable sleep assessment is an essential component of all health checks. Assessments that explore sleep disruptions create an opportunity for health care professionals to discuss with their clients the topics that involve physical and mental issues that cause or result from interference with sleep patterns. Parallel to assessments, OT interventions that focus on sleep difficulties play a

key function in fostering and maintaining optimum overall health. Research that examines and explains the process of choosing an appropriate sleep assessment and intervention is needed to better understand how sleep is conducive to health.

Sleep is fundamental to an individual's physical, mental, emotional, and social well-being. Because humans spend approximately one-third of their lives sleeping, it is irrefutable that any form of sleep disturbance must be attended and addressed by health care professionals, including OTs. While there are a multitude of sleep assessments available for OTs to use, the reasoning behind why a specific assessment or intervention is chosen and utilized in OT practice to treat sleep dysfunction is not evident. This study aimed to understand the reasoning and decision-making process behind the utilization of appropriate OT sleep assessments and interventions.

The Statement of Purpose, Hypothesis, and Research Questions

The purpose of our research was to analyze how OTs select sleep assessments and interventions by gathering qualitative responses via an online survey. The qualitative questions were designed to gather short-answer responses regarding possible challenges and clinical reasoning behind selecting and utilizing sleep assessments and interventions in their practice. We then analyzed the qualitative data to identify in the survey responses.

Theoretical Framework

We utilized the Person-Environment-Occupation-Performance (PEOP) model to understand how the OTs we surveyed assess the relationship between sleep and a client's psychological, cognitive, spiritual, and behavioral well-being. According to Cole and Tufano (2008), the PEOP model was developed in 1985 and updated in 1997. This model assumes that occupational performance is the result of combining elements of the person,

occupation, and environment for each individual client. We aimed to understand how the "person," "environmental," and "occupational" aspects can influence an OT's selection of sleep assessments and interventions.

The "person" aspect of the PEOP model is focused on assessing neurobehavioral, cognitive, physiological, psychological, and spiritual factors (Cole & Tufano, 2008). According to Ho and Sui (2018), OTs should minimize personal bodily functions that negatively affect sleep. Client intrinsic factors that can negatively affect sleep include the sensation of pain, the experience of stress, and the diagnosis of a medical or mental condition such as depression.

Additionally, the "environmental" aspect of the model is focused on the clients' natural context, social interactions, societal norms, and social/economic systems. Environmental aspects impacting sleep can be physical elements such as housing or social influences like family member or pets (Ho & Sui, 2018). Common environmental modifications include heavy drapes, weighted blankets, and ear plugs, all of which decrease the number of stimuli disrupting quality of sleep (Cole & Tufano, 2008).

"Occupation" refers to what people want or need to do in their daily lives that improves their quality of life (Cole & Tufano, 2008). Ho and Sui (2018) studied the results of when sleep management programs are used by OTs to help select daily activities to gain occupational balance. These intervention techniques were focused on how to organize daytime occupations such as work, education, and leisure activities. This part of the PEOP model categorizes sleep interventions by occupational activities which allows OTs to address sleep through a client's daily routines and rituals.

The PEOP model provided a framework to analyze our data to understand how OTs select appropriate sleep assessments and interventions. Responses from our quantitative survey were filtered through the PEOP model to ultimately organize data for a comprehensive understanding of the sleep assessments and interventions currently used in OT. Additionally, the PEOP provided guidance for establishing qualitative themes surrounding environmental and person (client-centeredness) factors that impact the OT's selection of sleep assessments and interventions.

Methodology

The goal of this study was to explore how OTs address sleep and their clinical reasoning and decision-making process behind utilizing different sleep assessments and interventions in their practice. There were four specific objectives of this study. First, to acquire a large sample of licensed OTs who possess adequate clinical experience and expertise in their area of practice. Second, to obtain a detailed understanding of how and why OTs select specific sleep assessments in their practice. Third, to obtain a detailed understanding of how and why OTs select specific sleep interventions in their practice. And fourth, to determine the different challenges for OTs in addressing sleep as an area of occupation.

Design

We designed this research as a mixed-method study which utilized both quantitative and qualitative techniques to address our objectives. An anonymous and voluntary survey questionnaire was distributed to licensed OTs via the AOTA and the Occupational Therapy Association of California (OTAC) online community forums. The objective behind collecting quantitative data such as demographic and professional

information was to assess possible resources used in the decision-making process of selecting which sleep assessments or interventions. More importantly, qualitative responses provided detailed information about challenges and reasoning OTs experience when selecting sleep assessments and interventions. Informed consent was provided (see Appendix K) and collected with the survey (see Appendix M).

Participants

All subjects (n = 124) were either active subscribers of AOTA or OTAC. Due to not giving consent, 1 participant was excluded from statistical analysis. We utilized convenience sampling by posting the survey on multiple AOTA discussion forums and asked OTAC to contact their members via email.

Inclusion criteria. OTs included in the study had to have a minimum of one year of experience in the field, had to be practicing within the United States, and had to have reliable access to a computer and/or a smartphone to complete the survey.

Exclusion criteria. Participants were excluded if they did not meet the inclusion criteria, were non-English speaking OTs, and were clinicians who did not directly or indirectly address sleep as an occupation.

Ethical Considerations

To ensure confidentiality and security, the participants' identity was protected as the survey was anonymous and had no potential identifiers. We utilized SurveyPlanet, a widely used online survey platform by researchers worldwide, to obtain survey responses. We used a secured email address created by Stanbridge University to create a SurveyPlanet account to manage the data collection process. We ensured that the participants' concerns were addressed by providing them with a Stanbridge University

email to use as a point of contact. We tried to ensure that the identity of the participants would be protected; however, there might be an uncontrollable potential risk of confidentiality being breached in the event that survey questionnaires were accessed by third-party sources. Completed survey questionnaires were kept in a password-protected file through Stanbridge University's encrypted online data storage. This research project only examined the opinions and experiences of registered and/or licensed OTs in addressing sleep as an occupation in the field, and did not include vulnerable populations, such as patients who are receiving care from health professionals. This research project posed minimal risks to participants. The Stanbridge University Institutional Review Board (IRB) categorized this study as exempt and provided approval in proceeding to the implementation stage of the research process (Application Number: MSOT-009-002; See Appendix J).

Informed consent

In the first part of the survey, we provided the participants with important information regarding the study, such as the background and purpose of the study, and asked for the participants consent to take part in the study (see Appendix K). Participants were informed about the length and duration of the study and what types of questions would be asked. More importantly, we provided our contact information to address concerns and questions regarding the study. The aforementioned information was provided in order for the participants to make a conscious decision of whether they would like to proceed in participating in the study.

Data Collection

The survey consisted of the survey consent forms, 11 multiple-choice questions, 2 questions that were measured on a 10-point Likert scale, and 3 essay questions. The survey was designed using the PEOP model to determine a comprehensive understanding of what sleep assessments and interventions are currently used in OT. The survey questions were chosen to address the study objectives. Qualitative and quantitative data were collected to address the aim of our study.

Minimal problems arose during the data collection process. Potential participants were unable to find the link to the survey on AOTA discussion forums or expressed the survey link was inactive. In these situations, participants contacted us via email and the link was provided in an email reply. In two of the survey's qualitative questions, the items asked for two separate pieces of information (e.g. Q12: In your practice, what is the most useful sleep assessment and why?). As a result, some participants only answered half of the question for an impartial response. In response to question 12, 40 participants provided a partial response, while in response to question 16, 55 participants provided a partial answer. The survey questions were designed by the researchers who based question options about appropriate assessments and interventions commonly mentioned in the literature review. The questions underwent revisions after receiving feedback from our advisor, a licensed occupational therapist, to clarify the purpose and readability of each one.

Data Analysis

Quantitative. We utilized quantitative questionnaires to gather and analyze data about OTs' knowledge on sleep assessments and interventions. General descriptive

statistics were generated on questions 4, 5, 6, 7, 8, 10, 11, 14 and 15. Descriptive statistics were used to demonstrate the participants' demographics from the survey questionnaires, in terms of their educational background, work experience, practice settings, and knowledge on sleep-related assessments and interventions. Nominal and categorical data were presented in pie charts, bar graphs, histograms, and frequency tables. Comparisons were made between survey question 6 and 13 using the Independent Sample t-test and a one-way between-subjects analysis of variance (ANOVA).

The ANOVA design was conducted to compare one's level of knowledge of sleep interventions amongst the various years of practicing OT. An independent samples t-test was conducted to compare differences in the participant's level of knowledge of sleep interventions between participants who possessed 10 years of OT experience versus participants who had more than 10 years of OT experience. A chi-square test was used to analyze survey question 3 and 9 to assess the associations between OTs of addressing sleep in their practice and OTs' education on sleep assessment and intervention. We delved into the possible correlation between OTs' demographic data and how they related to the types of sleep assessments and intervention utilized in their field. Statistics were generated by a professional statistician consultant.

Qualitative. We utilized qualitative questionnaires to delve into the different challenges that OTs were confronted with in addressing sleep, as well as their clinical reasoning behind choosing certain sleep assessments and interventions in their practice. Our qualitative themes emerged from survey questions 12, 16, and 17. We analyzed these specific questions as they aimed to provide an opportunity for participants to expand and provide more in-depth responses in addressing sleep. To ensure the inter-rater reliability

and consistency in the analysis of qualitative data, responses were coded through intensive discussions on survey responses that were vague, ambiguous, and were prone to different interpretations. We noted our own interpretations from the survey responses, and discussed recurrent key words and common themes among the group to compare and contrast (see Appendix N for the Master Coding List).

Results

Participant Demographics

As shown in Figure 1, of the 124 participants who participated in the study, there was a disproportionate number of participants practicing as OTs in the state of California (n = 88, 71%), followed by practitioners in Arizona (n = 4, 3%), and then Michigan (n = 3, 2%). In terms of education level, most participants (n = 60, 48%) have earned a Master's degree in occupational therapy, as shown in Figure 2. Furthermore, most of our survey participants answered that they have been practicing OT for more than 20 years (see Figure 3). Most of the participants practice in the pediatric setting (n = 49, 11.67%), followed by participants who practice in the outpatient setting (n = 45, 10.71%), and acute care (n = 35, 8.33%) as shown in Appendix A. Last but not the least, in order to gain a better understanding about the participants' source of knowledge on sleep assessments and interventions, we asked the survey participants to identify their methods of obtaining their knowledge on this topic. Most participants claimed that they have gained their knowledge of sleep assessments and interventions through professional recommendations from a colleague or co-worker (n = 61, 25.85%), which was followed by participants who pursue continuing education courses (n = 52, 22.03%), and

participants who obtain their knowledge through the consumption of published journals (n = 51, 21.61%; see Appendix B).

Knowledge on Sleep Assessments and Interventions

23% of the participants (n = 28) stated that they had a poor understanding of sleep assessments on a Likert scale of 1 to 10, wherein a score of "1" signified that they did not have a good understanding of sleep assessments, and a score of "10" indicated that they were confident on their knowledge on sleep assessments (see Figure 4). However, when the participants were asked about sleep assessments that they were most familiar with, most participants stated that they are most familiar with Mini Sleep Questionnaire (n = 22, 16.67%) as shown in Appendix C. Following the Mini Sleep Questionnaire, participants were also familiar with Epworth Sleepiness Scale (ESS) (n = 18, 13.64%) and Functional Outcomes of Sleep Questionnaire (n = 16, 12.12%). However, when participants were asked to rate their knowledge on sleep interventions on a Likert scale of 1 to 10, most participants perceived their knowledge as average, which is equivalent to a score of a 5, as shown in Figure 5. Overall, we found that participants believe that they are more knowledgeable on sleep interventions as opposed to sleep assessments (see Figure 6).

The majority of the participants answered that they use a holistic approach in sleep interventions in their practice (see Appendix D). Moreover, when asked about sleep interventions that participants generally utilized in their practice, participants mostly selected deep breathing (n = 97, 24.56%), followed by relaxation techniques like progressive muscle relaxation, meditation, or guided imagery (n = 96, 24.30%), sleep hygiene education (n = 92, 23.29%), cognitive behavioral intervention (n = 49, 12.41%),

and sleep diaries (n = 45, 11.39%; see Appendix E). Most participants selected daytime activities (n = 82, 16.17%), stress management (n = 81, 15.98%), followed by habit training (n = 77, 15.19%), and reverse ADLs (activities of daily living; e.g. bedtime routine; n = 75, 14.79%) when selecting interventions to address their clients' sleep issues.

Inferential Statistics

An ANOVA statistical test was conducted to analyze whether there was a relationship between the participants' perceived level of knowledge on sleep interventions and their years of OT practice. Contrary to expectations, we did not find significant results when analyzing the relationship between the years of practice in OT and the participants' perceived level of knowledge on sleep interventions (F[5,118] = 0.78, p = .564). The results indicated that the duration of practicing OT had no correlation with one's perceived knowledge of sleep interventions (see Appendix F).

An independent sample t-test was conducted to compare the difference between one's level of perceived knowledge of sleep interventions and years of OT practice. Specifically, we analyzed a comparison between participants who accumulated 10 years of practice as compared to participants who accumulated less than 10 years of practice. Contrary to expectations, there was no significant differences found between the perceived level of knowledge on sleep interventions and years of experience, regardless of accumulated years of practice of less than 10 years (M=4.29, SD=2.29) versus participants who had more than 10 years of OT experience (M=4.53, SD=2.63; t[122]=-0.53, p=.595; see Appendix G).

We analyzed whether there was an existing relationship between addressing sleep in practice and methods of acquiring knowledge on sleep assessments and interventions. We performed a chi-square analysis to determine whether participants who stated that they addressed sleep were more likely to utilize a specific source or reference in learning about sleep. In the study, the participants were asked to identify their sources of obtaining knowledge regarding sleep. These outside sources were methods that involved attending conferences, pursuing continuing education, OT school, obtaining knowledge from professional recommendations, and consuming published journals. We found that there were no statistically significant relationships between addressing sleep as an occupation and the participants' method of acquiring knowledge between observed (O) and expected (E) counts amongst "yes," "no," or "I don't know" responses at $p < .05$ (see Appendix H). There was no existing relationship between addressing sleep as an occupation in practice and their method of acquiring knowledge, regardless of whether the participant attended conferences (Table 8a), pursued continuing education (Table 8b), attended OT schools (Table 8c), obtained knowledge from professional recommendations (Table 8d), or consumed published journals (Table 8e).

We also delved into the relationship between addressing sleep as an occupation and the likelihood of utilizing specific sleep interventions in practice. Sleep interventions that were often applied in OT practice were CBT, computerized training, deep breathing, didactic class sessions, group problem solving, relaxation techniques, sleep diaries, and sleep hygiene education (see Appendix D). After conducting a chi-square analysis, the relationship between addressing sleep as an occupation and the likelihood of utilizing specific sleep interventions in practice did not yield statistically significant findings.

Regardless of whether participants addressed sleep as an occupation, the participants' likelihood of utilizing certain sleep interventions in practice did not produce any positive associations between O and E counts at $p < .05$ (refer to Appendix I).

Qualitative Item Results

In this study, participants were asked about the barriers in addressing sleep as an area of occupation. After data analysis and intensive coding, we identified five recurring themes. Based on the survey responses, the participants determined the appropriate assessments and interventions when addressing sleep were based on *convenience, environmental/external factors, values, knowledge* and *education, and client-centeredness.* We were able to identify the underlying influences of the various barriers that OTs were challenged with when addressing sleep. These unique influences will be further examined under each appropriate theme.

Convenience. Convenience was found to be a prominent factor in choosing which sleep assessments and interventions the participant uses in their practice. The participants preferred to utilize assessments and interventions that were practical, or, in other words, quick and easy to use. One of the participants expressed that due to the ease of re-administering, they utilized the "PSQI [assessment because it is] easy, fast, and [it provides] information [on] how to effectively improve sleep for clients." In addition to practicality, we have found that participants preferred to utilize assessments that provided access to comprehensive and detailed client information. One participant specified that they often administered the "BEARS screening [and] Pediatric Sleep Questionnaire [to provide a] more in-depth assessment and information to see if a referral for a sleep study is needed[ed]." Another participant expressed that "by the time [parents] see [an] OT,

they [have] been through so many physicians[,] social workers[,] and various other assessments that they tend to go auto-pilot in response to any standardized questionnaire, whereas a face to face conversation elicits more detailed information." However, some participants revealed they select specific interventions because they have found them to be easier for parents and caregivers to implement. Participants have found it more convenient to utilize these interventions to obtain a better response and follow-through when implementing interventions outside of therapy. The participants identified convenience as an influential factor that guides their decision-making. They reported that they lacked sufficient time to address sleep in their practice, and as a result they preferred to use assessments and interventions that met these time demands. Due to this external barrier, participants found themselves selecting assessments that were convenient and quick to administer.

Environmental/External Factors. Another theme that emerged was environmental/external factors. We found that participants selected assessments and interventions to utilize in treatment based on their practice setting. For example, the pediatric OTs we surveyed stated they utilize assessments that are specific to the setting of pediatrics. Practice settings were identified as both an influential factor on the decision-making process, and a barrier to overcome when addressing sleep as an occupation. Participants were often challenged with contextual factors that exist within their specific practice settings when addressing sleep. One participant revealed that "the biggest challenge in addressing sleep in the pediatric outpatient world, is the inability to see sleep in the natural setting. [One cannot] assess it in the clinic, and [would] have to strictly [base it on] report." Furthermore, another participant expressed that "sleep

routines may not be as easily under a client's control, such as in in-patient hospitals." Participants found that they were limited by these environmental factors due to the uniqueness of their practice settings when addressing sleep. These barriers influenced their decisions when selecting assessments and interventions that were appropriate to the context that they practiced in.

As well as practice settings, external factors such as a client lacking income, resources, or having limited living arrangements were found to affect how OTs implement assessments and interventions. We found that the participants are challenged with these external factors as clients meet different environmental demands that may affect their ability to implement interventions in their own homes. One participant revealed that "there are almost always constraints out of [one's] control[,] whether it [is] living in tight quarters or an apartment . . . it [is] an area [that should be] address[ed] on a case by case basis." Furthermore, clients are also challenged with "environmental changes for those [who may have] restrictions, [wherein their] home[s] [would have] to be approved by [the Department of Child and Family Services]." These external barriers impact the participants' decision to select the appropriate assessments and interventions to meet with the environmental demands when addressing sleep.

The participants also identified the lack of insurance coverage as an external factor that limits their decisions on sleep assessments and interventions. For instance, nine participants selected assessments and interventions according to the extent of coverage on the client's insurance. These participants expressed that reimbursement often poses as a challenge, and limits their capacity to address sleep problems. One participant mentioned that "sleep is not a billable occupation." Other participants expressed that

there was a lack of funding and reimbursement by third-party institutions when addressing sleep issues, which limited opportunities to make clinical decisions to address sleep. Additionally, participants stated that another barrier in addressing sleep was having a lack of OT referrals from other disciplines. Due to the lack of referrals, participants were unable to address sleep as an occupation in their practice.

Values. We also found that the value of sleep is also an important factor in determining whether sleep should be addressed. Results indicated that sleep is often viewed as something that most people do not value as important. One participant commented, “Although sleep is in the most significant category when it comes to the hierarchy of human needs, it is often undervalued clinically by institutions or reimbursement sources (Medicare).” Because OT practice is client-family-centered, family perception about sleep is another challenge that one participant brought up: “In a pediatric setting, the parental/family perception of sleep routines as highly personal and dependent on family dynamics and not susceptible to change.” Another participant mentioned, “not much for education on and patients tend to not want to discuss the topic unless it is addressed by the therapist.” In addition to a client’s values about sleep, we also found that societal values influence how participants prioritize sleep assessment and intervention. Sleep dysfunction is often overlooked, and many clients do not see sleep deprivation as a problem because of daily responsibilities which dictate when they go to sleep. One participant stated “our society does not promote sleep and almost encourages people to use it as a ‘badge of honor’ if they are only sleeping 4,5, or 6 hours per night. Thinking back to my college days I sacrificed my sleep in order to stay up later to work on school work. So I don't feel that our society prioritizes sleep.”

Knowledge and Education. Another major theme that influenced OT practice is the participants' knowledge and education in addressing sleep. We found that many participants do not have adequate training and education in OT school to properly address sleep. Most participants acknowledged that they either "lack understanding of how to address sleep [as an occupation]" or that, "Probably the biggest challenge is that it is difficult to make other providers aware of how OTs can address sleep, especially in the mental health practice area. So many other disciplines know about 'sleep hygiene' but don't realize that generic guidelines do not work for everyone and don't know what OTs do in general." The responses indicated the gap of knowledge and the lack awareness of OTs' role in addressing sleep. The lack of OT-specific research, and no consensus guideline on OT-specific management also made it difficult for participants to address sleep in their respective practice. When asking about standardized sleep assessment, participants responded that the "lack EBP research [on sleep assessment]," the "lack of standardized (sleep) assessment," and they were "not aware of formal (sleep) assessments available." Clients and their family's awareness and perception about sleep is another challenge to addressing sleep. Participants mentioned that "the parental/family perception of sleep routines as highly personal and dependent on family dynamics and not susceptible to change." It is a challenge to include sleep in the treatment plan when the client and family do not perceive it as a problem and do not see it as a priority. Participants also revealed that the lack of interdisciplinary communication and awareness of OT scope of practice are also the contributing factors. One participant stated that, "I feel that it is a very under addressed area in my OT department" and "Lack of understanding of how to address sleep as an occupation. Understanding from clients the

importance of routine and referrals and understanding from other disciplines like PT and Nursing for assistance with sleep from OTs." OT practitioners need to emphasize the need for a more explicit recognition of OT scope of practice among health care professionals in addressing sleep. From the perspective of health maintenance and promotion, OT practitioners may address sleep dysfunctions and the ramification of sleep deficiency using holistic and evidence-based sleep promotion practices. They are experts in evaluating for factors that contribute to sleep dysfunctions that place the clients at risk for health problems and implementing client-centered interventions that focus on promoting optimal sleep performance to facilitate occupational engagement.

Client-centeredness. The final theme that emerged from the survey is client-centeredness. Participants reported that their decisions to utilizing certain sleep assessment and/or intervention are influenced by the basic principle that the clients are autonomous decision-makers and that they would know more about themselves than the therapist possibly knows. One participant expressed that, "I use sensory diet, daytime activities, and reverse ADLs most often. I think that sleep interventions need to be individualized to the client, and all of these techniques allow for a client-centered approach." Another participant wrote that "the intervention used with each client is different depending on the physical, emotional, and cognitive needs of the individual." In addition, approaches to sleep assessment and interventions posed different challenges based on the characteristics of the populations. Geriatric and pediatric populations have different needs, mental and physical characteristics, and different causes for sleep problems, which influence the decision-making process of participants in determining which sleep assessment and intervention to use.

Many participants reported that the client's conditions determine how the sleep assessments are chosen and guide the direction of sleep intervention. For example, 31 participants reported that because of their clients' personal factors that lead to ineffective medication and side-effects related to pharmaceutical usage, participants opted to use self-regulation and holistic approaches such as relaxation and pain management to address sleep intervention. 23 participants mentioned examples of these conditions are the client's cognitive deficits, comorbidities, and other medical conditions that interfere with sleep. The client's pain, stress, and anxiety also contribute to the selection of sleep assessment and direction of the design intervention.

We found that the participants' challenges in addressing sleep assessments and/or intervention are also due to the client's beliefs, values, attitude, and motivation about their sleeping problems. Public awareness and how society viewed sleep was also mentioned by participants as challenges in addressing sleep to their clients. For instance, some clients viewed the lack of sleep per night as a "badge of honor," and that "sleep is a private matter," thus they do not see their lack of sleep as a concern and do not feel the need to communicate it to the therapist during the session. Ultimately, clients' participation and consistency in sleep interventions are affected depending on their perceived value of sleep.

Discussion and Limitations

The objective of the quantitative section was to collect demographic and personal information from the participants and to identify how this information related to the process of deciding which sleep assessments and interventions they should select and use in their practice. The quantitative portion of the study also aimed to identify possible

relationships between two quantitative questions. For instance, responses from the questions “do you address sleep as an occupation in your practice” and “how did you gain your knowledge of sleep assessments and/or sleep interventions” were analyzed. We analyzed these questions in order to understand where OTs gain their knowledge of sleep assessments and interventions and to determine whether their knowledge influences the likelihood of implementing sleep assessments and interventions into their clinical practice.

We further sought to understand if the source and level of knowledge contribute to the process of which assessments and interventions to select and implement in the OTs’ clinical practice. The analysis revealed that knowledge of sleep assessments and interventions gained from conferences, continuing education, OT schools, professional recommendations, and published journals had no influence on whether or not OTs address sleep.

The current study also sought to identify whether there is a relationship between the OTs’ years of practice and their perceived level of knowledge of sleep interventions. The analysis revealed that the number of years of practice did not have an effect on the participants’ knowledge of sleep interventions. Furthermore, in terms of level of knowledge, participants who have less than ten years of experience did not differ from participants who have more than ten years of OT practice. These findings suggest that the length of practice experience does not increase nor influence an OT’s current knowledge of sleep interventions. It is not known whether years of clinical experience contribute to the decision-making processes for selecting and implementing sleep interventions.

Further research on the influence of length of practice on the decision to use a particular sleep intervention is warranted.

The purpose of the open-ended questions in this study was to further understand why OTs choose certain sleep assessments and interventions. Before this study, a literature review was done to identify which sleep assessments and interventions are used in various OT areas of practice. Although the names of the assessments and techniques used for treating sleep difficulties were discovered, none of the articles reviewed discussed the process of how and why these assessments and interventions were chosen. The qualitative questions in this study's survey aimed to determine and understand the rationale behind the OTs' selection and implementation of particular sleep assessments and interventions.

Convenience

In regard to convenience, OTs' decision to select and use sleep assessments and sleep interventions is influenced by how efficient and effective they are in addressing sleep. In this study, OTs use sleep assessments that are convenient and can provide the most amount of client information in a given evaluation time. Also, many practitioners who participated in this study identified lack of time with patients as a challenge in assessing and treating sleep. Assessments are selected based on how quick they are to administer. Assessments that do not contain numerous questions or items are often easier and quicker to administer (Ibañez, Silva, & Cauli, 2018). Sleep assessments or questionnaires that contain less than 15 items include the Mini Sleep Questionnaire, PSQI, ESS, and STOP-BANG Questionnaire, which were all chosen and mentioned as the assessments that most of the participants use when addressing sleep. Time restrictions

during an evaluation prevent OTs from using long and comprehensive assessments when evaluating their clients' sleep health and difficulties.

OTs in pediatric settings choose to use sleep assessments that they think the parents can easily understand and follow. We hypothesize that OTs select and use these easily understandable sleep assessments because they can provide a more accurate and reliable client data, especially from the parents. We further hypothesize that accurate and reliable client information gathered from the assessments influence the OTs' decision on which sleep intervention to use for the client. Finally, OTs base their choice of sleep interventions on how easy they can be followed by the clients, families, and the clients' caregivers. OT practitioners decide to use sleep interventions that either have worked in the past or that work best for the clients and their caregivers. If the interventions are simple for the clients and the families to follow, we hypothesize that the effects or benefits of the sleep interventions will easily transfer outside of the clinical setting.

Environmental/External Barriers

Our research showcases environmental and external factors which limit the ability to directly observe a client's sleeping patterns and restricts the availability of various assessments and interventions due to insurance or treatment settings. According to Ho and Sui (2018), within the PEOP model, environmental elements refer to physical, social or cultural factors which may impact sleep interventions. The inability to directly observe clients' sleeping patterns physically limits the practitioner to obtain accurate, real-time data causing the clinician to rely on self-reported methods such as questionnaires or sleep diaries. In an observational study, subjective sleep reports and objective actigraphy results were negatively correlated with sleep assessment responses meaning higher sleep

time measured by the actigraphy related to decreased self-reported sleep disturbances or impairments (Hanish et al., 2017). This implies overcoming environmental and external factors that limit the ability to collect objective sleep data will improve the decision-making process by providing unbiased data to measure the effectiveness of prescribed sleep interventions.

One of the survey responses stated that, “There are almost always constraints out of our control,” which range from insurance policies, setting specific influences, and living arrangement limitations. Limiting external factors include interdisciplinary teams and insurance providers who may not value sleep and decline reimbursement for sleep interventions or do not refer sleep issues to OTs. Additionally, sleep assessments may have been previously completed from an interdisciplinary team member influencing which sleep intervention the occupational therapist selects. Other limiting environmental factors include family context and lack of ability to adjust living situations due to restrictive income or decreased government funding from the Department of Child and Family Services (DCFS). These environmental factors create obstacles to easily implement sleep techniques into a client’s lifestyle which impacts sleep interventions selected by the OT.

Furthermore, we hypothesize specific settings influence which strategies are chosen due to the client’s temporal, physical, or mental conditions. For example, specific assessments and interventions are more appropriate for a pediatric versus geriatric setting or may only be suitable for a mental health setting. These setting specific influences are displayed in current EBP due to a majority of the sleep literature focused on specific setting interventions rather than the effectiveness of a sleep intervention across multiple

settings. This implies OTs may be influenced by their practice setting when selecting appropriate sleep assessments and interventions due to setting specific EBP and clinical setting appropriateness.

Values

According to Cole and Tufano (2008), values, beliefs, customs, and behaviors are categorized under the cultural environment and passed from one generation to the next which influences our social role expectations (p. 129). Our research provides insight on how cultural and personal values influence clients' perception of sleep, which impacts both the initial discussion and the follow through with the recommended interventions. We hypothesize that personal values such as viewing sleep as too private or personal to discuss may influence the responses during assessments, therefore resulting in OTs deciding sleep interventions may be unnecessary or inappropriate.

Moreover, OTs identify their clients' prioritization of sleep as a challenge in their practice. Clients who do not see sleep as a priority often do not seek professional health services such as OT when they experience sleep difficulties. The clients' personal values may lean towards the use of easier strategies such as pharmacological options which discourage seeking OT for sleep issues. In a qualitative study to understand the experience of sleep apnea, seven out of nine participants found the CPAP (continuous positive airway pressure) helpful when engaging in their daily occupations (O'Donoghue & McKay, 2012). CPAP is an easier strategy to implement compared to OT home-based interventions because implementing a CPAP does not require many adjustments to an individual's lifestyle except properly using the equipment with the prescribed schedule. Alternatively, home-based interventions could focus on incorporating environmental or

personal modifications such as reducing liquid intake before bed or changing bedroom furniture to support better sleeping habits. A client's personal value may influence the importance of sleep which could discourage the use of sleep interventions requiring too many lifestyle adjustments.

Additionally, cultural factors have an influence on family values leading OTs to choose sleep interventions that are most congruent with their clients' family structure, lifestyle, and values. Furthermore, many participants stated that sleep is undervalued by institutions like Medicare, decreasing the likelihood of reimbursement for sleep interventions. The difficulty of obtaining Medicare reimbursement for sleep interventions showcases cultural values relating to the importance of appropriate and effective sleep. These cultural values impact an OT's ability to address sleep issues due to the client's personal or cultural values prior, during, or after sleep assessments and interventions.

Knowledge and Education

Our research suggests lack of sleep education may greatly impact the way OTs select sleep assessments and interventions. Due to a lack of education, OTs may experience an increased dependence and reliance on utilizing techniques recommended from professional colleagues or those they are most familiar with. This implies that decisions are not made based on reliable and critically appraised research. Responses to our survey support the claim that more evidence-based research is needed to improve sleep education within our profession. According to Tester and Foss (2018), it is important to prioritize research about sleep assessments to understand their clinical effectiveness and evidence to support sleep interventions focused on the client's rehabilitation and improving their participation and quality of life. Additionally, the

responses to our survey indicate that a lack of education and evidence-based research has a strong influence on the OT's confidence and decision making when addressing sleep as a lack of effective resources leads the OT to feel unprepared to address sleep.

Another challenge related to education and knowledge is how practitioners and other professionals understand OT's scope of practice. Since a majority of our survey responses were from OT professionals with twenty plus years of experience, many were unaware sleep is no longer classified as an ADL and is independently listed under occupations as of 2008 (Tester & Foss, 2018). This recategorization helps OTs understand the importance of addressing sleep due to its strong influence over areas such as functionality and quality of life. Sleep being considered an occupation redefines sleep as an activity that brings meaning and purpose to life, rather than as an ADL which refers to an activity to take care of one's own body (AOTA, 2014).

Additionally, other members of an interdisciplinary team such as physical therapists, speech and language pathologists, and nurses are unaware that OTs can address sleep challenges and provide sleep interventions. Other disciplines often lack understanding regarding the role of OT, and this may affect their opportunities to collaborate with OTs who can address sleep with potential clients.

Another challenge that OTs face when addressing sleep is their clients' lack of understanding and awareness of the importance of sleep and sleep interventions. Thus, OTs may choose sleep interventions that the clients are familiar with or have heard from the other disciplines, such as psychology and sleep medicine.

Client-centeredness

In deciding which sleep assessments and interventions to select and use, OTs

consider their clients' age, condition, beliefs, motivation, and other characteristics that influence the client's functioning. For example, OTs choose CBT-I for their clients with insomnia (Mitchell et al., 2012). While OTs take into account their clients' condition when addressing sleep, the presence of comorbidities often creates a challenge in selecting and using the most appropriate sleep intervention for the client. OTs are often unsure of which comorbidity symptoms should be addressed first. For example, it is possible that in some cases, OTs have to first address their clients' symptoms of pain before they evaluate and treat the presence of sleep problems.

Moreover, many OT practitioners encounter the challenge of lack of follow through from the clients and their families. Perhaps lack of client follow through is caused by the clients' beliefs on sleep and their lack of motivation to seek OT services. The clients may believe that sleep is not important and that sleep interventions are not effective in treating sleep difficulties. We hypothesize that the clients' lack of consistency influences the type of sleep interventions OTs decide on to use and implement. That is, OTs may search for other intervention alternatives and select interventions that they think will be easier for their clients to follow and adhere to. Also, tailoring the intervention to the clients' level of familiarity or knowledge of different sleep interventions may help increase the clients' understanding of what OT does and how it can benefit one's sleep health and quality. In addition to challenges with client follow through, OTs base their selection and utilization of sleep assessments and interventions on client or parent reports. Although gathering data from the clients and parents can help guide the OTs' choice and use of assessments and interventions, the subjectivity, unreliability, and inaccuracy of the information sometimes limit OTs in finding the most accurate sleep

intervention for their clients. Thus, while client reports contribute to the decision-making process of OTs, they can also give rise to challenges in addressing sleep.

Gaps in Data

For our quantitative research we were able to identify two gaps in our quantitative data affecting the normal distribution. 77% of the participants were from California and 38% had twenty or more years of clinical experience, which both imply that our research is not representative of OTs' responses nationwide.

For our qualitative research, we identified gaps in our data that occurred due to the structure of our open-ended survey questions. Our qualitative questions addressed multiple key points, including which assessment or intervention was most used. In addition, the same open-ended question asked why the participants selected their response. We discovered a majority of participants did not answer both key points from the qualitative questions to capture the entire reasoning behind their responses on sleep assessments and interventions.

Another identified gap in our research was the difficulty of interpreting some of our qualitative data due to ambiguity. To reduce researcher bias, we categorized these vague responses into a separate theme label "unable to interpret" to avoid incorrectly misunderstanding the response. Often, vague responses were the result of participants responding with minimal words to our open-ended survey questions.

Extraneous factors

Additionally, there were extraneous factors and variables to consider in our study. With the COVID-19 pandemic, our research may have a disproportionate number of participants from settings who were affected by the pandemic with reduced hours or

telemedicine options. This contextual event may have also positively influenced the total amount of research participants due to this unique situation with stay-at-home orders.

OT Implications

The literature review revealed a limited amount of research aimed at understanding the decision-making process for selecting and using sleep assessments and interventions within OT. Although this current study provided additional details on this topic, it is recommended that more sleep research based on populations and practice settings should be conducted. This targeted research will provide more in-depth understanding and evidence of the unique challenges faced by each setting when addressing sleep.

Additionally, our data revealed that 66% of our participants rated their knowledge of sleep assessments below average and 49% rated their knowledge on sleep interventions below average (<5 on the Likert scale rating). This implies that integrating topics related to sleep into the OT program and continuing education may be beneficial to the OT practitioners' competency and knowledge of how to address sleep. A few of the topics that can be discussed in OT education may include: sleep as an area of occupation, sleep research appraisal, sleep assessments and interventions, and the role of OTs in addressing sleep (Fung, Wiseman-Hakes, Stergiou-Kita, Nguyen, & Colantonio, 2013). Furthermore, higher quantity and quality of research specific to sleep assessments and interventions used in OT may provide OTs with more resources that can help them make more concrete and appropriate decisions in addressing sleep.

The observed variability in the participants' response regarding how and why they choose specific sleep assessments and interventions suggested that there is no

standardized method for how to select instruments. Also, creating and having a standardized OT sleep assessment may help decrease or diminish some of the challenges that OT practitioners face when evaluating and treating the clients' sleep difficulties and well-being.

Limitations

This study has several limitations. First, the survey only recruited participants from AOTA and OTAC, so the sample size was limited to practitioners actively maintaining professional organization membership from these two organizations' forum platforms. A disproportionate number of participants practice in California, which skewed the data and did not provide an accurate nationwide assessment. Also, most of the participants have been practicing for over 20 years, so we cannot generalize the results to OTs who have just started working in the field. Second, online delivery of surveys may limit participation from those who are not technologically savvy. The nature of online surveys limited the ability to elaborate some qualitative data due to vague and overly generalized responses. Further research could enhance generalizability and provide further understanding of addressing sleep as an occupation among different practice settings. For example, a similar study could be conducted at different regions or with different OT associations in America.

Summary, Conclusion, and Recommendations

Sleep is positively linked to the restoration of the body's physiological functions. Due to its vital role in human functioning, OTs are expected to address and consider sleep as an important area of occupation. After conducting a literature review, we found that there were sleep assessments and interventions available for OTs to use when addressing

sleep with their clients. Although OTs use standardized assessments such as PROMIS and PSQI when evaluating sleep quality and interventions like CBT when treating sleep dysfunctions, we identified that there was a lack of reasoning behind why specific sleep assessments and corresponding sleep interventions are chosen by OTs. In order to identify and understand the clinical reasoning and decision-making process behind OTs' selection and usage of appropriate sleep assessments and interventions, a mixed-method study was conducted.

The study's purpose was to fill the gap in the literature by identifying reasons on why sleep techniques were used by OTs. Our research findings imply that OTs select sleep assessments and interventions based on the clinician's convenience, environmental factors, knowledge and education, values, and client-centeredness. We recommend further research is conducted to investigate how sleep assessments and interventions are selected based on specific populations and practice settings by analyzing the reliability and validity for chosen sleep techniques. Future research should also aim to design a sleep assessment specific to OT in order to assist OTs to formulate clinical decisions addressing sleep based on reliable and valid evidence-based research.

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Appendix A

Table 1

Frequency of occupational therapy settings as identified by participant experience

OT Practice Settings	*N*	*%*	*M*	*SD*
Academia	24	5.71	1.37	1.14
Acute Care	35	8.33	2.92	1.64
Community	14	3.33	0.47	0.67
Early Intervention	26	6.19	1.61	1.23
Geriatrics	21	5.00	1.05	1.00
Health & Wellness	11	2.62	0.29	0.53
Home Health	30	7.14	2.14	1.41
Hospital	28	6.67	1.87	1.32
Inpatient	25	5.95	1.49	1.18
Long-term care/Skilled nursing facility	31	7.38	2.29	1.46
Mental Health	25	5.95	1.49	1.18
Outpatient	45	10.71	4.82	2.07
Private Practice	26	6.19	1.61	1.23
Pediatrics	49	11.67	5.72	2.25
Rehabilitation & Disability	27	6.43	1.74	1.27
Work & Industry	3	0.71	0.02	0.15
	420	100	30.88	19.72

Note. Different OT practice settings applicable to the participants were listed on Table 1. *N* refers to the number of participants who selected the applicable practice setting. *%* refers to the percentage derived from the total number of participants who participated in

the study who have selected the specific practice setting. *M* refers to the mean average frequency that the practice setting had been selected. *SD* refers to the standard deviation as determined from the mean.

Appendix B

Table 2

Survey respondents' source of professional knowledge on sleep assessments and interventions

Source of Professional Knowledge	*N*	*%*	*M*	*SD*
Conferences	31	13.14	4.07	1.88

Continuing Education courses	52	22.03	11.46	2.99
OT School	41	17.37	7.12	2.43
Professional recommendation (e.g. colleague or coworker)	61	25.85	15.77	3.42
Published Journal	51	21.61	11.02	2.94
	236	100	49.44	13.65

Note. Table 2 displays the different sources of professional knowledge that participants utilize to gain an understanding of sleep assessments and interventions. *N* refers to the number of participants who selected the applicable source of professional knowledge. *%* refers to the percentage derived from the total number of participants who participated in the study who have selected the source of professional knowledge. *M* refers to the mean average frequency that the source of professional knowledge had been selected. *SD* refers to the standard deviation as determined from the mean.

Appendix C

Table 3

Frequency and familiarity of various sleep assessments

Sleep Assessments	*N*	*%*	*M*	*SD*
Athens Sleep Questionnaire (ASQ)	3	2.27%	0.07	0.26
Calgary Sleep Apnea Quality of Life Index (SAQLI)	1	0.76%	0.01	0.09
Epworth Sleepiness Scale (ESS)	18	13.64%	2.45	1.46

Functional Outcomes of Sleep (FOSQ)	16	12.12%	1.94	1.31
Insomnia Severity Index (ISI)	8	6.06%	0.48	0.67
Mini Sleep Questionnaire (MSQ)	22	16.67%	3.67	1.75
National Sleep Foundation Sleepiness Test	10	7.58%	0.76	0.84
Obesity, Snoring, Apneas, aged over 50 (OSA50)	5	3.79%	0.19	0.43
Oviedo Sleep Questionnaire (OSQ)	0	0.00%	0.00	0.00
Pittsburgh Sleep Quality Index (PSQI)	12	9.09%	1.09	1.00
PROMIS Sleep Disturbance Instruments	12	9.09%	1.09	1.00
Self-Efficacy Measure for Sleep Apnea (SEMSA)	4	3.03%	0.12	0.34
Simple Four Variables (SFV)	0	0.00%	0.00	0.00
Sleep Apnea Clinical Score (SACS)	4	3.03%	0.12	0.34
Sleep Disorders Questionnaire	13	9.85%	1.28	1.07
STOP BANG Screening Questionnaire	4	3.03%	0.12	0.34
	132	100%	13.39	10.89

Note. Various sleep assessments that were most often utilized in addressing sleep as derived from literature were listed on Table 3. *N* refers to the number of participants who selected the applicable sleep assessments with the appropriate level of perceived familiarity. *%* refers to the percentage derived from the total number of participants who participated in the study who have selected the specific sleep assessments. *M* refers to the mean average frequency that the sleep assessments had been selected. *SD* refers to the standard deviation as determined from the mean.

Appendix D

Table 4

Sleep interventions frequently utilized in practice

	N	*%*	*M*	*SD*
Cognitive behavioral interventions	49	12.41	6.08	2.31
Computerized training	1	0.25	0.00	0.05
Deep breathing	97	24.56	23.82	4.24
Didactic class sessions	9	2.28	0.21	0.45
Group problem solving	6	1.52	0.09	0.30
Relaxation techniques (e.g. progressive muscle relaxation, meditation, guided imagery)	96	24.30	23.33	4.20
Sleep diaries	45	11.39	5.13	2.13
Sleep hygiene education	92	23.29	21.43	4.05
	395	100	80.08	17.73

Note. Various sleep interventions that were most often utilized in addressing sleep in different practice settings as derived from literature were listed on Table 8. Multiple answers can be chosen by each participant. N refers to the number of participants who selected the applicable sleep intervention (s) in their practice. % refers to the percentage derived from the total number of participants in the study. M refers to the mean average frequency that the sleep interventions had been selected. SD refers to the standard deviation as determined from the mean.

Appendix E

Table 5

Sleep interventions utilized to address sleep

	N	*%*	*M*	*SD*
Daytime activities	82	16.17	13.26	3.33
Habit training	77	15.19	11.69	3.15
Incontinence/nocturia	32	6.31	2.02	1.38
Mobility	30	5.92	1.78	1.29
Nutrition management (diet)	35	6.90	2.42	1.50
Pain management	56	11.05	6.19	2.35
Reverse ADLs (bedtime routines)	75	14.79	11.09	3.07
Skin integrity/Positioning	39	7.69	3.00	1.66
Stress management	81	15.98	12.94	3.30
	507	100	64.39	21.03

Note. Various sleep techniques that were most often utilized in addressing sleep as derived from literature were listed on Table 9. Multiple answers can be chosen by one participant. N. Refers to the number of participants who selected the applicable sleep techniques(s). % refers to the percentage derived from the total number of participants in the study. M refers to the mean average frequency that the sleep techniques had been selected. SD refers to the standard deviation as determined from the mean.

Appendix F

Table 6

ANOVA comparison between participant's perceived level of knowledge of sleep interventions and years of practice in OT

Group	*SS*	*df*	*MS*	*F*	*p*
Between	24.01	5	4.80	0.78	0.564
Within	724.19	118	6.14		
Total	748.19	123			

Note. Participants' perceived level of knowledge on sleep intervention was compared to duration of OT practicing sleep using ANOVA. *SS* or the Sum of Squares refers to the deviation of data from the mean value of the perceived level of knowledge of sleep interventions and years of practicing OT. *df* refers to the degrees of freedom in terms of extent of range value. *MS* or mean squares, pertain to the product of sum squares divided by degrees of freedom. *F* refers to the variability of the group means divided by the mean of the within variance. *p* refers to the probability of obtaining results of similar extremes as the observed result.

Appendix G

Table 7

Independent samples t-test analysis comparison between practitioners who had less than 10 years of practice and greater than 10 years of practice

Group	*M*	*SD*	*t*	*df*	*p*
Up to 10 yrs	4.29	2.29	-0.53	122	.595
10 plus yrs	4.53	2.63			

Appendix H

Table 8a

Conferences as a source of professional knowledge

Response	*O*	*E*	$(O-E)^2/E$
Yes	31	29.667	0.060
No	30	29.667	0.004
I don't know	28	29.667	0.094
		χ^2	0.157
		α	0.050
		df	2
		p	0.076

Table 8b

Continuing education as a source of professional knowledge

Response	*O*	*E*	$(O-E)^2/E$
Yes	52	47.333	0.460
No	48	47.333	0.009
I don't know	42	47.333	0.601
		χ^2	1.07
		α	0.05
		df	2
		p	0.414

Table 8c

OT Education as a source of professional knowledge

Response	*O*	*E*	$(O-E)^2/E$
Yes	41	36.333	0.599
No	39	36.333	0.196
I don't know	29	36.333	1.480
		χ^2	2.28
		α	0.05
		df	2
		p	0.679

Table 8d

Professional Recommendation as a source of knowledge

Response	*O*	*E*	$(O-E)^2/E$	
Yes	61	*55.333*	0.580	
No	57	*55.333*		0.050
I don't know	48	*55.333*		0.972
		$\chi 2$		1.60
		α		0.05
		df		2
		p		0.551

Table 8e

Published Journal as a source of sleep knowledge

Response	*O*	*E*	$(O-E)^2/E$
Yes	51	47.333	0.284
No	48	47.333	0.009
I don't know	43	47.333	0.397
		χ^2	0.69
		α	0.05
		df	2
		p	0.292

Table 9a

Cognitive behavioral was utilized for sleep intervention

Response	*O*	*E*	$(O-E)^2/E$
Yes	49	45.333	0.297
No	47	45.333	0.061
I don't know	40	45.333	0.627
		χ^2	0.985
		α	0.050
		df	2
		p	0.389

Table 9b

Computerized training was utilized for sleep intervention

Response	*O*	*E*	$(O-E)^2/E$
Yes	1	1.000	0.000
No	1	1.000	0.000
I don't know	1	1.000	0.000
		χ^2	0.00
		α	0.05
		df	2
		p	0.500

Table 9c

Deep breathing was utilized for sleep intervention

Responses	*O*	*E*	$(O-E)^2/E$
Yes	97	86.333	1.318
No	91	86.333	0.252
I don't know	71	86.333	2.723
		χ^2	4.29
		α	0.05
		df	2
		p	0.883

Table 9d

Didactic class was utilized for sleep intervention

Response	*O*	*E*	$(O-E)^2/E$
Yes	9	9.000	0.000
No	9	9.000	0.000
I don't know	9	9.000	0.000
		χ^2	0.00
		α	0.05
		df	2
		p	0.500

Table 9e

Group problem solving utilized as a sleep intervention

Response	*O*	*E*	$(O-E)^2/E$
Yes	6	5.666	0.020
No	6	5.666	0.020
I don't know	5	5.666	0.078
		χ^2	0.12
		α	0.05
		df	2
		p	0.471

Table 9f

Relaxation techniques utilized as a sleep intervention

Response	*O*	*E*	$(O-E)^2/E$
Yes	96	86.000	1.163
No	92	86.000	0.419
I don't know	70	86.000	2.977
		χ^2	4.56
		α	0.05
		df	2
		p	0.051

Table 9g

Sleep diaries utilized as a sleep intervention

Response	*O*	*E*	$(O-E)^2/E$
Yes	45	41.000	0.390
No	42	41.000	0.024
I don't know	36	41.000	0.610
		χ^2	1.02
		α	0.05
		df	2
		p	0.401

Table 9h

Sleep hygiene education utilized as a sleep intervention

Response	*O*	*E*	$(O-E)^2/E$
Yes	92	83.000	0.976
No	86	83.000	0.108
I don't know	71	83.000	1.735
		χ^2	2.82
		α	0.05
		df	2
		p	0.122

Appendix J

IRB Application ApprovalL

Gmail **Kanika Eng <kanikaeng1@gmail.com>**

MSOT009-002

Dr. Dominique Wascher <dwascher@stanbridge.edu> Wed, Mar 25, 2020 at 11:39 AM
To: Enjoli Filemu <efilemu@stanbridge.edu>, "kanikaeng1@gmail.com" <kanikaeng1@gmail.com>, "kathleendyanapostol@yahoo.com" <kathleendyanapostol@yahoo.com>, Pat Librea <patlibrea7@gmail.com>, "thonghvo89@gmail.com" <thonghvo89@gmail.com>

Dear Dr. Filemu,

The Stanbridge University Institutional Review Board has completed a review of your application entitled "The Clinical Reasoning Behind the Applications of Sleep Assessments and Interventions in Occupational Therapy." Your research protocol (MSOT009-002) is formally accepted as completed and categorized as exempt.

State laws mandate that the California Research Subjects' Bill of Rights be presented and signed at the beginning of the consent process by California subjects (or legal representative) participating in research. Therefore, you must include this bill in the consent section of the survey and email a copy to the IRB before conducting your study.

Should you wish to make modifications to this approved protocol, please submit a modification form for IRB review and approval. No changes may take place without establishing IRB approval.

IRB Application Number	MSOT009-002
Date	03/25/2020
Level of Review	EXEMPT Category 2
Conditional Approval	
List Modifications	
Approval	X
Signature of IRB Chair	

Sincerely,

Dominique N. Wascher, Ph.D.

IRB Chair

Appendix K

Survey Consent Form and Experimental Research Subject's Bill of Rights

Survey Consent Form

The purpose of this research study is to investigate the process of clinical reasoning and decision making behind the application of appropriate sleep assessment and interventions by Occupational Therapists' on their clients. The scope of this study will only include Occupational Therapists who can speak in English and practices within the United States.

This study will be non-experimental and will comprise of a survey questionnaire that will only take 10-15 minutes to complete.

In this study, you will be asked to complete a questionnaire about your demographics, including your educational background and practical experience in the field of Occupational Therapy. Furthermore, you will be asked about your knowledge and experience on utilizing certain assessments and interventions that may or may not be used to address sleep as an occupation.

There will be minimal-to-none potential risks and discomforts involved in this study. The researchers will attempt to ensure that the identity of the participants will be protected, however, there may be an uncontrollable potential risk of breach of confidentiality in the event that survey questionnaires will be accessed by the unknown.

This study will be conducted purely for the purpose of research and advancing the knowledge on sleep assessments and interventions in the field of Occupational Therapy. There will be no costs to you should you choose to participate. Also, there will be no compensation and expected benefits other than taking pride in partaking in a study that aims to contribute evidence-based research for the advancement of the profession.

At any time and for any reason during the study, you may choose to withdraw your participation and terminate the process by exiting the survey before your questionnaire has been fully completed.

Should you choose to participate in the study, the researchers will take precautionary and exhaustive measures to ensure that your confidential information will be secured and protected. The researchers will have sole access to and will secure the information that you provide in a password-protected file. Furthermore, the researchers will ensure anonymity, such that there will be no identifiers that will be able to match the completed survey questionnaires according to its respective contributor.

If you choose to participate in the study, should significant new information arise from the study's findings, you have the option to opt in so that researchers may provide the outcomes accessible to you.
Participation in this study is entirely voluntary, and the decision to participate, or not participate, is solely up to you.

If you have any comments, concerns, or questions regarding the conduct of the study and/or your rights as a participant of this study, you may contact sleepresearch@my.stanbridge.edu

[ ] I understand the statements above and agree to participate in this study.
[ ] I do not wish to participate in this study.

Experimental Research Subject's Bill of Rights

California law, under Health & Safety Code '24172, requires that any person asked to take part as a subject in research involving a medical experiment, or any person asked to consent to such participation on behalf of another, is entitled to receive the following list of rights written in a language in which the person is fluent. This list includes the right to:

1. Be informed of the nature and purpose of the experiment.

2. Be given an explanation of the procedures to be followed in the medical experiment, and any drug or device to be utilized.

3. Be given a description of any attendant discomforts and risks reasonably to be expected from the experiment.

4. Be given an explanation of any benefits to the subject reasonably to be expected from the experiment, if applicable.

5. Be given a disclosure of any appropriate alternative procedures, drugs or devices that might be advantageous to the subject, and their relative risks and benefits.

6. Be informed of the avenues of medical treatment, if any, available to the subject after the experiment if complications should arise.

7. Be given an opportunity to ask any questions concerning the experiment or the procedures involved.

8. Be instructed that consent to participate in the medical experiment may be withdrawn at any time and the subject may discontinue participation in the medical experiment without prejudice.

9. Be given a copy of the signed and dated written consent form.

10. Be given the opportunity to decide to consent or not to consent to a medical experiment without the intervention of any element of force, fraud, deceit, duress, coercion, or undue influence on the subject’s decision.

Appendix L

Recruitment Flyer

Appendix M

Survey Questions

1. **Experimental Research Subject's Bill of Rights/California Law (See Appendix K)**

2. **Survey Consent Form (See Appendix K)**

3. **Do you address sleep as an occupation in your practice?**
    a. Yes
    b. No
    c. I'm not sure

DEMOGRAPHICS

4. **What state(s) are you currently practicing in as Registered and/or Licensed Occupational Therapist?**

    _____

5. **What is your current Occupational Therapy education level?**
    a. Associate's
    b. Bachelor's
    c. Master's
    d. Doctorate

6. **How long have you been practicing OT?**
    a. Less than 3 years
    b. 3-5 yrs
    c. 5-10 yrs
    d. 10-15 yrs
    e. 15-20 yrs
    f. 20+ yrs

7. **What settings have you practiced in as an Occupational Therapist? (select all that apply)**
    a. Academia
    b. Acute Care
    c. Community
    d. Early Intervention
    e. Geriatrics
    f. Health & Wellness

g. Home Health
h. Hospital
i. Inpatient
j. Long-term care/Skilled nursing facility
k. Mental Health
l. Outpatient
m. Private Practice
n. Pediatrics
o. Rehabilitation & Disability
p. Work & Industry
q. Other:_____

8. In your practice, what percentage of your clients have you addressed sleep with?

a. 75-100%
b. 50-74%
c. 25-49%
d. 0-24%

9. How did you gain your knowledge of sleep assessment/interventions?

a. Conferences
b. Continuing Education courses
c. Journal
d. OT Training
e. Professional recommendation (e.g. colleague or coworker)
f. Other:_____
g. Not applicable (N/A)

SLEEP ASSESSMENTS

10. On a scale of 1-10, how would you rate your knowledge of sleep <u>assessments</u>?

1 2 3 4 5 6 7 8 9 10

Poor Average Excellent

11. Please select the following sleep <u>assessments</u> you are familiar with: (Select all that apply)

a. Pittsburgh Sleep Quality Index (PSQI)

b. PROMIS Sleep Disturbance Instruments
c. National Sleep Foundation's Sleepiness Test
d. Insomnia Severity Index (ISI)
e. Epworth Sleepiness Scale (ESS)
f. STOP BANG Screening Questionnaire
g. Mini Sleep Questionnaire (MSQ)
h. Sleep Disorders Questionnaire
i. Sleep Apnea Clinical Score (SACS)
j. Functional Outcomes of Sleep (FOSQ)
k. Calgary Sleep Apnea Quality of Life Index (SAQLI)
l. Oviedo Sleep Questionnaire (OSQ)
m. Athens Sleep Questionnaire (ASQ)
n. Self-Efficacy Measure for Sleep Apnea (SEMSA)
o. Obesity, Snoring, Apneas, aged over 50 (OSA50)
p. Simple Four Variables (SFV)
q. Other:_____

12. In your practice, what is the most useful sleep assessment and why?

SLEEP INTERVENTIONS

13. On a scale of 1-10, how would you rate your knowledge of sleep interventions?

1 2 3 4 5 6 7 8 9 10

Poor Average Excellent

14. Please select the following sleep interventions that you are utilizing in your practice: (Select all that apply)

a. Relaxation techniques (e.g. progressive muscle relaxation, meditation, guided imagery)
b. Deep breathing
c. Sleep diaries
d. Sleep hygiene education
e. Cognitive behavioral interventions
f. Didactic class sessions
g. Computerized training
h. Group problem solving
i. Other:_____
j. N/A: I do not use any of these

15. Do you address the following relating to sleep? (Select all that apply)

a. Skin integrity/Positioning
b. Mobility
c. Pain management
d. Nutrition management (diet)
e. Incontinence/nocturia
f. Daytime activities
g. Habit training
h. Reverse ADLs (bedtime routines)
i. Stress management
j. Other:_____
k. N/A: I do not address any of these

16. Which sleep interventions do you use most often? Why did you choose it?

17. In your opinion, what is the biggest challenge for OTs in addressing sleep as an important area of occupation?

Appendix N

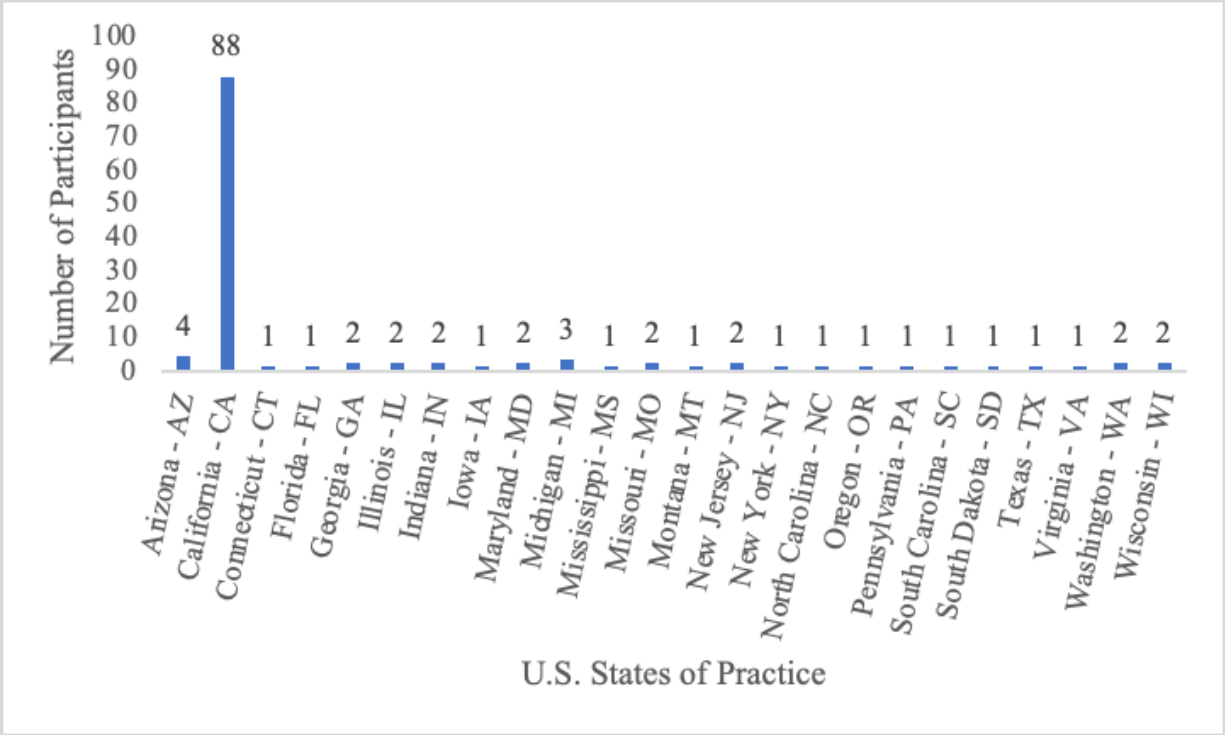
Master Coding List

General Themes	Description
Convenience	Quick, easy, time, effectiveness, practical, provide more in depth Lack of Time for OT to address (Explanation: works best for parents; easier for the caregiver to follow; easier for the caregiver to follow (goes w/ easy & practical?)
Environmental/ External Factors	Setting specific Context of time and place (e.g. OT don't work at night, pediatric outpatient worlds; in-patient clients) Setting Specific (inpatient hospitals, acute, outpatient, rehab, mental health) Limited visits Lack of Client space (home) External barriers that we don't have control over (living arrangements) home has to be approved by DCFS (#20) Lack of Access to Resources Lack of Client Income Recommendation, Referral, Assessment completed by third party, Insurance Reimbursement Issues (funding/billing), Lack of OT referrals
Values	Undervalued (sleep is not prioritized) Client Does Not Value Sleep Family perception of sleep routines How Society view sleep (e.g. less sleep as a “badge of honor”)
Knowledge & Education	OT Knowledge (e.g. OT don't know what to do; familiarity; Thinking it’s an ADL)/Experience/Education OT Unawareness; Scope of practice (OT understanding; out of scope); Lack of OT Training Lack of standardized assessment Model challenges (#33) (e.g. medical model vs. OT model in addressing sleep) Lack of OT Discussion (within other OTs) Lack of treatment consistency between OTs

	Lack of Research (EBP) Client Awareness Client understanding (e.g. Understanding OT role in sleep (client)) Lack of Parent Education Lack of Interdisciplinary Support (Communication) Sleep is addressed by other discipline
Client-centeredness	Client-centeredness Pain-management Depends on client's condition (e.g. cognitive deficits, comorbidities, multiple medical conditions that interfere with sleep; many variables are involved = pain, stress, anxiety; Sleep comes up in context of sensory processing) Client's Age Pharmacological methods (e.g. Ineffective pharmacological interventions = nonpharmacological will work better for the client; Client uses pharmacological sleep aids; medication side effects) Initiates discussion (e.g. client has to bring it up first), Reliable data (e.g. Parent's Reporting (Subjective/inaccurate); Reporting difficulties (client unable to offer reliable/objective data)) Client Belief Client Communication Client Follow Through (e.g. Lack of Client consistency; Lack of Parent/Caregiver Follow Through) Client Motivation Sleep is private Public Awareness Other factors are involved (potty training, screen time, multi-faceted) Population Specific (e.g. Teenagers don't want it; peds; geriatrics)

Figure 1

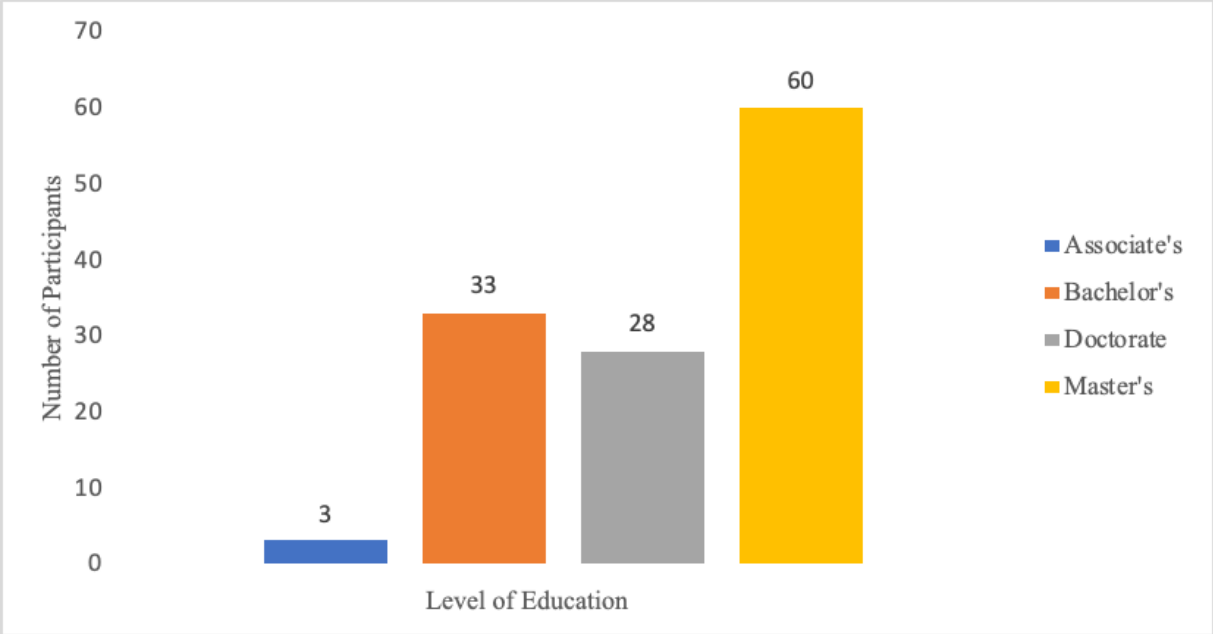
The number of participants practicing in different U.S. States



Note. The data on figure 1 exhibits the y-axis as pertaining to the number of participants who responded that they are currently practicing in the said U.S. state. The x-axis pertains to the applicable U.S states where different participants are practicing Occupational Therapy.

Figure 2

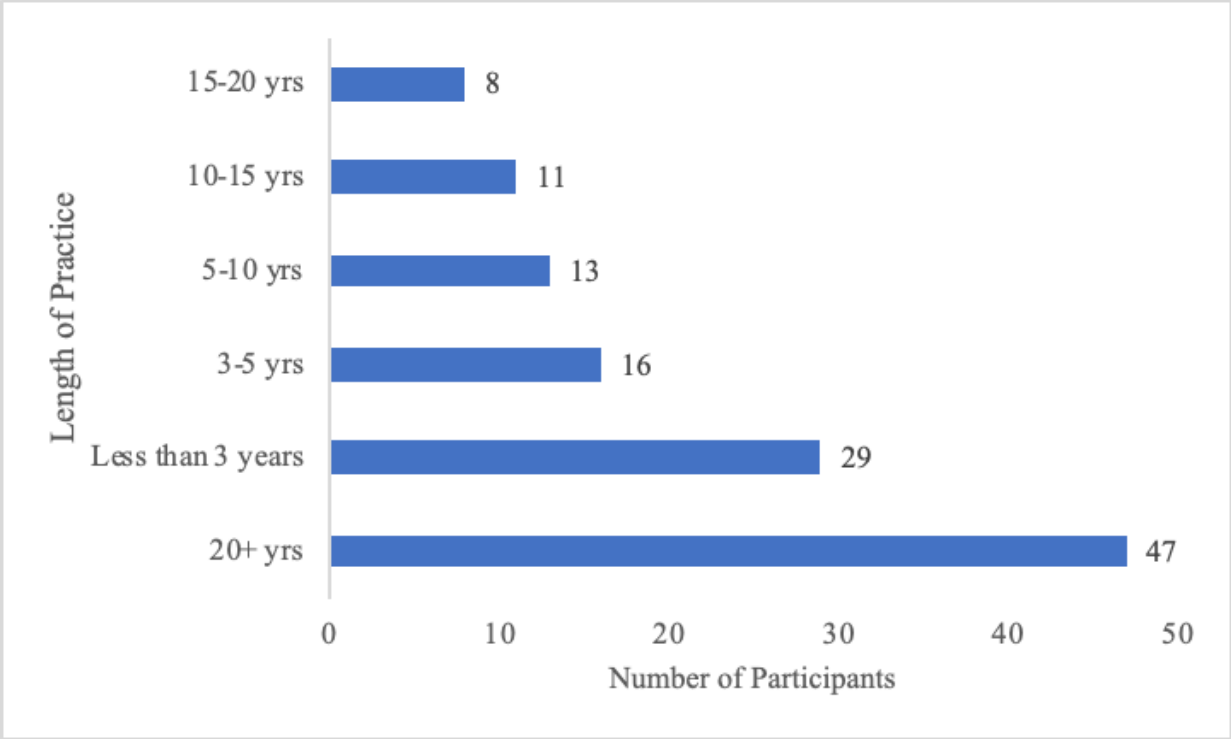
Survey respondents' current level of education



Note. The data on Figure 2 demonstrates the number of participants who attained a certain educational level (y-axis), and the different levels of education that may possibly be attained in Occupational Therapy (x-axis).

Figure 3

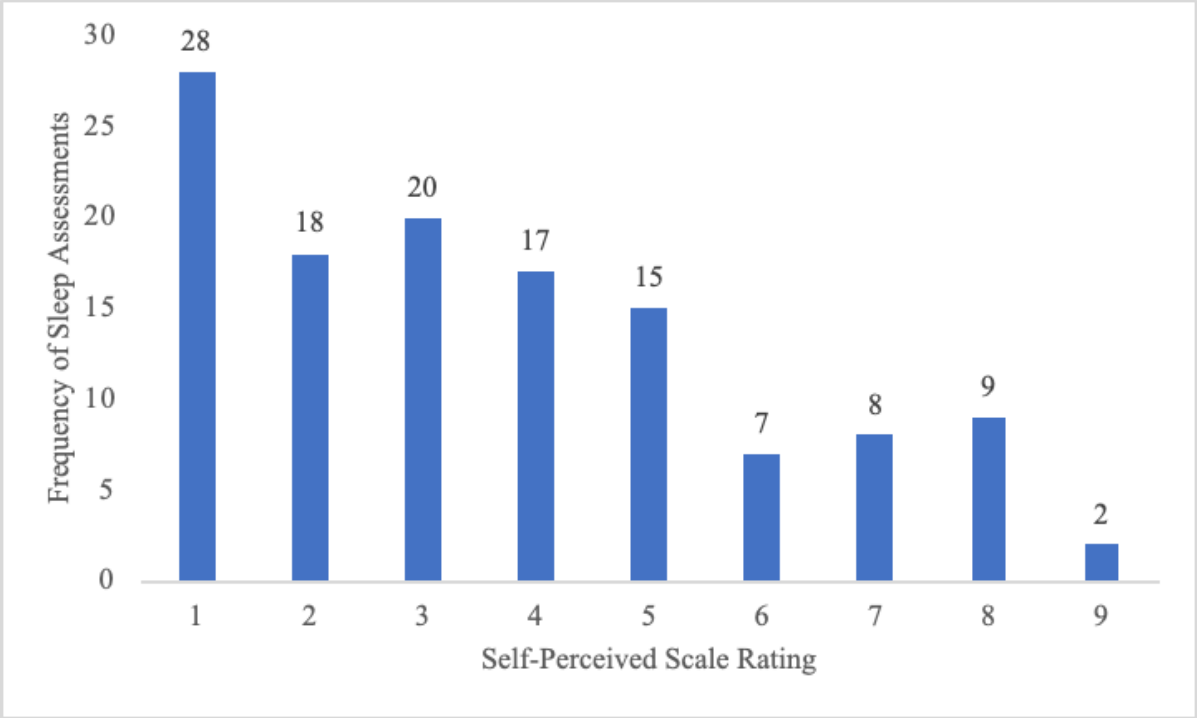
Survey respondents' length of practice in Occupational Therapy



Note. The data in Figure 3 demonstrates the survey respondents' duration/length of practice in Occupational Therapy in years.

Figure 4

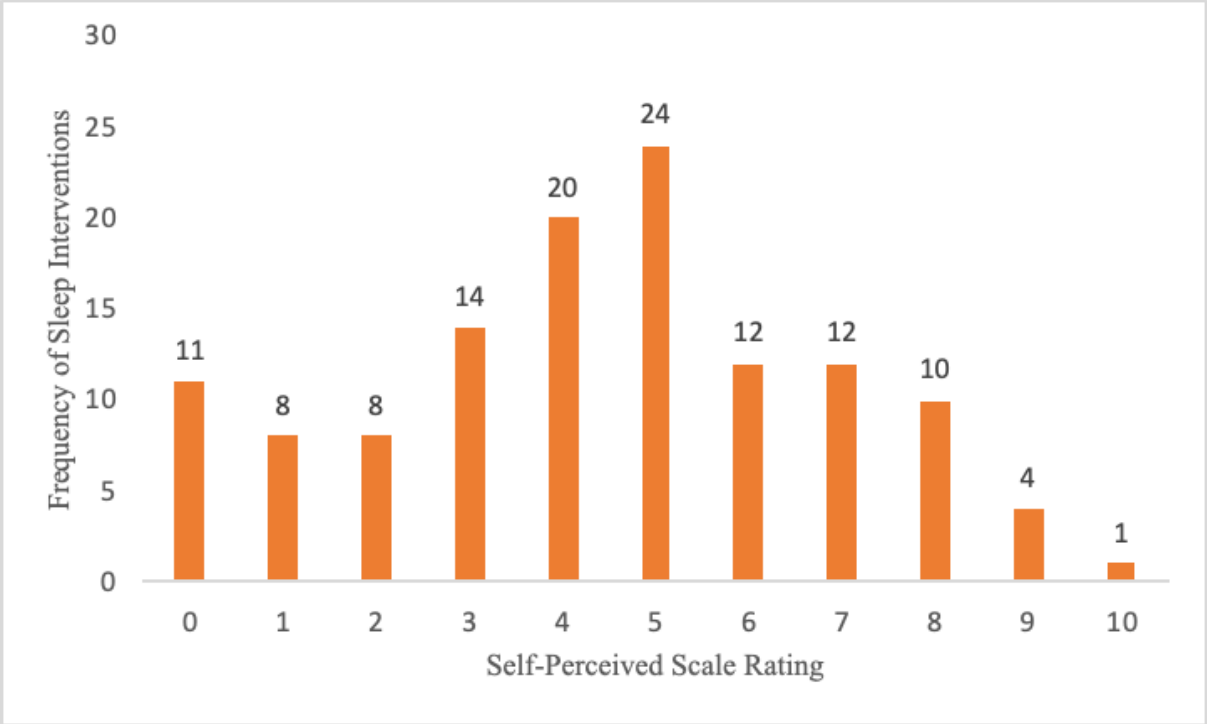
Participants' self-perceived knowledge on sleep assessments



Note. Researchers utilized a Likert scale of "1" being the lowest to "10" being the highest to measure the participants' self-perceived knowledge on sleep assessments. Frequency pertains to the number of times that participants selected the specific scale rating. Scale Rating refers to the range of scale ratings that may be selected.

Figure 5

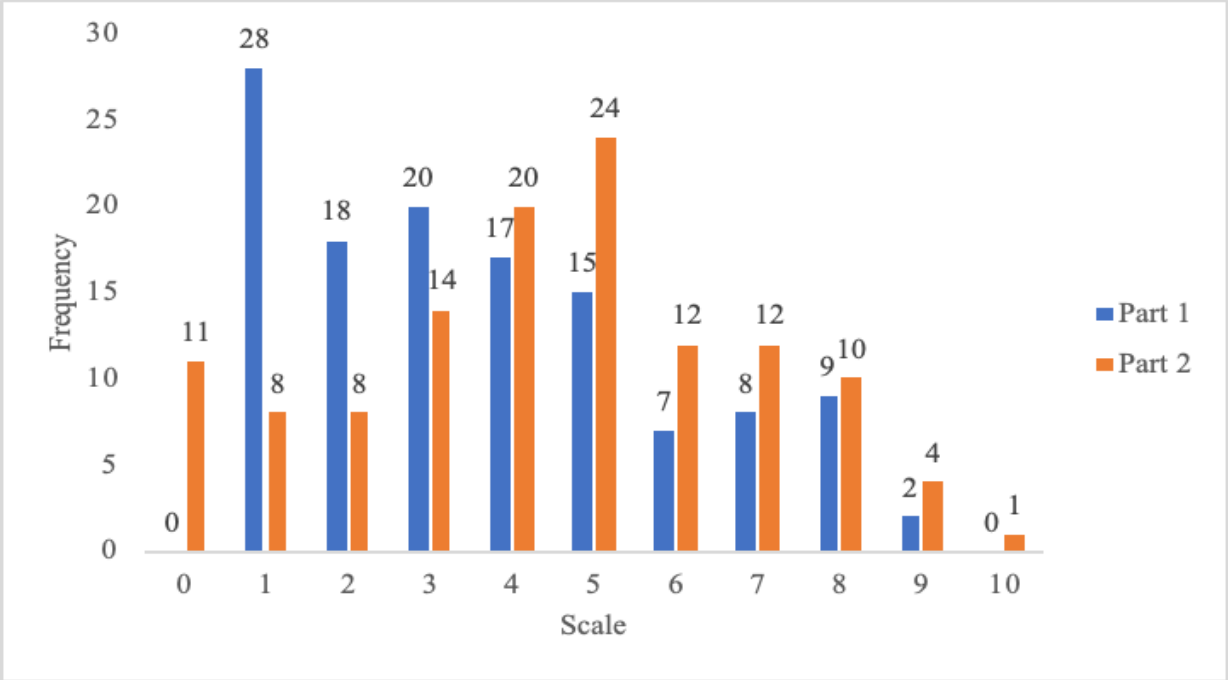
Participants' self-perceived scale on frequency of sleep interventions



Note. Researchers utilized a Likert scale of "1" being the lowest to "10" being the highest to measure the participants' self-perceived knowledge on sleep interventions. Frequency pertains to the number of times that participants selected the specific scale rating. Scale Rating refers to the range of scale ratings that may be selected.

Figure 6

Comparison between self-perceived knowledge on sleep assessments and interventions



Note. Researchers utilized a Likert scale of "1" being the lowest to "10" being the highest to measure the participants' self-perceived knowledge on sleep assessments and interventions. Frequency pertains to the number of times that participants selected the specific scale rating. Scale Rating refers to the range of scale ratings that may be selected.