



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPA)**
'A Bridge Between Laboratory and Reader'

www.ijbpas.com

EFFECTS OF CO-OP APPROACH ON TRANSGENDERS WITH SLEEP DEPRIVATION

ARUN KUMAR M^{1*}, FAIZA TABASSUM², MALARVIZHI V³, JOYCE J⁴,
KOTHAISRI S M⁵, SHERILDA ANGELINE P⁶

- 1: Principal of Saveetha College of Occupational Therapy, Saveetha Institute of Medical and Technical Science (SIMATS), Saveetha Nagar Thandalam, Chennai, India
- 2: Occupational Therapist, College of Occupational Therapy, Saveetha Institution of medical and Technical Sciences (SIMATS), Saveetha Nagar Thandalam, Chennai, India
- 3: Occupational Therapist, College of Occupational Therapy, Saveetha Institution of medical and Technical Sciences (SIMATS), Saveetha Nagar Thandalam, Chennai, India
- 4: Occupational Therapist, College of Occupational Therapy, Saveetha Institution of medical and Technical Sciences (SIMATS), Saveetha Nagar Thandalam, Chennai, India
- 5: Occupational Therapist, College of Occupational Therapy, Saveetha Institution of medical and Technical Sciences (SIMATS), Saveetha Nagar Thandalam, Chennai, India
- 6: Occupational Therapist, College of Occupational Therapy, 6Saveetha Institution of medical and Technical Sciences (SIMATS), Saveetha Nagar Thandalam, Chennaiaveetha Nagar Thandalam, Chennai, India

*Corresponding Author: Mr. Arun Kumar: E Mail: arunbot@rediffmail.com

Received 5th Jan. 2026; Revised 6th Feb. 2026; Accepted 20th May 2026; Available online 1st Nov. 2026

<https://doi.org/10.31032/IJBPA/2026/15.11.10111>

ABSTRACT

Background

Occupational therapy practitioners are skilled at analyzing the supports and barriers that individuals face when engaging in their occupations. They can play a crucial role in facilitating the involvement of transgender individuals in the occupation of gender. Use the Pittsburgh Sleep Quality Index to identify sleep deprivation in transgender individuals and compare the effects of the CO-OP approach and conventional occupational therapy on sleep quality. This study involved 30 transgenders aged 20 to 35 with sleep deprivation, divided into 15 control

and 15 experimental groups. The experimental group received a CO-OP approach, while the control group received conventional occupational therapy for 3 months (36 sessions, 3 days a week). Sleep was measured using the Pittsburgh Sleep Quality Index. The statistical analysis revealed a significant difference in the Pittsburgh Sleep Quality Index scores between the pre-test and post-test results in the experimental group compared to the control group.

The study concluded that the CO-OP approach effectively improves sleep among transgender individuals.

Keywords: Sleep deprivation, COOP approach, Transgenders

INTRODUCTION

The occupations of transgender individuals may be impacted by the transition process and must be fully understood. Occupational therapy practitioners are skilled in analyzing the supports and barriers people experience when engaging in their occupations, thus can be instrumental in facilitating transgender individuals' engagement in the occupation of gender [1]. Sleep deprivation occurs when an individual does not get enough sleep, which is necessary and varies among different age groups [2]. The Cognitive Orientation to Occupational Performance (CO-OP) approach is a client-centred intervention method utilized in occupational therapy, with the primary goal of improving individuals' functional performance. This approach emphasizes the importance of cognitive processes, including planning, self-monitoring, and self-evaluation, throughout the skill acquisition process [2][4]. Research studies have consistently demonstrated the effectiveness of CO-OP across diverse populations. This method is successful

because it is tailored to clients, allowing for personalized interventions that address specific functional challenges. Quality of sleep is a crucial aspect that occupational therapists (OTs) address, given its significant impact on various daily activities. Occupational therapy for sleep focuses on improving sleep quality using preparation and participation strategies. Common methods include cognitive behavioral therapy (CBT), assistive devices like sound machines and weighted blankets, and promoting sleep hygiene practices [5] [6]. Research has shown that sexual minority adults are more likely to experience sleep problems compared to heterosexual individuals. Among teens and young adults, those who are transgender are four times more likely to suffer from sleep disorders than their peers. Researchers analyzed claims data from over 1.2 million young people aged 12 to 25, which included 2,603 individuals who identified as transgender. The results revealed that transgender youth

are 5.4 times more likely to experience insomnia [7].

MATERIALS AND METHODS:

The purpose of this study was to determine the effect of the COOP Approach on transgender individuals suffering from sleep deprivation. This quasi-experimental study utilized a convenient sampling technique, with a total sample size of 30 participants—15 individuals in the control group and 15 in the experimental group. The sample was drawn from a transgender community in Villivakkam. The independent variable was the COOP Approach, while the dependent variable was sleep deprivation. The inclusion criteria for participants were transgender individuals aged between 20 and 35 who experienced sleep deprivation. Those excluded from the study were individuals aged below 20 or above 35, as well as those who have suffered or are currently suffering from psychiatric disorders. The Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality, showing a test-retest reliability correlation of 0.87. A global score above 5 had a sensitivity of 98.7% and a specificity of 84.4% [10]. The questionnaire exhibited good internal consistency with a Cronbach's alpha of 0.736 and significant correlations ($p < 0.010$) between component scores and the global score. The duration of the intervention lasted for 3 months, with sessions of 45 minutes each.

Participants:

Thirty transgenders aged 20-35 years diagnosed with sleep deprivation participated in this study. All participants underwent a pre-assessment of their balance using the Pittsburg sleep quality index. Following the pre-assessment, which was conducted during the first two sessions of the study, the participants were randomly allocated into two groups: an experimental group ($n=15$) and a control group ($n=15$). Inclusion criteria: patients aged 29-35 years, Transgenders diagnosed with sleep deprivation and only transgenders were included. Exclusion criteria: has suffered or suffering from any psychiatric disorder, age below 20 and above 35 were excluded.

Tools used:

A sleep quality measure specifically designed for adults with sleep problems is the Pittsburgh sleep quality index (PSQI) [8]. Pittsburgh Sleep Quality Index: The PSQI evaluates seven domains, including the duration of sleep disturbance, sleep-onset latency, daytime dysfunction because of sleepiness, sleep efficiency, need for medications to sleep, and overall sleep quality. The PSQI yields a global score and seven component scores (poor sleep: global score > 5). Adding up the average scores of the seven factors gives a global PSQI score from 0 to 21, with 0–4 indicating “good” sleep and 5–21 indicating “poor” sleep [9].

Reliability:

The overall PSQI global score correlation coefficient for test-retest reliability was 0.87. PSQI global score > 5 resulted in a sensitivity of 98.7 and specificity of 84.4 [10].

Validity:

Cronbach's alpha for the questionnaire was found to be 0.736. Internal homogeneity was high, with the majority of correlations between questionnaire component scores and the summed global score being significant ($p < 0.010$) [10].

Procedure:

The intervention was scheduled according to a structured plan for each session. It included a variety of warm-up activities, such as cardio exercises, strategy planning, listening to mild music with eyes closed, and practicing the military breathing technique. Additional activities involved leisure pursuits like meditation, spot running, establishing consistent wake-up and sleep times, and utilizing the goal-plan-do-check method. The 4- 7-8 breathing technique and group therapy sessions were also integral components of the intervention.

Data analysis

Difference between Pretest and post-test scores Pittsburgh's sleep quality index test was performed to find the significant difference between Pretest and post-test

scores. 5% level of significance was observed.

Table 1 and Figure 1, Since the p-value of 0.001 is lesser than 0.05, an alternate hypothesis is accepted. Hence, there is a statistically significant difference between pre- test and post-test scores in the Control Group of the PSQI. This suggests that the intervention received by the control group had higher significant improvement.

Table 2 and Figure 2, In the Experimental group, since the p-value of 0.00 is less than 0.05, an alternate hypothesis is accepted. Hence, there is a statistically significant difference in the Experimental Group between pre-test and post-test scores of PSQI. This suggests that the intervention received by the experimental group had higher significant improvement.

Difference between Experimental and Control Pittsburgh's sleep quality index test was performed to find the significant difference between Pretest and post-test scores. A 5% level of significance was observed.

Table 3 and Figure 3, Since the p-value of 0.01 is lesser than 0.05, an alternate hypothesis is accepted. Hence, there is a statistically significant difference in post-test scores between the Experimental and Control Groups of the PSQI. This suggests that the intervention received by the experimental group had high improvement when compared to the control group.

Table 1: Statistical analysis of pre-test and post-test in the control group in control group using Pittsburgh sleep quality index

Test	Mean	SD	N	Z value	p value
Cntr-Pre	15.1333	2.79966	15	-3.471	0.001 *
Cntr-Post	11.8	2.54109	15		

* Significant at 5% alpha level

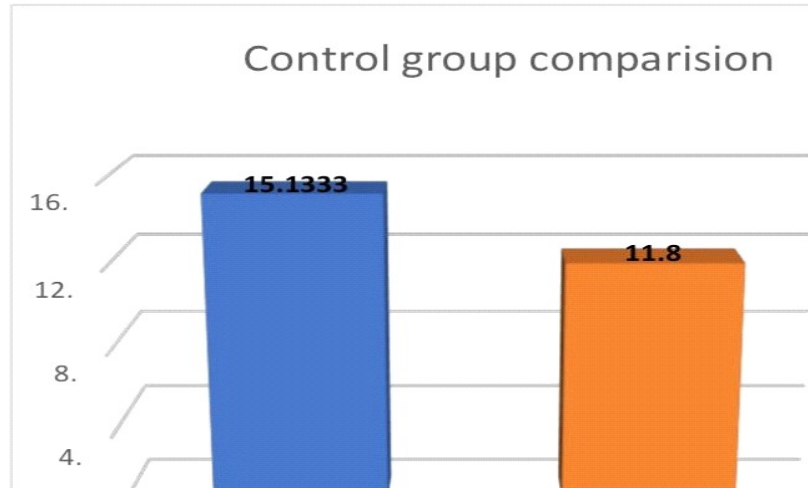


Figure 1: Comparison between the pre-test and post-test of the control group

Table 2

TEST	MEAN	SD	N	Z value	p value
Expt-Pre	16	3.09377	15	-3.482	0.001*
Expt-Post	8.6	3.20268	15		

Significant at 5% alpha level

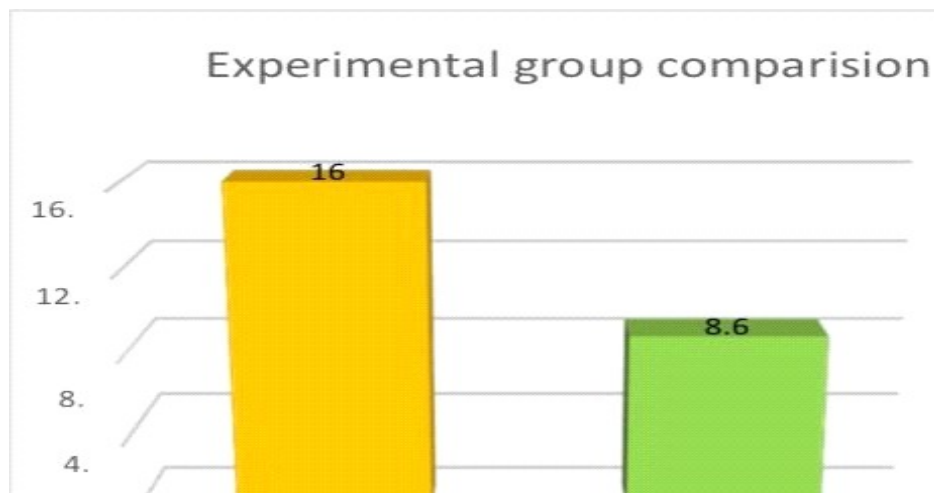


Figure 2: Comparison between Pre-test and Post-test of the Experimental group

Table 3: Statistical analysis between the post-test scores of the control and experimental group using Pittsburgh sleep quality index

Group	Mean	SD	N	Z value	p value
Cntr-Post	11.8	2.54109	15	2.592	0.01*
Expt-Post	8.6	3.20268	15		

*Significant at 5% alpha level

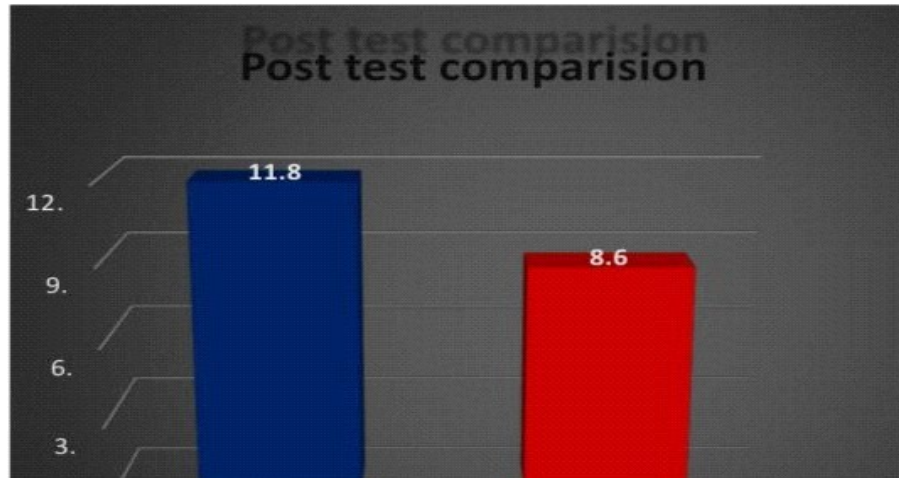


Figure 3: Comparison between the Post-test of the Control and Experimental Group

Statistical analysis:

This study used inferential statistical methods to evaluate the effect of coop approach transgenders with sleep deprivation. Descriptive statistics including mean and standard deviation were used to summarize data and evaluate the distribution of participants. Due to the small sample size (30 people) and the nature of the data, non-parametric statistical methods were used. Pittsburg sleep index scores were used to evaluate differences between pre- and post-test test scores in the experimental and control groups. The analysis showed a significant improvement in sleep for the control group **Table 1 and Figure 1** ($Z = -3.471$, $p = 0.001$). Accordingly, the experimental group showed a significant increase in balance scores **Table 2 and Figure 2** ($Z = 3.482$, $p = 0.001$). Pittsburg sleep quality index test was used to compare the effectiveness of the interventions between the control and experimental

groups. The results after the test showed a significant difference between the two groups **Table 3 and Figure 3** ($Z = 2.592$, $p < 0.01$), which shows that the intervention of coop approach has a significant effect in improving the remainder which were treated with conventional occupational therapy. A significance level of $p < 0.05$ was used for all statistical analyses.

RESULTS

The study demonstrated that the COOP approach led to a significant improvement in sleep for transgenders when compared to conventional occupational therapy. The experimental group, which engaged in COOP approach, showed a substantial increase in their pittsburg sleep quality index scores from a pre-test mean of 16 to a post-test mean of 8.6. Conversely, the control group, which received standard occupational therapy, showed a more modest improvement, with scores increasing from 15.13 to 11.8. Statistical analysis

confirmed that the improvement in the experimental group was significantly greater than that in the control group.

DISCUSSION

Previous studies indicate that transgender individuals often struggle with sleep, affecting their daily activities. This study aimed to assess the "Effect of CO-OP approach on transgenders with sleep deprivation." Results showed significant improvements in sleep levels for participants after engaging in a CO-OP intervention that included sleep training.

Table 1 and Figure 1 showed the statistical analysis of the pre-test and post-test results from the Pittsburgh Sleep Quality Index in the control group is presented. The mean score for the pre-test was 15.1333, while the mean score for the post-test was 11.8, yielding a p-value of 0.001. Since the p-value of 0.001 is less than 0.05, we can conclude that there is a significant improvement in the control group following the application of conventional occupational therapy interventions for transgender individuals experiencing sleep deprivation. Thus, the alternative hypothesis is accepted. These results are consistent with a study by Melanie K. Means *et al.* (2000) [11], which found that relaxation therapy for sleep deprivation leads to improved sleep quality, supporting the effectiveness of conventional occupational therapy interventions in enhancing sleep.

Table 2 and Figure 2 showed the Statistical analysis of the Pittsburgh Sleep Quality Index showed a significant improvement in the experimental group, with pre-test and post-test mean values of 16 and 8.6, respectively (p-value = 0.001). This suggests that the occupational therapy "CO-OP approach" effectively reduces sleep deprivation. These findings align with Mohan Kumar Archana's study, which also noted the CO-OP approach improved sleep quality compared to the control group.

Table 3 and Figure 3 showed the statistical analysis of the post-test results indicates a comparison between the control group and the experimental group. The mean score of the control group was 11.8, while the mean score of the experimental group was 8.6. The p-value obtained was 0.01. Since this p-value is less than 0.05, it indicates a highly significant improvement in the experimental group compared to the control group. This suggests that the CO-OP (Cognitive Orientation to daily Occupational Performance) approach demonstrates a notable improvement when compared to conventional occupational therapy programs. These findings align with the study conducted by Mohan Kumar Archana [12], which highlighted the effectiveness of the CO-OP approach in enhancing activities of daily living (ADL) performance and improving sleep quality when compared to the control group.

Limitations

The study is subject to limitations due to its small sample size and the limited number of sessions, which may constrain the generalizability of the findings. Additionally, the reliance on a convenience sampling method introduces potential selection bias and affects the representativeness of the sample. These limitations should be carefully considered when assessing the applicability of the results to broader populations.

CONCLUSIONS

In conclusion, this study's findings support the CO-OP approach's positive effects on transgender individuals experiencing sleep deprivation. By focusing on functional independence, such interventions can enhance quality of life and increase participation in daily activities. Improvements in sleep highlight the potential for positive change through targeted training, which may reduce anxiety and depression, fostering greater self-reliance and social engagement. Additionally, better sleep could lead to enhanced physical activity, benefiting cardiovascular health and overall fitness. Continued research is essential to refine these interventions for individuals with sleep deprivation, emphasizing long-term sustainability and accessibility. Ultimately, this study contributes to promoting inclusivity and equal opportunities for

individuals with intellectual disabilities, helping them thrive and engage in their communities.

Conflict of interest: The authors have no potential conflict to disclose.

Funding statement: None

ACKNOWLEDGEMENT:

The author would like to thank transgender community and thank all the participants for participating in this study.

REFERENCES

- [1] Kimelstein, Jamie. Gender as an Occupation: The Role of OT in the Transgender Community. (2019). Ithaca College Thesis. 424.
- [2] Bandyopadhyay, A. (2019). Sleep deprivation: Causes, effects, and prevalence. *Journal of Sleep Medicine & Disorders*, 7(4), 213-220.
- [3] Polatajiko, H. J., & Mandich, A. (2001). Enabling occupation in children: The Cognitive Orientation to daily Occupational Performance (CO-OP) approach. Ottawa, ON: CAOT Publications ACE.
- [4] Wilson, P. H., Smits-Engelsman, B. C. M., & Polatajiko, H. J. (2013). The Cognitive Orientation to daily Occupational Performance (CO-OP): A new approach for children with developmental coordination disorder. *Developmental Medicine & Child Neurology*, 55(2),

-
- [5] Batista, E., Smith, J., Rodriguez, M., & Thompson, L. (2021). Occupational therapy interventions for sleep disturbances and sleep hygiene in adults: A comprehensive review. *Journal of Occupational Therapy Practice Research*, 22(3), 145-158.
- [6] Francis, N., & D'silva, F. (2012). Effectiveness of progressive muscle relaxation therapy on quality of sleep among patients admitted in medical ward of a selected hospital in Mangalore. *International Journal of Nursing Education*, 4(2), 46-50.
- [7] Formosan, N. (2022, November 21). Teens and young adults who are transgender are four times more likely to suffer sleep disorders than their peers. *Journal of Clinical Sleep Medicine*.
- [8] Mollaveva, T. (2016). The Pittsburgh sleep quality index as a screening tool for sleep dysfunction in clinical and nonclinical samples: A systematic review and meta-analysis. *Sleep Medicine Reviews*, 25, 52-73.
- [9] Park, B. K. (2020). The Pittsburgh sleep quality index (PSQI) and associated factors in middleschool students: A cross-sectional study. *Child Health Nursing Research*, 26(1), 55.
- [10] Backhaus, J., Junghanns, K., Broocks, A., Riemann, D., & Hohagen, F. (2002). Test– retest reliability and validity of the Pittsburgh Sleep Quality Index in primary insomnia. *Journal of Psychosomatic Research*, 53(3), 737-740.
- [11] Means, M. K., Edinger, J. D., Glenn, D. M., & Fins, A. I. (2000). Relaxation therapy for sleep deprivation: Differential effects on daytime and nighttime sleep. *Journal of Consulting and Clinical Psychology*, 68(3), 490-498.
- [12] Archana, M. K. (2018). Effectiveness of Cognitive Orientation to Occupational Performance (COOP) Approach in Improving ADL Performance in Patients with Stroke (Doctoral dissertation, KMCH College of Occupational Therapy, Coimbatore).
-