Adolescent Perceptions of Weighted Blankets and Quality of Sleep: A Mixed Method Design

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Adolescent Perceptions of Weighted Blankets and Quality of Sleep: A Mixed Method Design

Abstract

*Background:* The purpose of this mixed methods case study was to describe the perceived sleep quality experience of an adolescent, without a pre-identified sleep need, when they used a weighted blanket during sleep.

*Method:* Adolescents (n = 5) 11 to 16 years of age completed a sleep diary for 7 days, sleeping with a self-selected weighted blanket for at least 3 days. A semi-structured individual interview was held after Day 7.

*Results:* The majority of the participants would like to continue using a weighted blanket for sleep. Eighty percent of the adolescents choose to sleep with a blanket at or above 12% of their body weight. Qualitative data revealed the following themes: perceptions regarding the characteristics of a weighted blanket, perceived changes in quality of sleep, and perceived changes in quantity of sleep.

*Conclusion:* A weighted blanket is a sleep hygiene tool that can be used safely and effectively to improve sleep quality for healthy adolescents when the weight and the size of the blanket are based on adolescent preference. Future directions include the exploration of sleep quantity and weighted blankets and the use of a weighted blanket as a sleep hygiene tool with other populations. Occupational therapists' unique skill set addresses sleep quality, and they are ideal leaders to promote this sleep hygiene tool from a global wellness perspective.

Comments

The author declares that they have no competing financial, professional, or personal interest that might have influenced the performance or presentation of the work described in this manuscript.

Keywords

sleep hygiene, sleep quantity

Cover Page Footnote

Thank you to Kelly McClintock, OTD, OTR/L, and Callie Victor, PhD, OTR/L, for your guidance and support during the research process.

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Sleep is the occupation that consumes more of an adolescent’s time than any other; yet, the profession of occupational therapy does not adequately address the needs of the healthy adolescent population with their occupational performance of sleep. The Centers for Disease Control and Prevention (2017) estimate that approximately 70 million Americans suffer from sleep problems. Sleep problems can affect all age groups, and as many as 40% of adolescents have sleep problems (Bhargava, 2011). Sleep problems are common in children and adolescents, but they are often under-identified and under-reported (Tharakan & Shenoy, 2019). Often, rather than identifying an underlying sleep problem, symptoms of poor sleep are misdiagnosed as behavioral or attention problems (Cleveland Clinic, n.d.). When identified, common approaches to treat sleep disorders include pharmacological and behavioral strategies (Williams Buckley et al., 2020). However, in recent years, literature has begun to address the use of a weighted blanket as a non-pharmacological sleep intervention (Ackerley et al., 2015; Ekholm et al., 2020; Gee et al., 2021; Gringras et al., 2014; Williams Buckley, 2020). Research has concluded that a weighted blanket may be a novel, non-pharmacological approach to improving sleep quality in healthy adults with self-reported insomnia (Ackerley, 2015), and the American Academy of Neurology reported that the weighted blanket could safely be used as a non-pharmacological sleep intervention for children and adolescents with autism spectrum disorder and sleep disturbance (Williams Buckley et al., 2020). These findings, coupled with the conclusion that healthy adolescents suffer from under-identified and unmet needs with sleep quality, present an opportunity to investigate the readily available weighted blanket as a non-pharmacological sleep aid from a health and wellness perspective for the adolescent population. Consequently, the problem this study addresses is understanding the clinical benefits of using a weighted blanket for healthy adolescents during the occupation of sleep.

According to Wolfson and Montgomery-Downs (2013, as cited in Buxton et al., 2015), sleep quality, as well as sleep quantity, is “vital for children” (p. 15). Similar to exercise and a healthy diet, sleep is necessary for a child’s health, growth, learning, and overall functioning. The literature has reported a relationship between sleep quality and physical (Gao et al., 2019) and psychological conditions (Palmer & Alfano, 2017). There is evidence of a stronger relationship between sleep quality and school performance compared to sleep quantity and school performance (Dewald et al., 2010). Similarly, sleep efficacy, an indicator of sleep quality, had a stronger effect on adolescent school performance compared to sleep timing and sleep duration (Tonetti et al., 2015). Despite the undisputed importance of sleep quality for children, sleep is not often addressed effectively by the primary medical care that children receive (Williamson et al., 2020). In fact, a recent study found that 48% of children who sought medical care unrelated to sleep had sleep disturbances that were not identified or reported (Tharakan & Shenoy, 2019). The study concluded that it is important to recognize sleep problems early and to evaluate them routinely in otherwise “normal” (Tharakan & Shenoy, 2019, p. 614) children.

Adolescents face unique impacts on their sleep, including the psychosocial aspects of bedtime autonomy, academic pressures, screen time, and social networking, as well as the societal pressure of the expectation of “late to bed and early to rise” (Carskadon, 2011, p.10). These impacts are driven by the American culture (Buxton et al., 2015) and are often out of the control of the adolescent. Given these external influences, it is important to facilitate an adolescent’s engagement in their own health. And while the literature on childhood sleep is advancing, gaps remain with the delivery of this knowledge back to the children (Cleveland Clinic, n.d.), suggesting an opportunity for sleep health promotion for adolescents.

Sleep literacy interventions are an emerging area of practice for occupational therapists (Brown et al., 2012). It is important for the occupational therapy profession to recognize the benefits of a “shift”
from an individual impairment perspective to a wellness perspective that can be applied to a larger population. Because of the clear link between poor sleep and daily function, occupational therapists are uniquely qualified and must broaden and build their scope of practice to address sleep (Brown et al., 2012). The framework for the profession of occupational therapy recognizes rest and sleep as an occupation (American Occupational Therapy Association [AOTA], 2020), yet the profession does not adequately address this occupation from a wellness perspective. While there are a variety of pharmacological, cognitive, and behavioral treatments available for individuals with sleep disturbances, there are also options to promote better sleep for the general population. These treatments may include sleep hygiene principles. Sleep hygiene includes behaviors, routines, and environmental modifications that an individual completes in an effort to improve sleep (Kansagra, 2020). Sleep hygiene principles may include limiting caffeine, maintaining a regular bedtime (Butxon et al., 2015), exercising, finding a relaxing ritual and environment, and finding time to wind down (Sleep Foundation, 2020).

A weighted blanket is a sensory-based intervention that uses deep-pressure touch simulation (Champagne et al., 2015). According to Grandin (1992, as cited in Champagne et al., 2015), sensory-based approaches that involve the application of deep pressure touch stimulation provide a feeling similar to that of a “hug, holding, swaddling, or massage” (p. 213). Champagne (2010, 2011, as cited in Champagne et al., 2015) states that the weighted blanket is a “therapeutic modality that is used to self-comfort, rest and to reduce anxiety or stress” (p. 212). While the use of a weighted blanket has been studied for its safety and effectiveness in anxiety reduction (Becklund et al., 2021; Champagne et al., 2015; Mullen et al., 2008) and sleep and insomnia benefits (Ackerley et al., 2015; Ekholm et al., 2020; Gee et al., 2021; Gringras et al., 2014), there has been no literature identifying the use of a weighted blanket for otherwise healthy individuals, including the adolescent population, with no previously identified sleep difficulties. A Google search with the keyword weighted blanket yields approximately 12,400,000 results, and a search on Amazon for a weighted blanket yields over 2,000 items for sale. The popularity of the weighted blanket and the fact that it is readily available presents an opportunity to explore the benefits of using a weighted blanket during sleep for a general, otherwise healthy population as a sleep-promoting, sleep hygiene method.

Using a weighted blanket ranging from 12% to 26% of a person’s body weight was found to be safe and provided calming benefits in the general adult population (Mullen et al., 2008). Similarly, a weighted blanket was found safe and effective in the reduction of anxiety for the adult mental health population (Becklund et al., 2021; Champagne et al., 2015). Research has also suggested that the perceived, subjective sense of relaxation by adults when using a weighted blanket is greater than the actual objective benefits of the weighted blanket (Mullen et al., 2008). Several studies have explored the impact of the weighted blanket on individuals with sleep problems. Ackerley et al. (2015) found the weighted blanket ranging from 12% to 38% of a person’s body weight to be effective at improving the sleep quality of adult participants with insomnia, both subjectively and objectively. Ackerley et al. found no adverse health safety effects with adults using the weighted blanket and found that when the adults used a weighted blanket, they had a calmer night’s sleep. Participants in Ackerley et al.’s (2015) study enjoyed sleeping with the blankets, found settling down to sleep easier, felt a sense of security with the blanket, and reported a “much better quality of sleep” (p. 5). Ekholm et al. (2020) found that adult psychiatric patients with insomnia who used a weighted blanket during sleep had less fatigue during the day, higher activity during the day, better sleep maintenance, and decreased symptoms of depression and anxiety compared to those patients with a control blanket. Gringras et al. (2014) found the weighted blanket to be safe during sleep.
but did not show an increase in total sleep time for autistic children 5 to 16 years and 10 months. However, on the subjective preference measures, children and parents “favored” (Gringras et al., 2014, p. 298) the weighted blanket during sleep. Finally, Gee et al. (2021) found in their case study of two children that a weighted blanket increased total sleep quantity for one child, and the other child had a reduced time falling asleep when using a weighted blanket.

Given the notion that sleep is an occupation controlled by engagement and measured by performance quality and performance quantity, one can assert that adolescents, given environmental, physiological, and psychological influences, may present with an unidentified occupational dysfunction with sleep quality and sleep quantity. The well-documented importance of sleep quality and sleep quantity for the health and well-being of an adolescent and the notion that there are variables for which an adolescent can and cannot control, as it applies to their perceptions of sleep quantity and quality participation and performance, presents an area of research for which limited literature has been identified. Similarly, no literature has been identified using a weighted blanket during sleep for the general adolescent population. Occupational therapists must broaden their scope of practice to address sleep from a wellness perspective for this population. Following this wellness perspective, similar to eating healthy and exercising, there is a need for exploration into readily available, easily accessible sleep hygiene methods for an adolescent to use to help promote the performance and the cognitive interpretation of sleep quality. Considering the theoretical and documented calming (Becklund et al., 2021; Champagne et al., 2015; Mullen et al., 2008) and sleep benefits (Ackerley et al., 2015; Ekholm et al., 2020; Gee et al., 2021) of the weighted blanket, an opportunity exists to investigate the use of the weighted blanket during adolescent sleep as a sleep hygiene tool. Therefore, the purpose of this mixed methods case study was to describe the perceived sleep quality experience of an adolescent without a pre-identified sleep need when they used a weighted blanket during sleep. The primary research question for this study was: In adolescents without a pre-identified sleep need, does the use of a weighted blanket during sleep impact their perception of sleep quality?

The constructionist research paradigm from qualitative methodology framed this research. Through the use of constructionism, reality was seen as a “product of social processes” (Chen et al., 2011, p. 130), and this researcher held the ontological and epistemological belief that the adolescent created their own meaning-making reality. A primary developmental task of adolescents is to gain and achieve independence in many areas of their lives, and sleep is one of those areas (Carskadan, 2011). This study viewed the adolescent to be in control of, and in support of, their own sleep quality performance and perception. See Figure 1 for the conceptual framework that guided this study, which includes all the interconnected influences and outcomes of sleep for adolescents.

**Method**

**Design**

This was a descriptive case study using mixed methods design (Baxter & Jack, 2008; Hesse-Biber, 2010). Understanding how the participant interpreted and made meaning (Hesse-Biber, 2010) of their sleep quality while using and not using a weighted blanket was a primary focus of this case study. Qualitative and quantitative data were collected through a 7-day sleep diary followed by a semi-structured individual interview. The sleep diary allowed the participant to organize and record their 7-day sleep experience before the interview in a manner that was developmentally appropriate, realistic, and with perceived efficiency. The quantitative data generated from the sleep diary and the closed-ended interview questions were gathered to complement the qualitative findings from the same instruments and to
understand and describe each individual adolescent’s perceptions of sleep quality. Thus, this case study gathered both qualitative and quantitative data from its data collection instruments, as these mixed methods of data collection, guided by a qualitative constructionist paradigm, were determined to be appropriate to provide a thorough answer to the research question for this study.

**Figure 1**
*Conceptual Framework*

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**Participants**

A private text or Facebook Messenger message was sent to potential participant’s parents from the researcher’s current contacts and communications with these contacts led to additional participants through word of mouth. To be included in the study, the adolescent had to be (a) between 10 and 19 years of age, (b) be of reported good health (having bodily functions working within normal limits as perceived by the participant), (c) be able to sleep in habitual conditions (the typical place in which the activity would occur on a regular basis) of their home(s) for 7 consecutive days, and (d) live within a 45-mile radius of the researcher. Participants were excluded from this study if they (a) had used a weighted blanket for nightly sleep in the past 3 months; (b) were unable to read, write, and/or communicate with the researcher, verbally or with communication aids; (c) had an identified diagnosis of an intellectual disability; and (d) were currently under the care of a physician for a sleep disorder. This study was conducted in the home of the adolescent. A university Institutional Review Board approved this study. Informed consent and child assent were obtained for all participants before enrollment in this study.

**Intervention**

A weighted blanket is a commercially and readily available item that is filled with materials such as small glass beads, which provide evenly distributed weight to the surface of a person’s body when the blanket is laid over the body. In their 2020 Practice Guideline, The American Academy of Neurology reported on the use of a weighted blanket for use with children and adolescents with autism spectrum...
disorder, insomnia, and disrupted sleep behavior. The American Academy of Neurology concluded that there were “no serious adverse events with blanket use and that blankets could be a reasonable nonpharmacologic approach for some individuals” (Williams Buckley et al., 2020, p. 392). This recommendation suggests that weighted blanket use over a period of time is safe for the general adolescent population. It has been found that a weighted blanket that is 12% or more of an adult’s body weight has no adverse effects on health safety and produces calming effects (Mullen et al., 2008) and an improvement in sleep quality (Ackerley et al., 2015). In Ackerley et al. (2015), the weight of the blanket ranged from 12% to 38% of the participant’s weight, and in Mullen et al. (2008), the weight of the blanket ranged from 12% to 26%. Although these data cannot be automatically generalized to the adolescent population, there is no evidence to support that a weighted blanket above 12% and under 38% of an adolescent’s body weight is unsafe for use by the adolescent population.

Each participant in this study preselected a blanket weight from a choice of two. Following the findings of Ackerley et al. (2015) and Mullen et al. (2008) the initial blanket provided to each participant as a choice was at or just above 12% of the participant’s body weight, with body weight taken at the time of informed consent and minor assent. If the participant felt that the initial blanket was too light or too heavy, they were offered to try a blanket approximately 2 lb (0.91 kg) to 3 lb (1.36 kg) lighter or 2 lb (0.91 kg) to 3 lb (1.36 kg) heavier to determine if that weight was preferred. Each participant’s blanket was similar in texture, color, and thickness, and all were weighted with glass beads. Blanket length and width differed.

**Data Collection Instruments**

**Sleep Diary**

A sleep diary is considered the “‘gold standard’ for subjective sleep assessment” (Carney et al., 2012, p. 287). The sleep diary available online for public use from the Sleep Foundation (Suni, 2021) was used for this study. It is readily available and is a realistic, developmentally appropriate tool for an adolescent to use to record their subjective sleep quality. It is a 7-day sleep diary that has a series of 19 items per day that are in the form of questions or prompts. Ten of the questions or prompts are completed in the morning and nine of the questions or prompts are completed in the evening. It asks a variety of sleep-related questions, such as the time the individual got into bed, how many times they woke during the night, the number of hours slept, a rating of sleep quality, any sleep disturbances experienced, and exercise and nap participation. The participants were given a paper version of the dairy. One item in the diary was blacked out by the researcher. This question asked if alcohol was consumed 2–3 hrs before going to bed. The researcher highlighted Day 3, Day 4, and Day 5 on the evening part of the diary with the words “use blanket.” The researcher highlighted Day 6 and Day 7 on the evening part of the diary with the word “choice.”

**Semi-Structured Interviews**

The one-on-one semi-structured interview with each participant occurred through teleconference after Day 7. The primary researcher developed the semi-structured interview guide which contained four main open and closed-ended questions and prompts. The questions were developed systematically to explore the meaning and perceptions of the weighted blanket experience for the participant and to allow for consistent data collection across the interviews. Based on the first interview, each participant was asked two additional main questions. With the permission of the parent and the adolescent, the one-on-one interview was recorded and transcribed. Parental presence during the interview was optional. Two participants had parents present during the interview. The interview question or prompt was directed to
the adolescent. For example, one prompt was, “Please tell me about your sleep experience while using the weighted blanket.” Another prompt was, “Did you choose to use the weighted blanket during Days 6 and/or 7 of the study?”

**Procedures**

The participants were offered an initial blanket at or just above 12% of their body weight. The participants lay on a couch or a reclining chair with the blanket donned over their bodies (feet, legs, torso, arms, hands). This was done to trial if they were comfortable with the 12% weight or if they would like to try either a heavier blanket or a lighter blanket. While both a lighter and a heavier blanket were available for each participant, each participant was only offered a choice of two blankets. A lighter blanket if they determined that the 12% of body weight blanket was too heavy or a heavier blanket if they determined that the 12% of body weight was too light. They were allowed to try both blanket options repeatedly, as described above, until they determined their individualized preference. The participant blanket fitting lasted approximately 5 minutes. The participants were provided with their blanket in the weight of their choice, a physical hard copy of a sleep diary, and a writing implement. The sleep diary form was explained to each participant and their parent, and all questions were answered. In addition, the use of the blanket was explained to each participant, including that it should only be used during nighttime sleep. Each participant began their seven consecutive days of data collection in the sleep diary on a day of their choice. The participant’s parent notified the researcher through a previously established communication method when their child started their data collection. Beginning on Day 1 and ending on Day 7 the researcher communicated daily with the participants and their parents. This communication was a procedural safeguard to minimize or protect against risks for subjects throughout the study and to be available for questions regarding procedures. The specific daily procedures are in Table 1 and were detailed in the sleep diary and in the informed consent and minor assent forms. After Day 7 the sleep diary and weighted blanket were collected, and the one-on-one individual semi-structured interview was held through teleconference. All participant interviews occurred within three days of sleep diary completion and the average interview time was 7.83 min.

**Table 1**

*Daily Participant Procedures*

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete the sleep diary in the morning and evening. Sleep at night in the typical place that you would sleep.</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete the sleep diary in the morning and the evening. Sleep at night in the typical place that you would sleep with the weighted blanket added to your bedding.</td>
<td></td>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete the sleep diary in the morning and the evening. Sleep at night in the typical place that you would sleep and you will choose to sleep with or without the weighted blanket.</td>
<td></td>
<td></td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data Analysis**

Sleep diaries were organized by each participant’s first name and assigned a participant number. The semi-structured one-on-one interviews were recorded and automatically transcribed using a password-protected video conference platform as well as audio recorded using a password-protected voice...
recording cell phone app. The automatically transcribed documents from the video conference platform were printed and compared to the video conference recording and the voice recording. Any errors were corrected so that the interviews were transcribed verbatim. After transcription, the interviews were organized by first name and then assigned a participant number. Field notes were taken during the interviews and were organized by first name and then participant number.

Quantitative data from the sleep diary and closed-ended interview questions were analyzed using descriptive statistics. Ordinal data from each participant’s sleep quality scale was organized by participant and day for visual analysis. The number of hours slept was organized by participant and day for visual analysis. A four-step thematic analysis process (Green et al., 2007) was used for the qualitative data collected from the semi-structured interviews. Step 1 was data immersion. This first step included viewing and listening to the recorded interviews, reading and re-reading the transcripts, taking notes, and reviewing field notes. Step 2 was coding. During coding, words and phrases were highlighted in each transcript, and notes were organized on separate sheets by question and participant. These words and phrases were then transferred to a code list. After initial coding, Step 3 involved grouping the codes to create categories. Movement through the steps was a dynamic process that involved back-and-forth collection and analysis. Ultimately, Step 4 was the identification of themes from the categories. Qualitative data from the sleep diary was organized by participant name, then participant number, and used to complement qualitative data from the interviews.

Results

Five participants (3 females, 2 males) between the 11 and 16 years of age completed this study. The participants were recruited through a purposeful, convenience sample. See Table 2 for demographic details about each participant and their blanket weight choice.

Table 2

<table>
<thead>
<tr>
<th>Participant (P)</th>
<th>Age (years)/ Gender</th>
<th>Participant Weight (lb)</th>
<th>Initial Blanket Offered (lb)</th>
<th>Blanket Chosen (lb)</th>
<th>Blanket Size (in.)</th>
<th>Body Weight % of Blanket</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 15/ Female</td>
<td>120 (54.43 kg)</td>
<td>15 (6.80 kg)</td>
<td>17 (7.71 kg)</td>
<td>48x72 (1.22x1.83 m)</td>
<td>14.16%</td>
<td></td>
</tr>
<tr>
<td>P2 13/ Female</td>
<td>120 (54.43 kg)</td>
<td>15 (6.80 kg)</td>
<td>17 (7.71 kg)</td>
<td>48x72 (1.22x1.83 m)</td>
<td>14.16%</td>
<td></td>
</tr>
<tr>
<td>P3 11/ Female</td>
<td>78 (35.38 kg)</td>
<td>10 (4.53 kg)</td>
<td>10 (4.53 kg)</td>
<td>48x60 (1.22x1.52 m)</td>
<td>12.82%</td>
<td></td>
</tr>
<tr>
<td>P4 16/ Male</td>
<td>169 (76.66 kg)</td>
<td>20 (9.07 kg)</td>
<td>22 (9.97 kg)</td>
<td>60x80 (1.52x2.03 m)</td>
<td>13.01%</td>
<td></td>
</tr>
<tr>
<td>P5 12/ Male</td>
<td>73 (33.11 kg)</td>
<td>10 (4.53 kg)</td>
<td>7 (3.18 kg)</td>
<td>41x60 (1.04x1.52 m)</td>
<td>9.58%</td>
<td></td>
</tr>
</tbody>
</table>

Quantitative Results from Sleep Diary and Closed-Ended Interview Questions

Descriptive quantitative data was derived from the closed-ended interview questions. Eighty percent of the participants chose to sleep with the weighted blanket on one or more of the two choice days (n = 4). One participant (P3) chose not to sleep with the blanket on either choice day. Sixty percent (n = 3) of the participants would like to continue using a weighted blanket for sleeping following the study.
Sixty percent (n = 3) of the participants would make a change to the weighted blanket that they used during this study. See Table 3 for the participant responses to the closed-ended interview questions.

**Table 3**

*Participant Responses to Closed-Ended Interview Questions (N = 5)*

<table>
<thead>
<tr>
<th>Closed-Ended Interview Question</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you choose to use the weighted blanket during Days 6 and/or 7 of the study?</td>
<td>Yes 6 &amp; 7</td>
<td>Yes 6 &amp; 7</td>
<td>No</td>
<td>Yes 7</td>
<td>Yes 6</td>
</tr>
<tr>
<td>Would you like to continue to use a weighted blanket for your nighttime sleep?</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Would you change anything about the blanket that you used?</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Each participant rated their daily sleep quality through a Likert scale as part of the sleep diary. They had the choice of rating their sleep as *very good, good, fair, poor, and very poor*. This rating was done in the morning and represented the sleep quality from the previous night’s sleep. Therefore, sleep quality ratings for Day 1 through Day 3 contained a rating when all of the participants slept without a weighted blanket, and sleep quality ratings for Day 4 through Day 6 contained a rating when all of the participants slept with a blanket. Data from the sleep quality ratings are organized by participant per day and are displayed in Figure 2. Day 7 sleep quality ratings were not included in the data because of the variability of the participants sleeping with and without a blanket.

**Figure 2**

*Sleep Quality Rating of Each Participant from Sleep Diary (N = 5)*

*Note.* Sleep Quality Descriptors: 5 = Very Good, 4 = Good, 3 = Fair, 2 = Poor, 1 = Very Poor.
Each participant also logged the total hours they slept each night in their sleep diary. Sleep quantity ratings for Day 1 through Day 3 contained a rating when all participants slept without a weighted blanket, and sleep quantity ratings for Day 4 through Day 6 contained a rating when all participants slept with a blanket. The total time slept each night per participant for Day 1 through Day 6 is in Figure 3. Day 7 sleep quantity ratings were not included in the data due to the variability of participants sleeping with and without a blanket.

![Figure 3](link)

**Figure 3**

*Sleep Quantity with and Without Weighted Blanket (N = 5)*

Qualitative Results from Open-Ended Interview Questions and Sleep Diary

Three themes emerged from the analysis of coded and categorized qualitative data that described the adolescents’ perceptions when using a weighted blanket during nighttime sleep. These themes included (a) perceptions regarding the characteristics of a weighted blanket, (b) perceived changes in the quality of sleep, and (c) perceived changes in the quantity of sleep.

**Perceptions Regarding the Characteristics of a Weighted Blanket**

The participants were asked if there was anything they would change about the weighted blanket that they used. Each participant expressed their individual preferences, which were related to specific characteristics of a weighted blanket. P1 and P5 both stated that they would make the blanket bigger. P1 stated that she “would make the blanket a little bit bigger, bigger so it covers more of me.” P5 stated, “if there were something I’d change, [I’d] maybe just make it just a little bit bigger width and lengthwise.” P5 discussed that the blanket would slide to the right or left and that he would need to “keep fixing it.” P2, P3, P4, and P5 all stated that the weight of their blanket was good for them. They used these descriptors for the weight: “good,” “perfect,” “fine,” “wasn’t too heavy.” P1 expressed that she would “go heavier”
and that she “liked the pressure.” She said that she would “probably go [to] like 20 [pounds], and that’s it.” P2 and P4 both suggested that they would make no changes to the blanket. In addition to mentioning that the weight was good, P2 mentioned, “It was perfect, like the weight and everything.” P4 said there is “nothing I’d change.” P3 mentioned that she would “make it [the weighted blanket] thicker.” P3 further explained that her current bedding, a comforter, “is softer and not as heavy” and that “my comforter is bigger and thicker.” P3 said that she did not use her comforter the nights that she slept with the weighted blanket and that although she would not change the weight of the weighted blanket, she “really didn’t like the heaviness” of the weighted blanket. When asked if she thought she would like the weighted blanket if she used it with her comforter, P3 answered, “Maybe.” P3 mentioned that she would not be interested in continuing to use a weighted blanket for her nighttime sleep, mentioning that she preferred her comforter’s size and thickness over the weighted blanket.

**Perceived Changes in Quality of Sleep**

All of the participants who participated in the study were prompted to discuss their sleep experiences while using the weighted blanket. Sleep quality descriptors emerged when discussing their sleep experiences. P1 stated, “I slept a lot better with it,” and it was “easier to fall asleep with the blanket.” P1 also stated that the blanket “helped me sleep.” P2 stated, “I went to sleep a lot faster [with the blanket].” P2 and P5 discussed similar perceptions in their statements. P2 stated that when using the blanket, “my tossing and turning decreased.” She stated, “I just didn’t have to move to a crazy position whenever I was sleeping.” P5 stated that the blanket “helped me settle down and stay in one place.” He also stated that the blanket “helped me relax because I didn’t move as much, and this helped me sleep better.” P1 and P2 described the weighted blanket as more comfortable. P1 said the weighted blanket was “more comfy.” P1 also said, “I felt [the weighted blanket] was more comfier [stet] to sleep with instead of having blanket on blanket.” She further mentioned that she just “had one blanket [and then] a comforter, so it’s just easier and better to sleep with.” P4 described his sleep when using the weighted blanket as “heavier sleep.” He stated that when he used the weighted blanket, “I slept in a more heavier sleep.” He further mentioned that he “was not waking up to the alarms I have set.” P4 was prompted if he would describe his heavier sleep as a different quality of sleep, and he said, “No, just a heavier sleep.” When asked directly if his heavier sleep improved his sleep quality, P4 said, “Not always.” P3 said, “I don’t really like the blanket.” P3 mentioned, “My comforter was more comfortable” and “I feel like I slept better with my comforter, it’s bigger than the weighted blanket and thicker. and that’s it.” When P3 was asked if the weighted blanket gave her any positive or negative feelings about her sleep, she answered, “No.” When asked if the weighted blanket changed her sleep at all, P3 answered, “I don’t think so.”

P1, P2, and P5 all said that they would like to continue to use a weighted blanket, mentioning the quality attributes described above. P2 stated that she “didn’t want to go back to sleeping the way I was before the blanket.” P5 explained that “it really just depends on how I feel. Some nights I’ll want to sleep with [the weighted blanket], and some nights I don’t.” P5 further elaborated, “I have a bunch of different blankets, and some nights I want to sleep with a few and some nights all of them.” P3 mentioned she did not want to continue using the weighted because she “likes her comforter.” P1 logged several naps on her sleep diary. She was asked if she would like to use a weighted blanket during her naps. P1 answered, “100!” P1 attributed her sleep quality “very good” ranking on Days 4 and 5 to the weighted blanket.

Most of the participants noted sleep disturbances in their sleep diaries. P1 mentioned an alarm (Day 2), her dog (Day 3), and a doorbell (Day 4) interrupting her sleep. P2 mentioned “discomfort” (Day 2 and Day 3), a sibling (Day 3), noise (Day 4), and pets (Day 7) interrupting her sleep. P3 mentioned her
sibling (Day 1, Day 2, Day 3, Day 4, Day 5, and Day 6), the weighted blanket (Day 5 and Day 6), and being cold (Day 7) as interrupting her sleep. P4 mentioned no sleep interruptions. P5 mentioned a car with bright lights (Day 2) and “My dog wanting outside” (Day 3, Day 4, Day 5, and Day 6) as interrupting his sleep.

**Perceived Changes in Quantity of Sleep**

When the participants were prompted to discuss their sleep experience while using the weighted blanket, perceptions regarding sleep quantity emerged from the data. P1 stated, “It felt like I slept longer [with the blanket].” P2 stated, “I know I slept longer.” P4 said, “I tend to have slept more” and “[the blanket] made me sleep longer.” P5 said, “I slept longer.” P4 went on to discuss how he would not be interested in continuing to sleep with a weighted blanket because he stated, “I like getting up early.” P2 and P4 were asked if they attributed sleeping longer to the weighted blanket, and both answered, “Yes.”

**Discussion**

This study aimed to describe the perceived sleep experience of an adolescent without a pre-identified sleep need, when they used a weighted blanket during sleep. The framework of this study supported the health, well-being, and meaning-making realities of the adolescent population through exploring their unique perceptions of using a weighted blanket during their occupation of sleep. This study indicated that the participants had individual perceptions regarding the characteristics of a weighted blanket and also indicated that there were perceived changes in the quality and quantity of sleep, as experienced by the participants.

Four out of the five participants in this study saw a change in their perception of sleep quality while using a weighted blanket. Three of the participants perceived a positive impact on sleep quality, including comfort; one participant saw a perceived negative impact, explained as having a “heavier sleep,” which was not desirable to the participant; and one participant did not report a perceived positive or negative change. Of the participants with a perceived positive impact, all would like to continue to use a weighted blanket for their sleep. The positive impacts on sleep quality included descriptions such as falling asleep faster and easier, decreased “tossing and turning,” settling down easier, easier to sleep, relaxation, and comfort. These findings support findings from Mullen et al. (2008), where adult participants reported a subjective sense of relaxation when using a weighted blanket; findings from Ackerley et al. (2015), where adults who used a weighted blanket had a calmer night’s sleep, settled down easier, and felt a sense of security; and findings from Gee et al. (2021), where one child had a reduced time falling asleep when using a weighted blanket.

The theme “perceived changes in sleep quantity” emerged from the evidence and speaks to the adolescents’ perceived increase in sleep quantity while using the weighted blanket. During her interview, P1 mentioned, “I felt like I slept longer [with the blanket].” A visual analysis of her sleep quantity appears to have a gradual increase in sleep across the 3 days of using the blanket. Visual analysis supports that P1’s sleep quality rating was “very good” on Day 4 and Day 5, which were days when she used the weighted blanket. P2 mentioned in her interview, “I know I slept longer.” Sleep quantity data shows that P2’s two longest nights of sleep were with the blanket and also shows her sleep quality rating as “very good” on days that she used the blanket, which suggests a possible relationship between sleep quality and sleep quantity for P2. P3 had her longest night of sleep with the weighted blanket; however, in contrast to P2, P3 rated her longest night of sleep as “fair.” P4’s sleep diary revealed his longest night of sleep while using the weighted blanket, which supports his statement, “I tend to have slept more” and “[the blanket] made me sleep longer.” P5 stated, “I slept longer.” P5 appears to have a gradual increase in sleep across
the 3 days of using the blanket and also had his highest-rated sleep on a day that he used the weighted blanket. These sleep quantity findings support findings from Gee et al. (2021), where one child had an increase in sleep quantity when using a weighted blanket.

**Implications for Occupational Therapy Practice**

*Weighted Blanket as a Sleep Hygiene Tool*

The perceived changes in sleep quality and sleep quantity themes that emerged from this study suggest that a weighted blanket should be considered a sleep hygiene tool. Rest and sleep are occupations recognized by the occupational therapy profession (AOTA, 2020), yet the profession does not adequately address the occupation of sleep from a wellness perspective. This study appears to be the first study that looked at using a weighted blanket during sleep for the general adolescent population. This study’s framework and methodology sought to provide a choice and individual control to the adolescent when it allowed its participants a choice of blanket weight, as well as a choice to use the weighted blanket on Day 6 and Day 7. This allowed for exploration into why the choice was made and provided a deeper understanding of adolescent perceptions. Of the four participants who chose to sleep with the weighted blanket on one or more of the choice days, three would like to continue to use a weighted blanket for nighttime sleep. Adolescents face environmental, physiological, and psychological influences on their sleep, which they cannot control (Buxton et al., 2015). This study revealed an array of those influences as recorded in participant sleep diaries, such as household noises, siblings, physical discomfort, and pets. Providing tools, such as a weighted blanket, to this population will facilitate engagement in their own health and allow them to recognize and perhaps better control their occupational performance of sleep. The results of this study help to solidify the use of a weighted blanket as a sleep hygiene tool and help to expand occupational therapists’ scope of practice, allowing them to reach individuals with unidentified and underrecognized sleep needs (Tharakan & Shenoy, 2019).

*Weighted Blanket Guidelines*

The theme “perceptions regarding the characteristics of a weighted blanket,” suggests the need for the occupational therapy profession to offer a weighted blanket from an individual preference perspective, rather than having a general, one-size-fits all approach. This individual approach should consider blanket weight and size. Ackerley et al. (2015) concluded that a “crucial point” (p. 5) when determining what weight of a blanket to use is that the weight of a blanket should not be too light or too heavy. They suggested that a blanket should be individualized to provide evenly distributed weight in the blanket and a weight that is preferred by the individual (Ackerley et al., 2015). Gee et al. (2021) and Mullen et al. (2008) discussed in their research that the historical 10% of body weight typically associated with weighted blanket weight recommendations is not backed by evidence. In fact, Mullen et al. suggested that blanket weight should be an individualized preference and should not be isolated at 10%. This study did what Ackerley et al., Gee et al., and Mullen et al. suggested and offered several weight options for blankets within a range of what has been proven safe to help address this lack of data and address what Gee et al. offered as an “open question in current clinical practice” (2021, p. 13).

The specific method identified and used in this study to have participants individualize blanket weight is important for clinical practice so that the occupational therapy profession can move away from the unsubstantiated 10% body weight claim that is still being used by many as a guiding method when studying weighted blanket benefits, whether used for sleep or calming. For this study, blanket size was not a participant choice. The importance of this weighted blanket characteristic emerged from the data when P1 and P5 revealed that they would make the weighted blanket bigger in size. Individualized weight
and size choices could be used to guide future studies and add to the literature as new methods and/or instruments. For this study, the participants chose their preferred blanket weight based on an initial baseline starting at or just above 12% of their body weight.

While weight preference was not a primary focus for this study, it is important to note that four out of five of the participants chose a blanket at or above 12% of their body weight. One participant chose 12%, three participants chose above 12%, and one participant chose a blanket under 12% of body weight. Each participant was offered an initial blanket at or just above 12% of body weight and was able to subjectively assess their own preference for a lighter or heavier weight during the weighted blanket selection procedure. Of the four participants who chose a blanket at or above 12%, three of them noted a change in their perception of sleep. The one participant who chose a blanket at 9.58% also noted a change in his perception of sleep. This speaks to the need for the occupational therapy profession to not be guided by a standard percentage of body weight for a blanket but to individualize based on what has been determined safe (Ackerley et al., 2015; Mullen et al., 2008). Although 12% or greater has been proven effective (Ackerley et al., 2015) this study was unique in that it allowed participants to choose lighter than 12% if that is what they determined was the best fit for their individual preference. The profession of occupational therapy should build upon these current findings in an effort to establish weighted blanket guidelines that are backed by safety and rooted in evidence of what is effective and desirable, including the characteristics of blanket weight and size, for each individual.

Limitations and Future Research

While this study helps to inform future research for the occupational therapy profession with global sleep practice, it comes with several limitations. The small sample size limits the generalizability of the findings to the larger adolescent population. Future studies should consider an increased length of time for data collection with and without the weighted blanket intervention. The sleep diary used in this study was beneficial as an interview guide for each participant because it helped to maintain the organization and trustworthiness of the information shared by each participant during the interview process. It appears that a measurement of sleep quality through this sleep diary without a specific understanding of how an individual interprets sleep quality may be challenging and should be considered in future research. In addition, given the sleep quantity perceptions that emerged from the data, an investigation into this through the use of actigraphy may be something to explore in the future. As indicated by the “perceptions regarding the characteristics of a weighted blanket” theme identified in this study, future studies using weighted blankets should consider participant choice by having a range of blanket weights and sizes available. Finally, future research may consider how this mixed method study might apply to other populations as a sleep hygiene tool from a wellness perspective.

Conclusion

This study sought to understand the clinical benefits of using a weighted blanket for healthy adolescents during the occupation of sleep. This study determined that a weighted blanket is a reasonable, affordable, easily accessible non-pharmacological sleep hygiene tool that can be used safely and effectively to improve sleep quality for the general adolescent population without previously identified sleep needs. An adolescent should consider a trial of a blanket at or above 12% of their body weight as a starting point and then customize the blanket to heavier or lighter, bigger or smaller based on their individual preference. Safety considerations should be considered. The literature reviewed in this study showed no evidence to support that a weighted blanket under 38% of an adolescent’s body weight is unsafe for use by the adolescent population (Ackerley et al., 2015; Mullen et al., 2008). Perceived changes
to sleep quantity emerging from the data should be a topic to explore in future research when addressing weighted blankets and sleep.

The profession of occupational therapy should be a leader in promoting tools for improving occupational performance with sleep participation and preparation (AOTA, 2020) from a wellness perspective rather than from an individual impairment perspective. Given our history of using deep-touch therapy, such as a weighted blanket, and our framework guided by occupation (AOTA, 2020), occupational therapy is uniquely situated to lead a trend toward global wellness as it relates to the occupation of sleep, which includes sleep quality and sleep quantity, in promotion of a weighted blanket as a sleep hygiene tool not only for the general adolescent population but for all populations.

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