ORIGINAL ARTICLE

Correlation Between Body Image and Sleep Quality in Patients with Congestive Heart Failure in the Sari City, North of Iran

Amir Hossein Goudarzian[1], Sima Beik[2], Fatemeh Zamani[1], Alimorad Heidari Gorji[3✉], Mansour Ranjbar[3]

[1] Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran
[2] Mazandaran University of Medical Sciences, Sari, Iran
[3] Education Development Center (EDC), Mazandaran University of Medical Sciences, Sari, Iran.

Abstract

Background: The present study was conducted aimed to determine the relationship between body image and sleep quality in patients with congestive heart failure. **Materials and Methods:** In this descriptive-correlational study, which was conducted in 2015, 290 patients with congestive heart failure (CHF) were recruited using the simple random sampling method. Data were collected by demographic information form (including age, sex, marital status, economic, and education level), as well as medical form (including history of hypertension and drug use, family history of heart disease and depression, physical activity and history of special disease), Body Shape Questionnaire (BSQ-34) and Pittsburgh Sleep Quality Index (PSQI). Data was analysis by SPSS 20.0 along with descriptive and inferential statistics tests (Generalized Linear Models with Bonferroni correction). **Results:** Based on the results, only 48 patients with PSQI mean score of 4.31 (SD: 0.94; 95%CI: 4.03-4.58) had a good level of sleep quality. The mean score of the BSQ for the studied patients was equal to 122.47 (SD: 19.157; 95% CI: 122.25-124.68). **Conclusion:** The sleep quality and body image of the patients with CHF were weak. Therefore necessary to do an intervention to remove the background of sleep disorders in these patients as well as conducting a more detailed experiment to determine the exact relationship between these variables. **[GMJ.2016;5(3):147-152]**

Keywords: Sleep Disorder; Congestive Heart Failure; Body Image; Iran

Introduction

Today, cardiovascular disorders are the most common diseases, in particular among the Eastern Mediterranean and Middle East countries including Iran [1]. The mortality rate from cardiovascular disorders in Iran was reported to be about 90 thousand per year [2]. Among the various categories of cardiac disorders, the prevalence and inci- dence of congestive heart failure are increasing [3]. Congestive heart failure (CHF) is a chronic and fatal disease [4] by which almost 287 thousand people die around the world per year [5]. Cardiovascular diseases come with the risk of developing several complications for patients [6]. Sleep disorders are a common complication of cardiovascular diseases which are manifested as decreased sleep quality and increased night awakenings [7, 8].

✉ **Correspondence to:**
Alimorad Heidari Gorji, Faculty Member at the Education Development Center (EDC), Mazandaran University of Medical Sciences, Sari, Iran.
Telephone Number:+98 911 124 5086
E-mail: spsmazums@gmail.com

Since human beings spent one-third of their life sleeping; therefore, sleep disorders can have a negative effect on the quality of patients' lives [9].

Various symptoms of the disease and consequently the created limitations, interfere with patients' lifestyle, fulfilling professional and family duties, their social life and also lead them to social isolation. Also, the presence of several symptoms such as dyspnea, fatigue, edema of upper and lower body's limbs (due to excessive leakage of fluid from the capillaries into the interstitial space) which can life-threated [10, 11]. Obvious changes in the body in these patients, which occur because of the mentioned complications as well as decreased range of activities, will lead the patient to the gradual reduction of self-esteem and changes in the mental image of the body [11]. Also, according to the studies the chronic and debilitating nature of CHF increased body mass index (BMI) in these patients due to numerous reasons such as salt and water retention [6] which in turn will disrupt the patient's body image.

According to researchers, weight changes and following consequences have an apparent affect the quality of sleep [12]. Charuzi et al. (1985) stated that sleep quality in patients undergoing heart bypass surgery has a significant relationship with weight loss [13]. However, based on the available databases, it seems that the present study is the first to assess the relationship between body image and sleep quality in patients with CHF.

So, the current study was aimed to determine the relationship between body image and sleep quality in CHF patients.

Materials and Methods

In this descriptive-correlational study, which was conducted in 2015; 290 patients with CHF who were hospitalized in the special heart hospital of Fatemeh Zahra in Sari, Iran were recruited using the simple random sampling method. The adequacy of sample size was determined using a significance level of 0.05 for a two-sided test and test power of 80% (d= 0.3) with Gpower 3.1 software. Diagnostic assessment and admission were performed by

the (i) relevant specialist based on the symptoms, Echocardiography (ECG) changes and Brain Natriuretic Peptide (BNP), (i) ability to read and write Persian, and (iii) don't have mental disorders (such as dementia and Major Depressive Disorder). Mental health was evaluated by patients self-report and opinion of his/her doctor. Patients who had (i) emotional and verbal problems, (ii) loss of consciousness and (iii) inability to respond were excluded from the study.

Data Collection

Data were collected by demographic information form (including age, sex, marital status, economic, and education level), medical form (history of hypertension and drug use, family history of heart disease and depression, physical activity and history of special disease), Body Shape Questionnaire (BSQ-34) and Pittsburgh Sleep Quality Index (PSQI).

The BSQ was designed and validated for the first time by Cooper et al. in 1987 [14] which consists of 34-questions regarding body image, pointing out to the concerns about the body image during the last four weeks. The participants declare their agreement with each question on a 6-point Likert scale ranging from 1 (never) to 6 (always). Also, the scores range is variable from 34 to 204. In Rosen et al.'s study (1996) in the United States of America (USA), BSQ showed a good reliability using test-Retest, concurrent validity with other measures of body image and criterion validity with good clinical situations [15]. The internal consistency of this tool was examined and proved using Cronbach's alpha for CHF patients in the present study ($\alpha= 0.76$).

The PSQI was another tool that was used in this study, which contained areas such as delays in falling asleep, sleep duration, sleep efficiency (the ratio of duration of useful sleep and total time spent in bed), sleep disorders (defined as waking at night), hypnotic drug consumption and morning performance (defined as the difficulties experienced by people during the day due to sleeping badly at night). The score of each scale on the questionnaire is based on the Likert scale from 0 to 3 and the range of changes is from 0 to 21 [16]. Based on the cut-off point on this scale, a score ≥ 5

considered as a significant sleep disorder and a score <5 indicated a good condition of sleeping. This questionnaire examined patient attitudes towards sleep quality during the past four weeks. The reliability of the tool is confirmed in the study of Heydarnejad (2011) that was conducted on patients with cancer [17]. Additionally, Buysse et al. (1989) confirmed the internal validity of this tool in a study on 168 people (sensitivity 89.6%, specificity 86.5% and kappa coefficient 0.75) [18]. Using Cronbach's alpha test, Ghanbari Jolfaei et al. (2014) measured its reliability to be 0.83 by investigating the patients who were receiving chemotherapy in Tehran (Capital of Iran) [19]. In this study, the reliability of Pittsburgh`s questionnaire was confirmed in CHF patients by Cronbach's alpha of 0.82.

Ethical Consideration
The study was approved by the ethics committee of Mazandaran University of Medical Sciences (Ethics Code 351). Patients were informed about the study aims and procedures which indicated that the participation was voluntary and would not affect medical care, before signing an informed consent document. Patient confidentiality was assured of completing all study procedures in a quiet treatment area. To ensure that a broad cross-section of patients was allowed to participate in the study, a trained research assistant who was part of the study team provided support as needed. All personal data were de-identified by assigning codes to the participants.

Statistical Analysis
The statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, IL, USA) was applied for data analysis. First, descriptive statistics for continuous variables were illustrated as mean ± standard deviation (SD), while descriptive statistics for categorical variables were indicated percentages (%). Single dummy variables were created for sex, education (guidance school or less versus high school or college graduate), socioeconomic status (lower income reference versus middle or upper income level), blood pressure (BP) and lipid (yes or no), history of smoking and drinking alcohol (yes or no), history of

depression disease (yes or no) and past medical history (CHF and Diabetes). Then univariate tests conducted using the Mann–Whitney U test and variables with P<0.3 were considered. Spearman's correlations were utilized to probe the relationship between sleep quality and body image. Finally, the predictors associating with sleep quality were determined using Generalized Linear Models (GLM) with Bonferroni correction for pairwise comparisons. Statistical significance was considered at P≤ 0.05.

Results

In this study, 145 male (50%) and 145 female (50%) with mean age of 52.84 (SD: 19.1; 95%CI: 51.16-53.10) year were participated. The mean±SD BMI of patients was 21.217±7.73. The demographic and medical characteristics of the CHF patients are summarized in Table-1 and Table-2.
Based on the results obtained in this study, only 48 patients with 4.31 (SD: 0.94; 95%CI: 4.03-4.58) mean score of PSQI had a good level of sleep quality. The mean score of the BSQ of the patients were 122.47 (SD: 19.157; 95%CI: 122.25-124.68).
Correlation analysis of the sleep quality scores with body image scores using the Spearman's correlation test revealed a statistically significant relationship between PSQI global sleep

Table 1. Demographic Characteristics of CHF Patients Included in the Study

Characteristic	N (%)
Gender	
Male	145(50)
Female	145(50)
Economic Status	
Low	81(27.9)
Middle	70(24.1)
High	23(23.1)
Excellent	24 (24.8)
Education	
Illiterate	81(27.9)
Diploma-BS	116(40)
MCs and above	93(32.1)

Table 2. Medical characteristics of CHF patients included in the study

Characteristic		N(%)
Alcohol consumption	Yes	158(54.5)
	No	132(45.5)
Smoking	Yes	140(48.3)
	No	150(51.7)
Drug abuse	Yes	69(23.8)
	No	221(52.8)
Diabetes Mellitus	Yes	144(35.4)
	No	263(64.6)
History of hypertension	Yes	143(49.3)
	No	147(50.7)
Antidepression Drugs intake	Yes	69(23.8)
	No	221(76.2)
Exercise status	Low	108(37.2)
	Moderate	74(25.5)
	High	72(24.8)
	Excellent	36(12.5)
Daily activity	Low	138(37.2)
	Moderate	74(25.5)
	High	
	Excellent	72(24.8)
Depression History	Yes	137(47.2)
	No	153(52.8)
Family history of heart disease	Yes	150(51.7)
	No	140(48.3)
High-level blood lipids	Yes	136(48.3)
	No	147(50.7)

Table 3. Correlation of PSQI Global Sleep Quality with BSQ

	r	p
Age	-0.05	0.33
Economic	-0.08	0.16
Education	-0.03	0.96
BMI	-0.001	0.98
exercise	0.01	0.78
BSQ	0.38	>0.001*

r: Spearman's correlation coefficient; **BSQ:** Body Shape Quality; **BMI:** Body mass index; *****P≤ 0.05

quality and BSQ in the CHF patients (r= 0.384, P<0.001) (Table-3).

Also, there was no significant correlation between sleep quality scores and age, economic status, BMI, educational and exercise level (P > 0.05).

To determine if sleep quality score values influence BSQ scores of CHF patients, GLM were performed, after accounting for possible confounders in addition to age, including, exercise, education, BMI, BP, history of smoking, alcohol consumption, family history of cardiac disease and past medical history. Based on the Table-4, there was no association between sleep quality scores and the use of anti-depression drugs (B= -0.013, P= 0.822), BP (B= 0.078, P= 0.065) and depression history (B= 0.022, P= 0.651). Furthermore, there was no association between sleep quality scores, and economic status (B= 0.028, P= 0.624). PSQI global sleep quality was associated with BSQ total in CHF patients (B= 0.007, SE= 0.001; P< 0.001).

Discussion

Sleep is one of the fundamental human needs which is necessary for energy conservation, appearance, and physical well-being and deprivation of it has many adverse effects on human and body [20]. According to the present study, 242 patients (83.4%) with CHF had different levels of sleep disorders. Several studies have been conducted on the quality of sleep in patients with cardiac diseases. The results of the current study are consistent with Freedman et al. (1999) and Brostrom et al. (2004) studies [21, 22]. According to the conducted studies, sleep quality of patients hospitalized in special care units is significantly lower than those who are hospitalized at homes [21]. Thus, adoption and implementation of appropriate programs are necessary to improve the sleep quality of patients, particularly those who are hospitalized in the hospitals.

According to the present findings, none of the demographic variables have a significant relationship with the quality of sleep. Brostrom et al. (2004) stated that gender influences on sleep quality in patients with congestive heart

Table 4. Relationship Between PSQI Global Sleep Quality and It's Covariates in CHF Patients

Characteristic	B (SE)	95% CI		Wald	P value
		Minimum	Maximum		
Economic Statue					
Low	0.02 (0.05)	-0.08	0.14	0.24	0.62
Middle	0.06 (0.06)	-0.05	0.18	1.28	0.25
High	-0.01(0.06)	-0.13	0.1	0.06	0.79
Sex	0.05 (0.058)	-0.02	0.14	1.91	0.16
History of Hypertension	0.07 (0.04)	-0.005	0.16	3.39	0.06
BSQ	0.007 (0.001)	0.005	0.009	40.18	>0.001*
Antidepression Drugs intake	-0.01 (0.05)	-0.12	0.09	0.05	0.82
Depression History	0.02 (0.04)	-0.07	0.11	0.2	0.65

*P < 0.05

failure [22]. This study was conducted on 223 patients with heart failure using the Epworth Sleepiness Scale (ESS) and Uppsala Sleep Inventory-Chronic Heart Failure tools. Differences of the used scales and also the cultural differences of the studied patients can be the important causes of this conflict. The results of the most studies have confirmed that nurses can have an effective role in the early diagnosis of this common disorder in patients with heart diseases especially CHF. They also can improve the sleep quality of the patients by implementing the appropriate measures to meet the physical and mental needs of the patients [23].

One of the other important results of the present study was the significant relationship between sleep quality and body image of the patients. However, given the available databases, it seems that the current study is the first survey in this regard. According to reports, body image is under the direct effect of BMI in different peoples [24]. Also, the body image of patients with CHF will be impaired under long-term cosmetic changes [11]. Therefore, these changes can result in altering in sleep pattern of CHF patients.

The lack of similar studies, lack of access to the CHF patients in other provinces to generalize the results and the possibility of inaccu-

racies in completing the questionnaires due to the probable bad conditions of some patients (due to treatment procedures) are the most important limitations of the present study.

Conclusion

According to the present study, the sleep quality and body image of the patients with CHF was weak. Also there was a significant relationship between body image and sleep quality. Therefore it is necessary to do something to remove the backgrounds of sleep disorders in these patients as well as the need for the most detailed investigation to determine the exact relationship between these two variables.

Acknowledgments

Conflict of Interests

The authors report that there is no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

References

1. Dunderdale K, Thompson DR, Miles JN, Beer SF, Furze G. Quality-of-life measurement in chronic heart failure: do we take account of the patient perspective? European journal of heart failure. 2005;7(4):572-82.

2. Mohammadifard N, Nazem M, Sarrafzadegan N, Nouri F, Sajjadi F, Maghroun M, et al. Body Mass Index, Waist-circumference and Cardiovascular Disease Risk Factors in Iranian Adults: Isfahan Healthy Heart Program. Journal of Health, Population, and Nutrition. 2013;31(3):388-97.

3. Taylor-Piliae RE, Molassiotis A. An exploration of the relationships between uncertainty, psychological distress and type of coping strategy among Chinese men after cardiac catheterization. Journal of advanced nursing. 2001;33(1):79-88.

4. Queen LM. Quality enhancement research initiative. Health services research and development services; 2002.

5. Go AS, Mozaffarian D, Roger VL, Benjamin EJ, Berry JD, Borden WB, et al. Heart disease and stroke statistics--2013 update: a report from the American Heart Association. Circulation. 2013;127(1):e6-e245.

6. McKelvie RS, Moe GW, Ezekowitz JA, Heckman GA, Costigan J, Ducharme A, et al. The 2012 Canadian Cardiovascular Society Heart Failure Management Guidelines Update: Focus on Acute and Chronic Heart Failure. Canadian Journal of Cardiology. 2013;29(2):168-81.

7. Javaheri S, Parker TJ, Liming JD, Corbett WS, Nishiyama H, Wexler L, et al. Sleep apnea in 81 ambulatory male patients with stable heart failure. Types and their prevalences, consequences, and presentations. Circulation. 1998;97(21):2154-9.

8. Redeker NS. Sleep disturbance in people with heart failure: implications for self-care. The Journal of cardiovascular nursing. 2008;23(3):231-8.

9. Bradley TD, Floras JS. Sleep Apnea and Heart Failure: Part II: Central Sleep Apnea. Circulation. 2003;107(13):1822-6.

10. Suman-Horduna I, Roy D, Frasure-Smith N, Talajic M, Lesperance F, Blondeau L, et al. Quality of life and functional capacity in patients with atrial fibrillation and congestive heart failure. Journal of the American College of Cardiology. 2013;61(4):455-60..

11. Randerath W, Javaheri S. Sleep-Disordered Breathing in Patients with Heart Failure. Current Sleep Medicine Reports. 2016:1-8.

12. Gupta NK, Mueller WH, Chan W, Meininger JC. Is obesity associated with poor sleep quality in adolescents? American Journal of Human Biology. 2002;14(6):762-8.

13. Charuzi I, Ovnat A, Peiser J, Saltz H, Weitzman S, Lavie P. The effect of surgical weight reduction on sleep quality in obesity-related sleep apnea syndrome. Surgery. 1985;97(5):535-8.

14. Cooper PJ, Taylor MJ, Cooper Z, Fairbum CG. The development and validation of the body shape questionnaire. International Journal of Eating Disorders. 1987;6(4):485-94.

15. Rosen JC, Jones A, Ramirez E, Waxman S. Body Shape Questionnaire: studies of validity and reliability. The International journal of eating disorders. 1996;20(3):315-9.

16. Farrahi Moghaddam J, Nakhaee N, Sheibani V, Garrusi B, Amirkafi A. Reliability and validity of the Persian version of the Pittsburgh Sleep Quality Index (PSQI-P). Sleep & breathing = Schlaf & Atmung. 2012;16(1):79-82.

17. Heydarnejad MS, Hassanpour DA, Solati DK. Factors affecting quality of life in cancer patients undergoing chemotherapy. African Health Sciences. 2011;11(2):266-70.

18. Buysse DJ, Reynolds CF, 3rd, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry research. 1989;28(2):193-213.

19. Ghanbari Jolfaei A, Makvandi A, Pazouki A. Quality of sleep for hospitalized patients in Rasoul-Akram hospital. Medical journal of the Islamic Republic of Iran. 2014;28:73.

20. Fateme Neyse, Mohammad Daneshmandi, Mahdi Sadeghi Sharme, Ebadi A. The effect of earplugs on sleep quality in patients with acute coronary syndrome. Iranian journal of critical care nursing. 2011;4(3):127-34.

21. Freedman N, Kotzer N, Schwab R. Patient Perception of Sleep Quality and Etiology of Sleep Disruption in the Intensive Care Unit. American Journal of Respiratory and Critical Care Medicine. 1999;159(4):1155-62.

22. Broström A, Strömberg A, Dahlström U, Fridlund B. Sleep Difficulties, Daytime Sleepiness, and Health-related Quality of Life in Patients With Chronic Heart Failure. Journal of Cardiovascular Nursing. 2004;19(4):234-42.

23. Hosein Abadi R, Noruzi K, Pour Esmaeili R, Karimlo M. The effect of Acupoints massage on Sleep quality in elderly. Quarterly Journal of Rehabilitation. 2008;9(2):8-14.

24. Kargarnovin Z, Asadi Z, Rashidkhani B MA. Assesing Body Image and Its Relation with Body Mass Index, Food Group Consumption and Physical Activity Among the University of Economic Sciences. Iranian Journal of Endocrinology and Metabolism. 2013;14(5):455-63.