The Relationship between Sleep Quality and Happiness in Men with Coronary Artery Disease

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Abstract

Introduction: Good sleep quality has positive effects on happiness, and being unhappy is significantly affect adverse cardiac outcomes. This study aimed to study the relationships between sleep quality and satisfaction in male coronary patients.
Methods: One hundred male coronary patients that having been referred to Madani Heart Hospital, Tabriz, Iran, completed the Pittsburgh Sleep Quality Index (PSQI) and Oxford Happiness Questionnaire (OHQ). All participants were selected by purposive sampling (aged 37 to 67 years).
Results: There was a significant negative association between happiness with sleep disturbances and the use of sleeping medication in coronary patients.
Conclusion: This study showed that sleep quality in coronary patients has an association with their happiness. Therefore, the quality of sleep in these patients can be given more consideration by community health care providers.

INTRODUCTION

Coronary Artery Disease (CAD) is a subgroup of diseases consisting of stable angina pectoris, unstable angina pectoris, myocardial infarction, and sudden cardiac death [1]. Hardening and narrowing of arteries providing blood and oxygen to heart muscles lead to CAD [2]. CAD causes lots of human deaths each year in many countries annually [3]. CAD is affecting 110 million people, and is the most common cause of death worldwide includes 15.9% of all human deaths [4, 5].

Family history of premature CAD, hypertension, physical inactivity and diabetes mellitus, smoking, and dyslipidemia are various risk factors of CAD [6]. Based on standard risk factors, we are not able to identify up to 50% of new CADs, which shows that a wide variety of CAD risk factors have a role in the creation of CAD [6, 7]. The evidence indicates that psychological and psychosocial variables like socioeconomic status, social support [8], personality [9-11], and psychological distress [12] could have essential influences on the incidence and continuation of CAD.

Happiness means the sense of satisfaction of significant desires and wishes of humankind. It also can be defined as a psychological state [13]. It is an indication of how much a person loves his/her life and influences some features of physical, mental, cognitive, and social life [14]. Based on previous studies, positive affect such as pleasure and happiness are related to the expansion of survival, development of the immune system, and reduction in the risk of heart disease like hypertension [15-18].

Some researches show that there is a relationship between high optimism and a significantly lower odds ratio (0.23) for deaths caused by cardiovascular disease [19]. Moreover, there has been a positive correlation between high levels of optimism and enhanced levels of protection against cardiovascular events [20]. Also, researches indicate that sadness is highly correlated with adverse cardiac outcomes [21]. Nevertheless, there is little information on the relationship between happiness and risk factors of the specific cardiovascular disease [22].

Sleep is a part of an ordinary biological rhythm, which is essential to support health and optimal body function [23]. Also, in human beings, it links to the overnight phase of the 24-hour time scale as a result of the overlap of two systems: a sleep homeostat and a circadian timing system [24]. Sleep homeostat depends on the sleep-wake history of the person possessing a drive for sleep (or sleep pressure), which happens during wakefulness, and the circadian timing system is related to waking up during the daytime and sleep at night [25].

In some cases, many people go through sleep disorders due to sleep habits changes, personal problems, stressful periods, and environmental factors [26]. Sleep disorders impact nearly 10-50% of the population in general [27]. Previous researches show that up to 28% of people with Coronary Heart Disease (CHD) report that they suffer from poor sleep quality. Nevertheless, the quality of sleep in CADs is rather low in comparison to other risk factors like blood pressure, diet, and physical activity [28, 29].

By attaining a thorough understanding of relationships between sleep and happiness in patients with CAD, we can make out factors for treatment and development of positive health in patients with CAD. So, this study aimed to explore the relationships between sleep quality and happiness in patients with CAD.

METHOD

This study was approved by the scientific committee of the Department of Psychology at the University of Tabriz. This study was a correlation with a population comprised of all male patients with CAD who referred to Madani Heart Hospital of Tabriz, Iran. CAD was defined as a history of myocardial infarction, or at least 50% stenosis of one or more major epicardial coronary arteries by invasive coronary angiography. The sample group included 100 male patients with CAD who were selected according to the purposeful sampling method (aged 37 to 67). All the participants were informed of study objectives, and explanations were given about the questions, and they could withdraw at any time they wish. The study tools were the Pittsburgh Sleep Quality Index (PSQI) and the Oxford Happiness Questionnaire (OHQ).

PSQI can be used as an efficient tool to measure the patterns and quality of sleep in adults and discriminates poor from good sleep by assessing these domains: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, using the sleeping medication, and daytime dysfunction. Participants fill items of the inventory on a 0-3 Likert scale, in which three shows the extremity of poor sleep quality. The sum of subscores depicts the total score of sleep quality, which ranges from zero to 21, where higher scores represent more mediocre sleep quality. The subjects were divided into good sleep quality (less than 5) and poor sleep quality (more than or equal to 50) [30]. A lot of studies, which use the PSQI in different adult populations, confirm the questionnaires' validity and reliability [31, 32].

OHQ is a tool of multiple-choice format containing 29 items. Each item consists of four choices, depicting the amount of happiness as unhappy or mildly depressed, a low level of happiness, a high level of happiness, and mania. The individuals were required to choose the items which described the manner they had been feeling over the previous week, consisting of today. The internal consistency, reliability, and construct validity of the Persian version of OHQ were confirmed by Alipour and Agah-Heris in 2007 [33].

The completion of the questionnaires has no time limit. Participants were requested to carefully read the instructions and choose one of the answer options. It was also notified that participants should not leave any question unanswered, and should select the option that described their usual sleep habits during the past month only.

Statistical Analysis

In the present study, descriptive statistics were calculated to determine the mean and standard deviation of happiness and sleep quality subscales. Multiple regression (simultaneous method) was used to analyze the relationship between happiness and sleep quality subscales in CAD patients. All data analyses were conducted using SPSS 19.0 software, and confidence intervals were set at 95%. Results were considered significant at an error probability level of $P < 0.05$.

RESULTS

An overall 100 male coronary patients, with a mean age of 51.5 ± 7.4 years old (mean ± SD), were included. Seventy percent of participants in the study were illiterate or elementary, 28% had secondary education, and 2% had higher education. Mean and standard deviations of happiness, sleep quality, and its components in CAD patients during the past month are shown in Table 1.

Table 2 presents the association of happiness and factors of sleep quality in CAD patients where showed a significant negative association between happiness and sleep disturbances ($P = 0.01$) and a significant negative association between happiness and use of sleeping medication in CAD patients ($P = 0.005$).

Table 1. The mean and standard deviation of sleep quality and its components in patients with coronary artery disease

Variable	Mean ± SD
Happiness	44.30 ± 12.77
Sleep quality	6.30 ± 2.93
Subjective sleep quality	0.92 ± 0.90
Sleep latency	1.59 ± 1.40
Sleep duration	0.92 ± 0.83
Habitual sleep efficiency	0.33 ± 0.68
Sleep disturbances	1.32 ± 0.46
Use of sleeping medication	0.29 ± 0.79
Daytime dysfunction	1.03 ± 0.84

Table 2. Results of multiple regression analyses of happiness and subscales of sleep quality in patients with coronary artery disease

Model	beta	t	P value
Subjective sleep quality	-0.082	-0.660	0.5
Sleep latency	0.100	1.040	0.2
Sleep duration	0.303	2.533	0.09
Habitual sleep efficiency	-0.195	-1.733	0.08
Sleep disturbances	-0.303	-2.443	0.01
Use of sleeping medication	-0.270	-2.885	0.005
Daytime dysfunction	-0.185	-1.897	0.09

DISCUSSION

This study aimed to investigate the relationship between sleep quality and happiness in CAD patients. Results showed a significant negative correlation between sleep disturbances and the use of sleeping medication with happiness in CAD patients.

Following previous studies, good sleep leads to more satisfaction with life [34-37]. A study showed that napping during the day is positively related to the happiness level of the person and that happiness and sleep are undoubtedly correlated [38]. Unlike this finding, a study showed that people sleeping poorly, were more likely to see happiness as a zero-sum mindset, and this leads people to social comparison and less positive experiences, and ultimately leads to unhappiness [39]. These people view sleep as a waste of time and money that exacerbates interpersonal stress [34].

Sleep patterns such as disturbed sleep have adverse physiological consequences on a cardiovascular disease like arrhythmia, atherosclerosis, hypertension, CHD, heart failure, stroke, and increasing human morbidity and mortality [40-43]. One study showed that people who scored low on sleep quality had high systolic blood pressure and were exposed to the 10-year risk of cardiovascular disease [44]. Another study showed that CAD patients with severe insomnia showed two or three times more arousal of sleep or anxiety compared with the general population [45].

Some CAD patients do not have enough time to sleep. Instead, they try to fight drowsiness. These patients also described lifestyles with a more neutral attitude toward reported sleep problems. They had adopted a sedentary lifestyle and had been experiencing nocturnal sleep deprivation as a minor problem due to their activities and desires. These patients organize their lives in a way that is consistent with their abilities and resources [45].

On the other hand, some CAD patients increase their level of consciousness by engaging in behaviors such as increased physical activity, reduced eating, and increased sleep, which may increase the risk of CAD. Therefore, using self-care management strategies to improve sleep, enhances the risk of adverse cognitive thoughts and expectations of not controlling sleep changes, which may exacerbate the patient's insomnia behavior [45].

The results of this study also showed a significant negative correlation between the use of sleeping medication and happiness in CAD patients.

Many studies have shown that disease and environmental sleep disturbance factors such as medications are the most common reasons for the severe lack of sleep among hospitalized patients. Researchers have shown that lack of sleep in hospitalized patients leads to tiredness, irritability, and a decrease in pain tolerance [46]. Benzodiazepines such as Lorazepam and Oxazepam are the most common medicines used for controlling sleep deprivation in hospitalized and outpatients [47]. Although these drugs are safe and effective, they have too many side effects if taken in high doses and for a long time [48]. The most common side effects are the lingering of soothing effect during the day time and breathing depression. Insomnia reactions are also some side effects one of the side effects of using Benzodiazepine. Drug resistance appears after using short-effect and average-effect Benzodiazepines for 1-2 weeks, and sudden cessation symptoms such as anxiety, dizziness, insomnia, perceptual changes, and confusion appear in drug takers [48]. This research showed that in male CAD patients, there is a relationship between low scores of sleep quality and happiness. Therefore, programs to increase life satisfaction and promote a healthy lifestyle should be supported to prevent sleep problems in CAD patients.

Conflicts of Interests
There is no conflict of interest.

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