

Review Article
Effects of Benson's relaxation technique on sleep quality of patients with cardiovascular diseases: A narrative review
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Abstract

Cardiovascular disease (CVD) counts at the forefront of death causes and has become a significant global issue due to its high prevalence rate. The Benson's relaxation technique (BRT) can benefit general health conditions in CVD patients. However, there is still controversy over the efficacy of BRT on sleep quality improvement. This narrative review aims to summarize the evaluation of the effects of BRT on sleep quality of patients with CVD. This narrative review was conducted via online databases, such as PubMed, Web of Science, Embase, and Scopus and Google Scholar search engine. Published articles were included in the search from the first until September 10, 2023. Additionally, the bibliographies of pertinent publications were looked up. These databases were searched using a strategy string that combined free text keywords with Medical Subject Heading phrases. The search terms for "cardiovascular disease" with synonyms AND "quality of sleep" with synonyms were combined with search terms for "Benson's relaxation technique". English-language published articles that matched the inclusion criteria were evaluated and included. The study results showed BRT can increase the sleep quality of patients in terms of mental sleep quality, sleep onset delay, useful sleep, sleep disorders, and overall sleep quality. To further increase the sleep of patients after open heart surgery, the BRT is recommended as a complementary method in addition to drug therapy. BRT increases sleep quality in patients with CVD. Therefore, this method can be used as a suitable complementary treatment to improve the sleep quality of these patients.

Keywords: Cardiovascular Disease, Cardiac Event, Quality of Sleep, Benson Relaxation Technique.

1 | Introduction

Cardiovascular disease (CVD) counts at the forefront of death causes and has become a significant global issue due to its high prevalence rate [1]. Despite its mortality, its morbidity is also essential as it can impact various general health conditions, including sleep hygiene [2]. Sleep is a fundamental requirement in living beings and maintains health conditions and physiological recovery of the body [3]. Sleep disorders are highly prevalent among CVD patients [2]. Several studies demonstrated a meaningful correlation between sleep quality and cardiovascular

disorders and investigated that sleep disorders can simultaneously count as both the result and cause of CVD [4-6]. Sleep deprivation and poor sleep quality are associated with increased sympathetic nervous system activity, which can induce tachycardia, elevated blood pressure, and subsequent increased cardiac workload, leading to ischemia and deterioration of general health conditions in patients with CVD [7].

On the other hand, the nature of the CVD can also induce the development of sleep disorders as these patients suffer from various disease-related issues, such as the psychological stress of

having severe illness and other complications [4]. Consequently, sleep quality in these patients is a significant concern [7]. The most frequent medical approach in insomnia (the most common sleep disorder amongst patients with CVD) has been pharmacological agents [8]. Implementing complementary methods such as relaxation seems essential since pharmacological agents are not usually cost-effective and may have serious adverse effects [9]. Benson relaxation technique (BRT) is one of the most well-known methods, which was first introduced in 1975 by Herbert Benson, a Harvard physician who declared that BRT could evoke relaxation response by diminishing the activity of the autonomic nervous system [8]. This technique invokes both faith factors and relaxation response techniques [10]. It is also one of the most well-known techniques that can be learned and implemented quickly and benefit patients with CVD considerably [11]. It can reduce cardiac workload and demand by decreasing muscle contraction, pulse, and respiratory rates [9]. According to Benson, BRT yields relaxation response by covering the following steps: First, it requires sitting quietly in a comfortable position with eyes closed and inspiration through the nose slowly.

This is followed by relaxing all muscles deeply and keeping them continuously relaxed while scanning the body for any areas of tension that can be settled further. Repeating a single positive word simultaneously during exhalation can help boost one's attention. After at least 5 minutes, one can start thinking regular thoughts and gradually open their eyes. Benson recommended doing this for 10 minutes in the morning to elicit the healing benefits of being relaxed [12]. Several studies investigated meaningful relationship between application of BRT and reducing blood pressure [13]. The speculated rationale behind this technique is that inflammation forms in the respiratory system during a long period of inspiration, stimulating lung stretch receptors to produce a signal. Subsequent signals will be sent to the medulla oblongata, which will forward information regarding increased blood flow to the brainstem. Consequently, parasympathetic nerves' activity rises, and sympathetic nerves' activity diminishes. Resultant elevated blood pressure and, the initial lung inflammation reduces the heart rate and bring about vasodilation in several blood vessels. According to the mentioned mechanism, the BRT can benefit general health conditions in CVD patients [10]. However, there is still controversy over the efficacy of BRT on sleep quality improvement. Our narrative review aims to summarize the evaluation of the BRT's effectiveness on sleep quality amongst patients with CVD.

2 | Methods

This narrative review was conducted via online databases, such as PubMed, Web of Science, Embase, and Scopus and Google Scholar search engine. Published articles were included in the search from the first until September 10, 2023. Additionally, the bibliographies of pertinent publications were looked up. These databases were searched using a strategy string that combined free text keywords with Medical Subject Heading phrases. The search terms for "cardiovascular disease" with synonyms and "quality of sleep" with synonyms were combined with search terms for "Benson's relaxation technique". The final syntax of the statement is ("Cardiovascular Disease*" OR "Major Adverse Cardiac Event*" OR "Cardiac Event*" OR "Adverse Cardiac Event*" OR "Disease* Cardiovascular" OR "Event* Cardiac" OR "Cardiac Event* Adverse") AND ("Benson Relaxation Technique" OR "Benson's Relaxation Therapy" OR "BRT" OR "Benson* Relaxation" OR "BR" OR "Benson's Relaxation Response" OR "BRR" OR "Benson's Relaxation Technique" OR "Relaxation Therapy" OR "RT" OR "Benson Relaxation Application" OR "Bens App" OR "Relaxation Technique" OR "Benson's Relaxation Response") AND ("Quality of Sleep" OR "Sleep Quality*" OR "Quality* Sleep"). A filter was applied for the English language and article publication year up to September 10, 2023. Reproducible search strings for all three databases are appended. All records identified in the database search were screened for eligibility in two steps: title/abstract and full text. English-language publications that demonstrated the connection between the terms "cardiovascular diseases", "Benson relaxation technique", and "quality of sleep" met the inclusion criteria. The search was performed by two authors independently. The investigators excluded all articles for which full texts were unavailable and those in a language other than English. After removing duplicate studies, the titles, abstracts, and full texts of the eligible articles were evaluated by two researchers independently. After exclusions, the remaining eligible papers underwent thorough full-text reviews, and pertinent information was incorporated into our narrative review. The EndNote X8 software were used to manage the data. A total of 118 articles were obtained initially using database searches. Then, the article titles and abstracts were screened to eliminate duplicate studies, excluding 43 articles. Finally, the full texts of selected articles were reviewed, and 26 eligible journal articles were finally included in the review, from which data were extracted for analysis. Lists of references from qualified research were examined to provide the most thorough search possible. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guideline was used to

document the automatic and manual collection, screening, and selection of articles.

3 | Results

3.1 | CVDs

CVDs are the most common causes of mortality and morbidity worldwide [14]. The most common factors that contribute to the occurrence and development of these diseases are blood pressure, diabetes mellitus, dyslipidemia, obesity, smoking, social isolation, and depression are brought on by these diseases [15, 16]. They interfere with the patient's lifestyle, daily activities, family relationships, and social interactions. The disease's effects may also prevent the patient from getting the best possible sleep [17]. For instance, people with heart failure have trouble sleeping [18].

3.2 | Sleep quality in CVD patients

Sleep is a physiological aspect of human life essential to maintaining health and well-being. It is a natural, reversible state mainly controlled by neurobiological processes [19, 20]. The cessation of motor activity and decreased awareness of external stimuli are related to sleep [20]. Numerous variables, including diet [21], exercise [22], genetics [23], and environmental [24], influence sleep quality. Poor sleep affects both physical performance and life quality [25]. Numerous illnesses, such as cancer, depressive disorders, and CVDs, are linked to sleep disorders at the beginning and end of their course [26, 27]. Lack of sleep raises heart rate and blood pressure. Which ultimately presents the danger of a heart attack [7]. According to a systematic review and meta-analysis, short and long sleep durations predict cardiovascular outcomes and are linked to an increased risk of coronary heart disease [28]. A U-shaped relationship between sleep duration and CVD risk was also noted by Yin *et al.*, [29] and inadequate or excessive sleep duration is strongly linked to an increased CVD risk.

3.3 | Effects of BRT on sleep quality of patients with CVD

Relaxation methods are complementary alternative therapies, also known as interventions for anxiety reduction. People's breathing, heart rate, blood pressure, and muscle tension all drop when they are relaxed, which in turn causes them to pay less attention to external stimuli [30]. Nursing interventions like relaxation are frequently used as supplemental and occasionally alternative therapies. It was developed to help patients sleep better [31, 32]. BRT, progressive muscle relaxation, relaxation with mental imagery, meditation, massage, hypnosis, breathing exercises,

yoga, and music therapy are standard relaxation techniques [33, 34]. The BRT is appealing because it is simple to understand and impart to others. Pulse, breathing, blood pressure, and heart workload are all decreased using this technique [35]. Additionally, this method can help systolic heart failure patients sleep better [8]. BRT can enhance patients' sleep quality in subjective sleep quality, sleep onset delay, beneficial sleep, sleep disorders, and overall sleep quality, according to the findings of research by Bagheri *et al.*, To further enhance patients' sleep after open heart surgery, the BRT is recommended as a complementary method in addition to drug therapy [36]. According to the study findings by Rakhshani *et al.*, the BRT is a complementary therapy. In chronic heart patients, it can improve sleep quality [37].

4 | Limitations

Our evaluation is based on our expertise in Iranian medical practice because we are here. We used a narrative review methodology that included two independent researchers' independent study selection and extraction, a highly sensitive search strategy in electronic databases, and a pre-specified process. Given the continuously evolving body of research on the efficacy of the BRT on sleep quality, a limitation of our narrative review is that the research being reviewed may have only recently been published and, as a result, still needs to be summarized in reviews. However, knowing the study's limitations is essential while evaluating the findings. We could not include all available studies since our search strategy and eligibility requirements did not aim for all studies reporting these outcomes. There might have been the omission of potentially relevant studies despite adopting a comprehensive search strategy. Only accessible databases were examined, including PubMed, Web of Science, Scopus, Google Scholar, and SID. This constraint may result in low power in analyses of the adverse impacts of the included therapies. Finally, we did not assign a grade to the degree of certainty of each piece of evidence confirming each outcome. This was minimized by hand-searching the references of the included articles, which was done in addition to our search strategy. The conclusion is limited to information gathered from research published in English-language databases since we only retrieved English-language publications. However, the level of evidence confidence could have been higher because there were so few studies in these fields.

5 | Implications for clinical nursing practice

The current study's findings may pave the way for a thorough examination of the studied variables to determine the effects of the BRT on patients' cardiovascular quality of sleep. Given that our

study was a pioneer in this field, it is recommended that nurses, doctors, and other medical staff use the findings to inform their policy decisions.

6 | Recommendations for future research

A recommendation is made to undertake additional interventional and comparative research endeavors to investigate the effects of BRT on sleep quality of patients with CVD.

7 | Conclusions

In summary, BRT increases sleep quality in patients with CVDs. Therefore, this method can be used as a suitable complementary treatment to improve the sleep quality of these patients.

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Authors' contributions

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work: HZ, ME, AMN, AK, MMP, ST, SMTO; Drafting the work or revising it critically for important intellectual content: HZ, ME, AMN, AK, MMP, ST, SMTO; Final approval of the version to be published: HZ, ME, AMN, AK, MMP, ST, SMTO; Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved: HZ, ME, AMN, AK, MMP, ST, SMTO.

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Competing interests

We do not have potential conflicts of interest with respect to the research, authorship, and publication of this article.

Availability of data and materials

The datasets used during the current study are available from the corresponding author on request.

Using artificial intelligent chatbots

None.

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