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Effectiveness of guided imagery to improve sleep quality among young adults with post-traumatic stress disorder (PTSD)

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ABSTRACT

Background: Post-traumatic stress disorder often leads to ongoing sleep difficulties such as insomnia and nightmares, which can interfere with mood, concentration, and daily activities. Guided imagery, a relaxation method that uses calming, multisensory visualizations, has shown potential to improve sleep and reduce distress in people experiencing high stress or trauma. This study evaluates the effectiveness of guided imagery in improving sleep quality among young adults with post-traumatic stress disorder (PTSD) compared to conventional occupational therapy.

Objectives: To evaluate and compare the effectiveness of guided imagery and conventional occupational therapy in improving sleep quality among young adults (18-25 years) with post-traumatic stress disorder.

Materials and methods: A quasi experimental design was conducted with 30 young adults aged 18-25 years, recruited through convenience sampling and divided into two groups: experimental (guided imagery intervention) and control (conventional occupational therapy). The potential of the post-traumatic stress disorder was accomplished by the diagnosis of PTSD using Clinician-Administered PTSD Scale for DSM-5, Past-Month version. Both interventions were delivered over three months, with 36 sessions held three times per week, each lasting 45 minutes. The state of sleep prior to intervention and right after the intervention was critically explained with the aid of the Pittsburgh Sleep Quality Index (PSQI). Statistical analysis was performed to compare pre- and post-test scores within and between groups.

Results: The experimental group (N=15) had a mean pre-test PSQI score of 14.40 (SD=2.41) and a post-test score of 8.73 (SD=2.05), showing a highly significant improvement (t=15.707, p=0.000). The control group (N=15) had a mean pre-test PSQI score of 14.07 (SD=1.53) and a post-test score of 13.47 (SD=1.60), also showing significant improvement (t=2.358, p=0.033). Post-test scores between the groups revealed a significantly greater improvement in the experimental group compared to the control group (t=7.050, p=0.000).

Conclusion: Guided imagery was found to greatly improve sleep quality in young adults living with post-traumatic stress disorder, offering better results than conventional occupational therapy. These results highlight the value of using gentle, non-drug approaches like guided imagery to ease sleep difficulties and support overall well-being in this group.

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Introduction

Occupational therapy is a client-centred profession aimed at enabling individuals to participate in meaningful daily activities by enhancing skills or modifying environments.[1-6] In mental health, it focuses on restoring routines, improving life skills, and

fostering emotional and social well-being, which is vital for individuals with psychiatric conditions. Sleep disturbances are common in various mental health disorders, especially in post-traumatic stress disorder, where up to 87% of affected individuals report issues like insomnia and nightmares that significantly impact mood, cognition, and daily life.[7,8]

Post-traumatic stress disorder develops after exposure to traumatic events and is characterised by intrusive memories, avoidance behaviours, negative mood changes, and hyperarousal. High-risk groups include young adults, who are more likely to encounter trauma, making them vulnerable to long-term functional impairments.[9-13] Sleep problems in this population often persist even after core PTSD symptoms are addressed, highlighting the need for targeted interventions.[14-16]

Guided imagery is a mind–body technique that uses positive mental visualization to promote relaxation and well-being. It engages multiple senses, not just vision, making it effective across different learning styles. Sessions typically begin with relaxation and breathing exercises, followed by calming imagery that counters distressing thoughts. Regular practice helps manage anxiety, arousal, and intrusive symptoms in PTSD by fostering grounding and self-regulation. Its non-invasive nature makes it a valuable alternative for individuals hesitant to pursue conventional therapy.[17-21]

Materials and methods

Research design

A quasi-experimental study design was employed to investigate the effectiveness of guided imagery on improving sleep quality in young adults with post-traumatic stress disorder.

Sampling technique

The study utilized a convenience sampling technique to select participants.

Sample size

A total of 30 subjects participated in this study. The participants were divided into two groups equally,

- **Experimental group:** 15 subjects underwent guided imagery interventions.
- **Control group:** 15 subjects received conventional occupational therapy.

Sample size justification

The sample size was determined based on feasibility within the available study duration and clinical setting. As this was a time-bound interventional study, the selected sample size was considered adequate to examine preliminary effects of guided imagery on sleep quality and to generate clinically relevant findings for future large-scale research.

Sample characteristics

The study sample comprised 30 young adults aged between 18 and 25 years diagnosed with post-traumatic stress disorder based on DSM-5 criteria and confirmed using the Clinician-Administered PTSD Scale for DSM-5 (CAPS-5). Both male and female participants were included. All participants reported sleep disturbances related to traumatic experiences and were clinically stable at the time of recruitment. Participants were able to understand and follow verbal instructions and actively engage in structured therapy sessions. Individuals with severe cognitive impairments, neurological conditions, or comorbid psychiatric disorders that could interfere with participation were excluded to ensure sample consistency.

Sample setting

The study was conducted at Grace Rehab Clinic, Purasawalkam.

Selection criteria

Inclusion criteria

1. Young adults aged 18-25 years.
2. Clinical diagnosis of post-traumatic stress disorder (PTSD) (based on DSM-5 criteria).
3. Reports of sleep disturbances.
4. History of psychological trauma.
5. Using sleep medication, no more than twice per week, with stable dosage.
6. Both male and female participants were included.

Exclusion criteria

1. Receiving other PTSD or sleep disorder treatments, except occasional sleep medication as allowed.
2. Cognitive impairments or neurological conditions that may interfere with participation.
3. Comorbid psychiatric conditions that impair study participation.

Tools used

1. Clinician-Administered PTSD Scale for DSM-5 (CAPS-5) – Past Month Version

The CAPS-5 is a structured clinical interview considered the gold standard for assessing post-traumatic stress disorder. It evaluates PTSD symptoms across four core clusters: intrusion, avoidance, negative alterations in cognition and mood, and alterations in arousal and reactivity.

Scoring method

Total symptom severity score is calculated by summing the severity scores for all PTSD symptoms.[22]

2. Pittsburgh Sleep Quality Index (PSQI)

The PSQI is a self-report questionnaire assessing sleep quality and disturbances over the past month. It evaluates seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication, and daytime dysfunction.

Scoring method

Each component is scored from 0 to 3, with higher

scores indicating worse sleep quality. The global PSQI score is calculated by summing the seven component scores, with scores above 5 indicating poor sleep quality.[23]

Intervention procedures

The study was conducted over 12 weeks, with participants attending three sessions per week, each lasting 45 minutes. The intervention was structured as follows:

- Introduction and Settling: 10 minutes (establishing a comfortable environment, brief check-in).
- Guided Imagery Session: 20 minutes (structured imagery script focusing on relaxation, grounding, and positive visualization).
- Closure and Reflection: 15 minutes (gentle return to present awareness, participant feedback).

Conventional occupational therapy for control group

The therapy sessions focused on providing standard sleep hygiene education and behavioural strategies to promote better sleep patterns among young adults with PTSD. A structured approach was followed to address common factors affecting sleep quality.

- **Sleep hygiene education:** Included guidance on establishing a consistent bedtime and wake-up routine, creating a restful sleep environment, and avoiding caffeine, nicotine, and heavy meals before bedtime.
- **Relaxation techniques:** Participants were introduced to basic relaxation practices such as slow breathing and gentle stretching to be performed before sleep.
- **Lifestyle modification advice:** Provided recommendations on limiting screen time before bed, engaging in regular physical activity during the day, and managing evening light exposure.
- **Stimulus control strategies:** Encouraged participants to use the bed only for sleep, get out of bed if unable to sleep within 20 minutes, and return only when sleepy.
- **Sleep scheduling:** Advised on maintaining regular sleep and wake times, even on weekends, to stabilize the circadian rhythm.
- **Psychoeducation on sleep and PTSD:** Shared information on the relationship between trauma, hyperarousal, and disrupted sleep, aiming to increase self-awareness and adherence to sleep-promoting behaviours.[24]

Session duration

Forty-five minutes, three times per week. Pre- and post-intervention assessments were conducted using the Pittsburgh Sleep Quality Index (PSQI) to measure changes in sleep quality

Guided imagery therapy for experimental group

The guided imagery sessions were designed to help participants relax, regulate emotions, and improve sleep quality. The intervention followed a structured format aimed at reducing arousal and promoting a calm mental state conducive to sleep.[25]

Session process

Each session began with simple grounding and slow breathing exercises to help participants settle and focus. This was followed by guided imagery involving calm, safe, and soothing scenes, encouraging participants to engage their senses and experience a sense of comfort and relaxation. Imagery was gradually directed toward releasing emotional tension and supporting the transition into sleep.

Session duration

Sessions were conducted for approximately 45 minutes, three times per week.

Outcome measurement

Changes in sleep quality were assessed before and after the intervention using the Pittsburgh Sleep Quality Index (PSQI). A detailed session-wise description of the guided imagery intervention is presented in Appendix A.

Results

The effectiveness of guided imagery on sleep quality in young adults with post-traumatic stress disorder was evaluated at Grace Rehab Clinic, Purasawalkam. A total of 30 participants were included in the study, divided into two groups: experimental (N=15) and control (N=15). The control group received conventional occupational therapy, whereas the experimental group received guided imagery interventions.

The experimental group consisted of 15 participants aged 18-25 years. The mean pre-test PSQI score in this group was 14.40 (SD=2.41), while the post-test mean score was 8.73 (SD=2.05). The control group also included 15 participants within the same age range. The mean pre-test PSQI score in the control group was 14.07 (SD=1.53), while the post-test mean score was 13.47 (SD=1.60). Both groups were comparable in terms of age and baseline PSQI scores, ensuring the validity of the comparison. The pre-test and post-test scores provide a basis for evaluating the effectiveness of the intervention in both groups.

As shown in Table 1 and Figure 1, a statistically significant difference was observed between the pre-test and post-test PSQI scores in the control group. The mean pre-test score was 14.07 (SD=1.53), while the post-test mean score was 13.47 (SD=1.60). The t-value for the comparison was 2.358, and the *p* value was 0.033, which is less than the significance level of 0.05. This indicates a statistically significant improvement in sleep quality, as measured by PSQI scores, among participants in the control group following conventional occupational therapy.

Table 1. Difference between pre-test and post-test scores in control group.

No.	Test	N	Mean	SD	T Value	Df	*p* value
1	Pre-test	15	14.07	1.534	2.358	14	0.033*
2	Post-test	15	13.47	1.598			

Note: **significant at 1% level, *significant at 5% level.

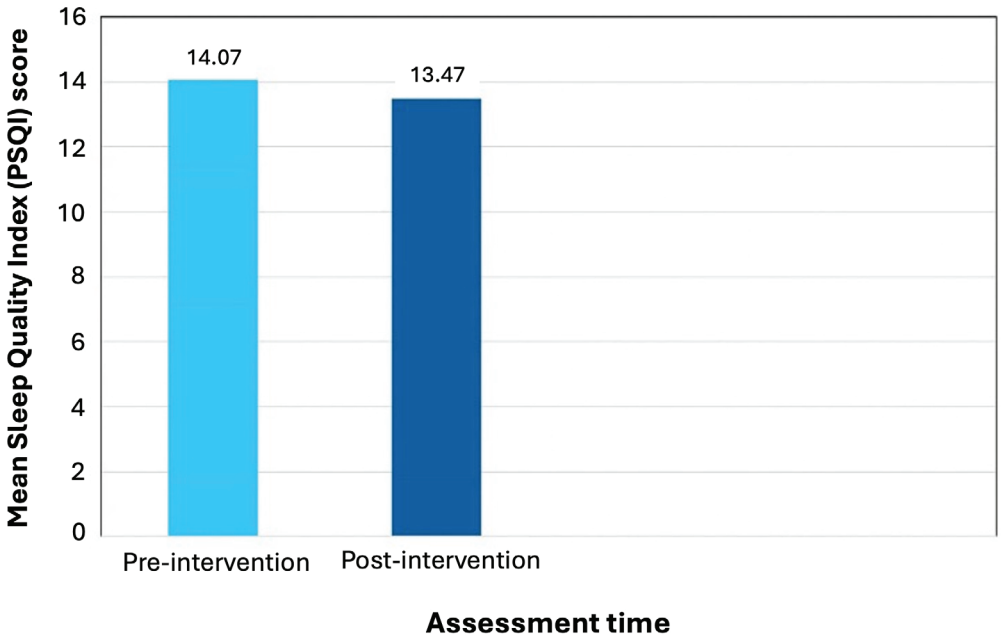


Figure 1. *Comparison of mean sleep quality index score between pre- and post-test in the control group.*

In the experimental group, a highly significant difference was observed between the pre-test and post-test scores. The mean pre-test score was 14.40 (SD=2.41), while the post-test mean score was 8.73 (SD=2.05). The t-value was 15.707, and the *p* value was 0.000, which is less than the 0.01 level of significance. This demonstrates that guided imagery produced a highly significant improvement in sleep quality for the experimental group.

In comparison between the post-test scores of the control and experimental groups, a statistically highly significant difference was found. The mean post-test score of the control group was 13.47 (SD=1.60), while that of the experimental group was 8.73 (SD=2.05). The t-value for the comparison was 7.050, with a p-value of 0.000, which is less than the 0.01 level of significance. This indicates that guided imagery was more effective than conventional occupational therapy in improving sleep quality among young adults with post-traumatic stress disorder (PTSD).

In the Control group, since the *p* value 0.033 is less than 0.05 and is significant at 5% level , an alternate hypothesis is accepted. Hence, there is statistically significant difference in the Control group between pre-test and post-test of PSQI test scores. This suggests that the intervention received by the Control group had improvement due to Conventional Occupational Therapy.

As shown in Table 2 and Figure 2, the experimental group exhibited a clear and statistically meaningful reduction in PSQI scores from pre-test to post-test ($p<0.01$). This improvement reflects the positive impact of guided imagery in enhancing sleep quality among young adults with post-traumatic stress disorder.

Table 2. Difference between pre-test and post-test scores in experimental group.

No.	Test	N	Mean	SD	T Value	Df	*p* value
1	Pre test	15	14.40	2.414	15.707	14	0.000**
2	Post test	15	8.73	2.052			

Note: **significant at 1% level, *significant at 5% level.

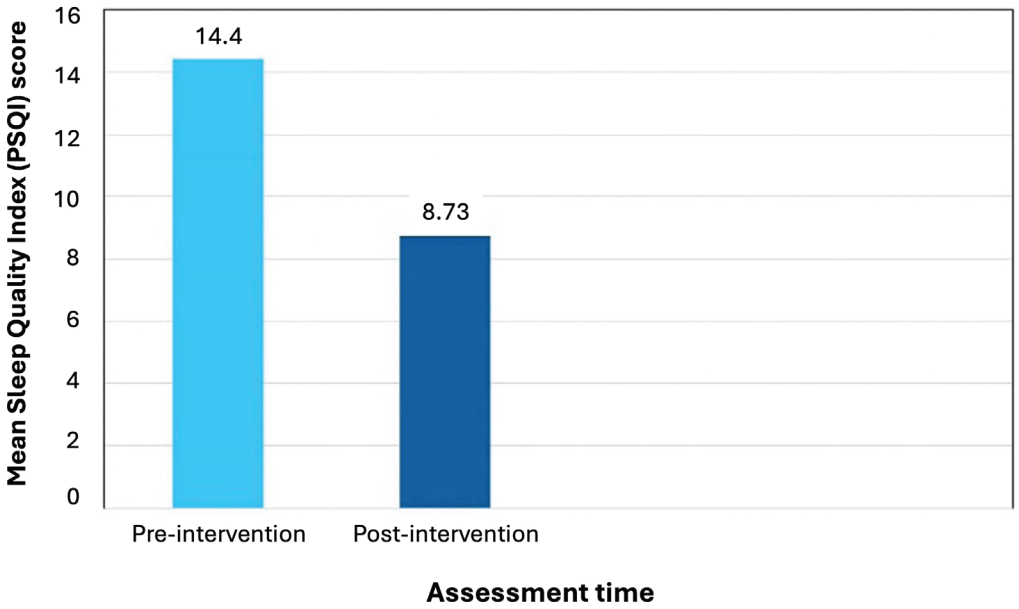


Figure 2. *Comparison of mean sleep quality index score between pre- and post-test in the experimental group.*

As presented in Table 3 and Figure 3, a statistically significant difference was observed between the post-test PSQI scores of the experimental and control groups (p<0.01). Participants who received guided imagery demonstrated greater improvement in sleep quality compared to those who received conventional occupational therapy.

Table 3. Difference between post-test scores of control group and experimental group.

No.	Test	N	Mean	SD	T Value	Df	*p* value
1	Control	15	13.47	1.598	7.050	28	0.000**
2	Experimental	15	8.73	2.052			

Note: **significant at 1% level, *significant at 5% level.

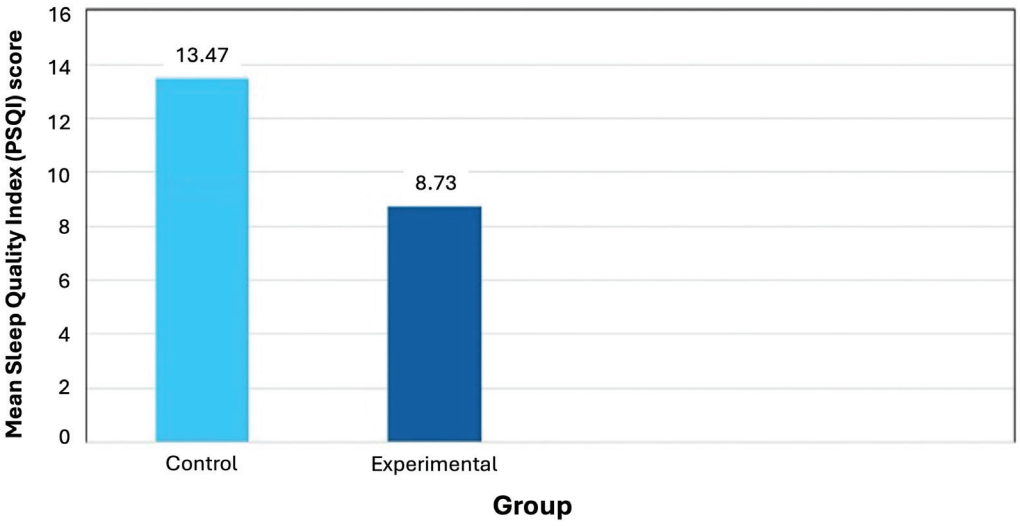


Figure 3. *Comparison of mean sleep quality index score between control and experimental group.*

Discussion

Guided imagery served as an effective intervention for addressing sleep disturbances associated with post-traumatic stress disorder. The structured sessions promoted relaxation, grounding, and positive mental imagery, helping participants manage hyperarousal and intrusive thoughts that interfere with sleep. This aligns with previous research by Schaffer *et al.*,[25] and Afshar *et al.*,[26] which reported improvements in sleep quality and reductions in psychological distress following imagery-based interventions.[27-33] The approach also reflects findings by Zehetmair *et al.*, highlighting guided imagery as a valuable self-regulation tool in trauma-exposed populations.[20] Similar benefits have also been shown in meta-analyses and clinical trials of imagery rehearsal therapy for nightmares and sleep disturbances in PTSD.In addition, trauma-focused guided imagery and music interventions have shown promise in both refugees and military veterans.[34,35.]

The pre-test scores confirmed that both groups were comparable before interventions, ensuring the validity of comparisons. The experimental group showed significantly greater improvements in sleep quality, validating the effectiveness of guided imagery for addressing trauma-related sleep difficulties in young adults with post-traumatic stress disorder. The significant difference in post-test scores between the experimental and control groups highlights the superiority of guided imagery over conventional occupational therapy.

The findings emphasize the need for guided imagery to be integrated into occupational therapy programs for young adults with post-traumatic stress disorder. Such interventions address persistent sleep disturbances, enhance relaxation, and support overall well-being. Therapists should consider incorporating multisensory, client-centred imagery practices into treatment to optimize outcomes.

Limitations

The scale of intervention was limited because of the small sample size and restricted generalizability, as the study was conducted within a single clinical setting. Individual psychosocial factors such as coping abilities, resilience, adaptability, and personal stress-management skills were not independently assessed and may have influenced participants' responses to the intervention. Additionally, the duration of the intervention was limited and long-term follow-up measurements were not conducted. Future studies should include larger sample sizes, longer intervention periods, follow-up assessments, and consideration of individual difference variables to strengthen outcome interpretation.

Conclusion

This study demonstrates that guided imagery significantly improves sleep quality in young adults with post-traumatic stress disorder. The findings underscore the importance of using safe, non-pharmacological, and engaging interventions to address trauma-related sleep problems, contributing to better rest, emotional stability, and overall quality of life.

Ethical approval

The study was approved by the Institutional Ethics Committee of Saveetha Institute of Medical and Technical Sciences (SIMATS), Chennai, India.(Approval No.: SCOT/ISRB/040/2025).

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Conflict of interest

The authors declare no conflict of interest.

CRedit authorship contribution statement

Vikraman G: conceptualization, methodology, supervision, writing: review and edit; **Benitta Paulin Giftlin R**: investigation, data curation, formal analysis, writing: original draft, review and edit.

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Appendix A

Guided imagery therapy for experimental group

Session 1:
- Pre-test examined on the basis of Pittsburgh Sleep Quality Index (PSQI).

Session 2:
- Theme: Safe Place Visualization.
- Materials: Pre-recorded guided imagery audio.
- Practice deep breathing and visualize a personally safe, calm location.

Session 3:
- Theme: Nature Scene Relaxation.
- Materials: Guided imagery script with soft instrumental background music.
- Imagine lying in a peaceful meadow, focusing on sensory details.

Session 4:
- Theme: Ocean Wave Breathing.
- Materials: Audio track with rhythmic ocean sounds.
- Match breathing to the sound of gentle waves.

Session 5:
- Theme: Sunset Visualization.
- Materials: Script describing a slow-setting sun.
- Focus on body relaxation as the sky changes colours.

Session 6:
- Theme: Forest Walk.
- Materials: Guided imagery script with nature sounds.
- Imagine walking slowly through a forest, feeling grounded.

Session 7:
- Theme: Mountain Top Calm.
- Materials: Script and soft wind sound effects.
- Visualize reaching a mountain top and feeling peace.

Session 8:
- Theme: Healing Light.
- Materials: Audio describing warm golden light.
- Imagine light gently flowing through the body, easing tension.

Session 9:
- Theme: River Flow Relaxation.
- Materials: Script with flowing water sounds.
- Imagine floating along a calm river.

Session 10:
- Theme: Starry Night Sky.
- Materials: Audio with gentle ambient tones.
- Visualize lying under a clear night sky, focusing on stillness.

Session 11:
- Theme: Garden of Peace.
- Materials: Script with bird song sounds.
- Imagine walking in a flower garden, smelling the scents.

Session 12:
- Theme: Cloud Drift.
- Materials: Audio with slow, soft music
- Imagine lying on clouds drifting slowly across the sky.

Session 13:
- Theme: Rainfall Relaxation.
- Materials: Script with gentle rain sound effects.
- Imagine sitting by a window watching soft rain.

Session 14:
- Theme: Cozy Cabin.
- Materials: Guided imagery describing a warm cabin fireplace.
- Focus on warmth, comfort, and safety.

Session 15:
- Theme: Morning Sunrise Energy.
- Materials: Audio with soft morning bird sounds.
- Visualize a sunrise bringing gentle warmth and optimism.

Session 16:
- Theme: Floating on Water.
- Materials: Script with soft wave background.
- Imagine floating effortlessly on calm water.

Session 17:
- Theme: Blossoming Tree.
- Materials: Guided imagery describing a tree growing and blooming.
- Focus on personal growth and healing.

Session 18:
- Theme: Peaceful Countryside.
- Materials: Script with distant farm and meadow sounds.
- Imagine walking through open fields with fresh air.

Session 19:
- Theme: Candlelight Calm.
- Materials: Audio describing soft flickering candlelight.
- Focus on slow breathing and visualizing the flame.

Session 20:
- Theme: Gentle Stream.
- Materials: Script with soft running water.
- Imagine dipping hands and feet into a cool stream.

Session 21:
- Theme: Desert Dusk.
- Materials: Audio with light wind sounds.
- Visualize a sunset over a peaceful desert landscape.

Session 22:
- Theme: Butterfly Meadow.
- Materials: Script with soft nature sounds.
- Imagine butterflies moving gently through flowers.

Session 23:
- Theme: Snowy Silence.
- Materials: Audio describing a snowy, quiet forest.
- Focus on stillness and calm.

Session 24:
- Theme: Horizon Journey.
- Materials: Guided imagery describing walking toward a peaceful horizon.
- Focus on letting go of stress with each step.

Session 25:
- Theme: Island Retreat.
- Materials: Audio with ocean and bird sounds.
- Imagine resting in a hammock on a quiet island.

Session 26:
- Theme: Spring Renewal.
- Materials: Script with soft spring rain and birdsong.
- Visualize nature coming alive after winter.

Session 27:
- Theme: Gentle Breeze.
- Materials: Audio with light wind.
- Imagine feeling a cool breeze passing over the skin.

Session 28:
- Theme: Harbor Rest.
- Materials: Script with water and distant seagull sounds.
- Imagine sitting safely by a quiet harbour.

Session 29:
- Theme: Crystal Cave Calm.
- Materials: Guided imagery describing a glowing cave.
- Visualize shimmering crystals reflecting peaceful light.

Session 30:
- Post-test assessed using the **Pittsburgh Sleep Quality Index (PSQI)**.

Wind-up Activities

Involved gentle grounding, slow stretching, and positive affirmations to close the session calmly.[25]