ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun590

Psychological Intervention for Promoting Sleep in Cardiac Patients: A Narrative Review

Ranjita Karmacharya[1]; Dr. David Ratna Paul Talagathoti[2]; Dr. Imran Khan[3]; Dr. R. Sreeraja Kumar[4]

[1]PhD Scholar, School of Nursing Science and Research, Sharda University, Greater Noida-201306 UP, India
[2]Associate Professor, Sharda School of Nursing Science and Research, Sharda University, Greater Noida-201306 UP, India
[3]Associate Professor, Sharda School of Nursing Science and Research, Sharda University, Greater Noida-201306 UP, India
[4]Dean, Sharda School of Nursing Science and Research, Sharda University, Greater Noida-201306 UP, India

Corresponding Author
Dr. T. David Ratna Paul, Associate Professor
Department of Mental Health,
School of Nursing Science and Research, Sharda University, Greater Noida-201306 UP

Publication Date: 2025/06/16

Abstract: Background: Sleep deprivation may increase the cardiovascular events. The possible mechanisms related to cardiovascular disease and insomnia may be related to neurochemicals changes. Psychological intervention helps in promoting sleep by modifying habitual behaviors and promoting necessary lifestyle changes. The aim of this study was identifying the role of psychological intervention for promoting sleep for cardiac patients. Methods: A review was done of six articles related to randomized controlled trial related to psychological intervention. Literature was search from 2020 to 2025 to identify relevant studies. Insomnia Severity Index, Pittsburgh Sleep Quality was most repeatedly used tool and Cognitive behaviour therapy was most preferred intervention. Results: Cognitive behaviour therapy, Sleep hygiene, Mindfulness meditation, Progressive muscle relaxation technique, Supportive psychotherapy are found effective psychological intervention. Conclusions: Psychological interventions address an individual's psychological and emotional symptoms, helping to restore motivation, reduce anxiety, and enhance self-esteem, all of which contribute to improved sleep quality.

Keywords*: Sleep, Insomnia, psychological intervention, Cardiac Patients, Narrative Review.*

How to Cite: Ranjita Karmacharya; Dr. David Ratna Paul Talagathoti; Dr. Imran Khan; Dr. R. Sreeraja Kumar (2025) Psychological Intervention for Promoting Sleep in Cardiac Patients: A Narrative Review. *International Journal of Innovative Science and Research Technology*, 10(6), 614-619. https://doi.org/10.38124/ijisrt/25jun590

I. INTRODUCTION

Cardiovascular diseases (CVDs) represent the various heart-related disorders that affect the heart and blood vessels. It is considered the leading cause of global death, which accounts for 17.9 million deaths each year [1]. More than four out of five CVD deaths are related to heart attacks and strokes, and one-third of premature deaths occur in people between the ages of 30 and 70 years [2]. The rate was 73. 6 out of 100,000 people in wealthy countries in the Asia Pacific, but it was much higher at 432. 3 out of 100,000 people in Eastern Europe. Regarding the disease of cardiovascular disease, rheumatic heart disease was the most (46,358,651) prevalent cardiovascular condition, while ischemic heart disease leading the to the highest number of deaths, which accounts for 9,239,181.[3]

Sleep deprivation may increase cardiovascular events by decreasing energy expenditure, enhancing hunger, and altering the glucose metabolism process. A prospective cohort study reported a J-shaped link between per day sleep duration and cardiac outcomes, with 6–8 hours of sleep per day associated with linked to minimal risk of death and major cardiovascular incidents[4].

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun590

Insomnia is more common sleep problem, which is related to cardiovascular morbidity and mortality. Possible mechanisms related to cardiovascular disease and insomnia may be related to increased sympathetic nervous system activity, disruption of the hypothalamic-pituitary gland and its adrenal axis, and elevated levels of inflammatory chemicals [5]. Pittsburgh Sleep Quality Index (PSQI) mainly assesses subitems related to quality, duration, latency, efficiency, disturbances on sleep, taking sleeping pills, and daytime dysfunction [6].

II. INTERVENTION

Unlike pharmaceutical therapy, CBT lowers the adverse effects by helping the patients to modify habitual behaviors and adapt to necessary dietary and lifestyle changes. CBT works by addressing psychological barriers that may hinder adherence to medication and healthy lifestyle practices. It can help reshape unhelpful thought patterns, reduce stress, and build resilience, ultimately enhancing a patient's ability to follow treatment recommendations. By supporting behavioral changes and promoting psychological well-being. CBT plays a pivotal role in holistic cardiovascular care and can improve the physical, psychological quality of life of the patients [7,8].

Sleep hygiene is recognized as a critical prerequisite for the effective management of insomnia, irrespective of pharmacological or cognitive-behavioral therapy. Sleep hygiene can be maintained through maintaining a regular sleep-wake cycle, keeping the room dark, quiet, and avoiding stimulants right before bed [9]. Mindfulness meditation addresses the cognitive and emotional aspects of individuals. Mindfulness meditation helps the individual think deeply, decrease emotional reactivity, and reevaluate the important events, which ultimately benefits in facilitating sleep [10].

Insomnia may also be a result of an agitated mind or Physical tension. To address this issue, a progressive muscle relaxation technique can be recommended. In this method, systematic tensing and subsequent relaxing of various muscle groups, beginning with the feet and progressively working upward through the body. This method involves the systematic tensing and subsequent relaxation of different muscle groups throughout the body. The practice typically begins with the feet and progresses upward through the legs, abdomen, chest, arms, shoulders, neck, and facial muscles [10,12].

An experiment was conducted to enhance sleep quality through yoga. Three sessions were provided per week, and altogether nine sessions were provided within a period of three months. Pittsburgh Sleep Quality Index (PSQI) was used to monitor sleep quality. Where results revealed significant improvements in the domains of Physical discomfort, psychological discomfort, and Worries and Concern-related aspects. Similarly, subjective sleep quality, duration, and sleep disturbance were also found to be positively correlated with yoga practice. Consequently, yoga demonstrates a multisystem effect that can be beneficial for sleep and daytime functioning (P = 0.001) [13]. Supportive psychotherapy focused on alleviating emotional distress and managing psychiatric symptoms. This method addresses minor and immediate issues. It emphasizes empathy, acceptance, praise, psychoeducation, rationalization, remotivation, reframing of negative thoughts, and encouraging positive behavioral responses. This form of therapy aids in strengthening coping mechanisms. So this therapy helps in reducing social isolation, decreasing anxiety, and boosting self-esteem [14].

Cardiac rehabilitation (CR) was provided to patients with revascularization therapy/heart failure/valvular heart surgery. The rehabilitation programmes considered physical training, health education, and psychological counseling. It was a group-based, 8-week, twice-weekly CR programme. During this CR programme, patients were educated about daily exercise, one hour of walking per day, and health education regarding nutrition and a heart-healthy diet. At the end of the program, the PSQI scale was used to measure sleep quality. The median overall score was reduced from 7 to 6 points (p = 0.008), subscales change in sleep quality (p = 0.023), sleep latency (p = 0.023), sleep disturbance (p = 0.033), and sleep dysfunction (p = 0.023). These changes were seen in only 25.0% of patients (Lodi Rizzini *et al.*, 2022).

Therefore, psychological interventions address individual psychological and emotional symptoms by promoting inner peace, restoring motivation, reducing anxiety, and enhancing self-esteem. These positive psychological outcomes contribute significantly to improved emotional regulation and mental well-being, which ultimately support better sleep quality for the individual.

III. METHODOLOGY

A narrative review design was adopted in this study with the aim of identifying the role of psychological intervention for promoting sleep for cardiac patients.

➢ *Search Strategy*

A comprehensive search of the literature from 2020 to 2025 was conducted to identify relevant studies. Initially, the title and abstract were screened thoroughly, and then the full text of potentially eligible studies was reviewed. Articles are selected based on inclusion and exclusion criteria. To search literature Boolean operators were used, i.e., 'AND', 'OR', and 'NOT'. MeSH Words like "cardiovascular disease" OR "Sleep problem" OR Insomnia "heart disease AND Sleep quality" "sleep" OR "sleeping "OR "sleeps" "sleep" AND "initiation" OR "maintenance" "psychotherapy" OR "intervention" OR "intervention" were used.

➢ *Inclusion Criteria*

- Articles related to cardiovascular disease, an interventional study for sleep.
- Adult population aged 18 years and above.
- The paper was published in the English language.
- Research articles published from the year 2020 onwards.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun590

➢ *Exclusion Criteria*

This study excluded: (1) Studies that only focused on descriptive methods; (2) Systematic reviews, narrative reviews, reviews of reviews, scoping reviews, comprehensive reviews, meta-reviews, book chapters, conference abstracts, editorials, and commentaries; (4) Studies published in languages other than English.(5) studies unavailable for open access.

Table 1: Psychological Intervention for Sleep among Cardiac Patients

Study Author, Year, Country	Population	Sample Size	Intervention	Duration of Intervention	Tool	Outcome
Heenan et al [15], (2020) Canada	Patients with cardiovascular disease	47	Cognitive Behaviour Therapy (CBT)	A six-session program, each session was 90	Insomnia Severity Index (ISI)	MANOVA result shows pre and post test result number of awakenings (1.91(0.92)/ 1.55(1.09), wake after sleep onset (43.42(35.64)/ 18.49(15.37), total sleep time (5.75(1.83)/ 6.40(1.08), sleep efficiency (73.30(14.56)/ 87.55(6.35), sleep latency (34.13(40.89)/ 15.05(11.00), and sleep quality (4.69(1.58)/ 6.30(1.30). ISI (16.73(4.58)/ 8.90(3.35)).
Zhang et al., [17]., (2023) China		82	App based CBT Intervention	6-week self-guided	Insomnia Severity Index scores	Mean (SD) ISI scores in the CBT-I group were significantly lower (12.7 ± 4.8) than those in the sleep education group (14.9 ± 5.0) after the 6-week intervention, and at the 3-month follow-up (12.1 ± 5.4 points vs 14.8 ± 5.5 points.
Redeker et al. [21], 2022. United States	Heart Failure patients	51	Cognitive-behavioral therapy for insomnia (CBT-I)	8 sessions	Actigraphy Insomnia Severity Index, Pittsburgh Sleep Quality Index, Dysfunctional Beliefs and Attitudes about Sleep (DBAS) and Sleep Disturbance Questionnaires (SDQ)	Significant changes were found in the Group × Time interaction of Insomnia Severity, Sleep quality, Sleep Latency, Sleep Efficiency and Sleep Duration of actigraphy report.
Gheiasi et al.[18]. (2024)., Iran		90	CBT	10 - 12 sessions	Pittsburgh Sleep Quality Index (PSQI)	PSQI score in the 2 groups before the intervention was not significantly different (P = 0.245). After the intervention, has a significant mean difference in the 2 groups (P = 0.0001).
Kou et al.,[19] (2024), China	Stroke comorbid with coronary heart disease	72	Mindfulness Meditation	Six weeks intervention	The Pittsburgh Sleep Quality Index	Sleep quality improved (9.22 ± 2.35/6.26 ± 2.47) according to time period. Sleep quality Before treatment 2.34 ± 0.84, 6 weeks after treatment, 12 weeks after treatment 0.94 ± 0.92 *p* time value (< 0.001)

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun590

Lee & Kang, [20], (2020). South Korea	Angina pectoris, myocardial infarction, heart failure, and cardiomyopathy	48	Meditation through virtual reality	8 sessions-videos of 30 minutes	Self-reported Sleep Scale -A and Activity tracker FitBit Charge 2	The experimental group subjective sleep quality was better than the control group. Activity tracker also indicated awake time was shorter, deep sleep time was longer and sleep efficiency was significantly higher among experimental group.

➢ *Ethical Considerations*

In this study, a narrative review was conducted, which includes only the articles that were published previously, so ethical approval was not taken. However, by appropriately citing and acknowledging the original authors' contributions, ethical norms were maintained.

IV. DISCUSSION

A narrative review was designed for this study. A compressive search of the literature from 2020 to 2025 was done to identify relevant studies. Initially, the title and abstract were screened thoroughly, and then full text of potentially eligible studies were reviewed. Cardiovascular problems, psychological intervention with randomized controlled trial were included in this study. Total six studies were reviewed. The tools were ISI, PSQI, Dysfunctional Beliefs and Attitudes about Sleep and Sleep Disturbance Questionnaires, Self-reported Sleep Scale -A and Activity tracker FitBit Charge 2.

Study on Heart Failure patients reported mean and standard deviation of Dysfunctional belief at baseline was 3.64(1.90), and gradually decreased 3.78(1.55) 3.47(1.84) after second and third time but in control group results are gradually increasing in each next time [4.20(1.88), 4.61(1.70), 4.63(8.14)]. With CBT-I group also found improving insomnia (indirect effect = −0.47, 95% CI = −0.93, −0.06) and fatigue (indirect effect = −0.42, 95% CI = −0.84, −0.05). These groups were provided four four-week intervention biweekly for total of eight weeks. The highest correlation from baseline to time 2 was found with DBAS and the SDQ scores (r=0.556). Therefore, in this study, CBT-I significant contribution was found on improving dysfunctional sleep-related cognitions among patients with stable HF. Changes in cognitions also found an important factor for improving insomnia severity and fatigue [21].

Mindfulness therapy also found equally effective for improving sleep quality. The breathing exercises and body awareness training done in mindfulness brings positive emotions which is beneficial for improving sleep. In this randomized study, both groups received medication therapy which included antiplatelet medication, lipid-lowering and plaque-stabilization medication, blood glucose control, blood pressure management and neurotrophic medication and rehabilitation therapy was provided according to the functional limitation of the patients. In an observation group, mindfulness meditation was introduced, and result showed improved outcomes in terms of sleep quality, duration, efficiency, sleep onset latency, and sleep disturbances throughout the course of six and twelve weeks compared to control group ($p < 0.05$). After 12 weeks of intervention, the overall score was ($9.22 \pm 2.35/6.26 \pm 2.47$) compared with the control group [19].

The latest virtual reality (VR) technology provides a personal space for meditation regardless of the surrounding environment. On the evening of admission day, 30 minutes of mediation was provided using NOON PRO, a head-mounted display type VR equipment. Routine sleep intervention, including sleep masks and earplugs, was provided to the control group. The sleep of both groups was measured by self-report type Sleep Scale A, an activity tracker and the FitBit Charge 2[20]. The subjective sleep quality of the experimental group was significantly higher than that of the control group. In activity tracker measurement, total sleep time and light sleep time did not significantly differ in an activity tracker measurement. However, in the experimental group, deep sleep time was found to be longer and awake time was shorter.

Harada et al.[22] Conducted study in Japan among patients with congenital heart disease to identify the prevalence for sleep apnea, as well as risk factors among 104 hospitalized patients. The reason for admission was diagnostic catheterization, interventional catheterization, arrhythmia and heart failure. To measure the sleep quality researcher used 3 portable overnight polygraphs and respiratory disruption index of ≥5. Mild apnea was reported 37%, which was followed by moderate, and severe and were distributed as 16%, and 10%, respectively. Twenty-six percent of participants had moderate to severe sleep apnea. Obstructive sleep apnea accounted for 92% of the cases, while central sleep apnea accounted for 8%.

Sleep duration of more than 9 hours per night was linked to a higher prevalence of CVD. Moreover, significant associations with heart attack were observed in participants with less than 7 hours of sleep per night and those with prolonged sleep-onset latency (over 30 minutes per night). Prolonged sleep-onset latency was 108% increased risk of congestive heart failure (CHF) [23].

The University of Ottawa Heart Institute (UOHI) conducted a pre- and post-test study using convenience sampling. The participants are provided a diary one week prior to the intervention. They have to record in that diary about sleep pattern for 7 nights. Then, six sessions of CBT were conducted by Heart Healthy Sleeping Group (HHSG). Each session was 90 minutes for 6-12 patients. The result shows that sleep outcomes related to sleep duration, maintenance, efficiency, latency, and quality were significantly improved after CBT-I [15].

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun590

Digital Cognitive behavioral therapy was conducted the University Hospital of China from March 2021 to January 2022. In this study Insomnia Severity Index (ISI) and sleep diary was used to measure sleep quality. As well as smart bracelet also used to measure the objective quality of sleep. In this study RCT was conducted with 82 respondents. In this intervention, smartphone-based app called *resleep* was used for 6-weeks. The intervention consisted of stimulation control, sleep restriction, sleep hygiene education, relaxation therapy, and cognitive therapy. The Insomnia Severity Index (ISI) scores were utilized to assess sleep quality. Results showed that after the 6-week intervention, mean ± SD of ISI scores in the DCBT-I group were significantly lower (12.7 ± 4.8) than those in the sleep education group (14.9 ± 5.0). As well as after the 3-month follow-up, the score was (mean ± SD =12.1 ± 5.4 vs 14.8 ± 5.5) [17].

Insomnia is a common sleep disorder for various health-related disorders that adversely affects individuals' quality of life. Pharmacological treatments are recommended by medical doctors but nowadays, growing interest is seen in alternative therapies, like yoga, meditation, massage, and cognitive behavioral therapy [16].

V. CONCLUSIONS

Sleep and cardiovascular outcomes are related to each other. For promoting sleep CBT-I framework is centered on individual cognitive processes that significantly influence behavioral responses among individuals. People with better quality sleep tend to have a better quality of life. Cognitive behavioral therapy (CBT) guides people in self-regulation for shaping their behavior. Mindfulness interventions may provide better long-term sleep improvements compared with medication alone. For patients with stroke with concurrent coronary heart disease, achieving better motor function improvement is an especially desirable outcome. The Virtual meditation can also be used as a recreation and relaxation therapy. It positive effect on sleep of the patient. Therefore, various modes of psychotherapy can be utilized to promote better sleep quality, many of which have been found to be effective.

- *Conflicts of Interest*

The authors declare no conflicts of interest.

ACKNOWLEDGEMENTS

Authors would like to express their sincere gratitude towards the School of Nursing Science and Research, Sharda University, Greater Noida for providing institutional support.

REFERENCES

[1]. World Health Organization. Cardiovascular diseases (CVDs),2021. Available from: https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)
[2]. Cesare MD, Bixby H, Gaziano T, Hadeed L, Kabudula C, McGhie DV, et al. World Heart Report, 2023: Confronting the world's Number one Killer. World Heart Fed. 2023; Available from: https://world-heart-federation.org/resource/world-heart-report-2023/
[3]. Mensah GA, Fuster V, Murray CJL, Roth GA, Mensah GA, Abate YH, et al. Global Burden of Cardiovascular Diseases and Risks, 1990-2022. J Am Coll Cardiol. 2023 Dec;82(25):2350–473.
[4]. Wang C, Bangdiwala SI, Rangarajan S, Lear SA, AlHabib KF, Mohan V, et al. Association of estimated sleep duration and naps with mortality and cardiovascular events: a study of 116 632 people from 21 countries. Eur Heart J. 2019 May 21;40(20):1620–9.
[5]. Kryger M, Roth T, Goldstein CA, Dement WC. Principles and Practice of Sleep Medicine. Seventh Edition. Vol. 1. ELSEVIER 1600 John F. Kennedy Blvd. Ste 1600 Philadelphia, PA 19103-2899: Elsevier,; 2022.
[6]. Lee S, Kim JH, Chung JH. The association between sleep quality and quality of life: a population-based study. Sleep Med. 2021 Aug;84:121–6.
[7]. Shen Z, Chen H, Cai Y, Zhou B, Chen H, Xie N. Study on the Correlation among Sleep Quality, Cognitive Function, and Self-Management Ability in Hospitalized Elderly Patients with Coronary Heart Disease. J Nanomater. 2021;2021(1):4580949.
[8]. Särnholm J, Skúladóttir H, Rück C, Axelsson E, Bonnert M, Bragesjö M, et al. Cognitive Behavioral Therapy Improves Quality of Life in Patients With Symptomatic Paroxysmal Atrial Fibrillation. J Am Coll Cardiol. 2023 Jul;82(1):46–56.
[9]. Giordano A, Ponzio MD, Cicolin A, Giordano A, Ponzio MD, Cicolin A. Psychological interventions in behavioral sleep medicine: An overview for clinicians and psychologists. Ann Psychiatry Treat. 2022 Nov 10;6(1):033–48.
[10]. Rusch HL, Rosario M, Levison LM, Olivera A, Livingston WS, Wu T, et al. The effect of mindfulness meditation on sleep quality: a systematic review and meta-analysis of randomized controlled trials. Ann N Y Acad Sci. 2019 Jun;1445(1):5–16.
[11]. Nabors M. Muscle Relaxation: The Best Exercises for Joint and Muscle Pain Relief. Youcanprint; 2021. 87 p.
[12]. Solan M. Harvard Health. 2023 [cited 2025 May 29]. Try this: Progressive muscle relaxation for sleep. Available from: https://www.health.harvard.edu/staying-healthy/try-this-progressive-muscle-relaxation-for-sleep
[13]. Shree Ganesh HR, Subramanya P, Rao M R, Udupa V. Role of yoga therapy in improving digestive health and quality of sleep in an elderly population: A randomized controlled trial. J Bodyw Mov Ther. 2021 Jul 1;27:692–7.
[14]. Lallukka T, Sivertsen B, Kronholm E, Bin YS, Øverland S, Glozier N. Association of sleep duration and sleep quality with the physical, social, and emotional functioning among Australian adults. Sleep Health. 2018 Apr 1;4(2):194–200.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun590

[15]. Heenan A, Pipe A, Lemay K, Davidson JR, Tulloch H. Cognitive-Behavioral Therapy for Insomnia Tailored to Patients With Cardiovascular Disease: A Pre–Post Study. Behav Sleep Med. 2020 May 3;18(3):372–85.
[16]. Mumtaz O, Hameed M, Kashif RS, Abazeed S, Ali A, Qureshi AU, et al. Yoga Exercises as a Therapeutic Approach for Adults with Insomnia to Promote better Sleep: A Randomized Control Trial. J Health Rehabil Res. 2024 May 9;4(2):585–92.
[17]. Zhang C, Liu Y, Guo X, Liu Y, Shen Y, Ma J. Digital Cognitive Behavioral Therapy for Insomnia Using a Smartphone Application in China: A Pilot Randomized Clinical Trial. JAMA Netw Open. 2023 Mar 27;6(3):e234866.
[18]. Gheiasi SF, Hosseini E, Sharifi F, Esmaeili M, Etesam F, Navab E. Effect of a Nurse-Led Cognitive-Behavioral Therapy on Sleep Quality in Patients Undergoing Open Heart Surgery: A Prospective Randomized Clinical Trial. Health Scope . 2024 Feb 15;13(1). Available from: https://brieflands.com/articles/healthscope-133858
[19]. Kou L, Liu M, Kang S, Ni G. Efficacy of Mindfulness Meditation on Patients With Stroke With Concurrent Coronary Heart Disease: A Randomised Controlled Trial. Clin Psychol Psychother. 2024;31(6):e70012.
[20]. Lee SY, Kang J. Effect of virtual reality meditation on sleep quality of intensive care unit patients: A randomised controlled trial. Intensive Crit Care Nurs. 2020 Aug;59:102849.
[21]. Redeker NS, Yaggi HK, Jacoby D, Hollenbeak CS, Breazeale S, Conley S, et al. Cognitive behavioral therapy for insomnia has sustained effects on insomnia, fatigue, and function among people with chronic heart failure and insomnia: the HeartSleep Study. Sleep. 2022 Jan 11;45(1):zsab252.
[22]. Harada G, Takeuchi D, Inai K, Shinohara T, Nakanishi T. Prevalence and risk factors of sleep apnea in adult patients with congenital heart disease. Cardiol Young. 2019 May;29(5):576–82.
[23]. Kadier K, Qin L, Ainiwaer A, Rehemuding R, Dilixiati D, Du YY, et al. Association of sleep-related disorders with cardiovascular disease among adults in the United States: A cross-sectional study based on national health and nutrition examination survey 2005–2008. Front Cardiovasc Med. 2022 Aug 4;9:954238.