Original Research

Comparison of Personality Profile and Sleep Quality of Patients with COPD and Healthy People

Moslem Arian[1], Amirreza Ehsani[2], Vahid Akbari Farkhani[3], Maryam Doustmehraban[4], Seyedeh Fahimeh Shojaei[5*]

[1.] *Department of Counseling, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran*
[2.] *Department of Surgery, Iran University of Medical Sciences, Tehran, Iran*
[3.] *Department of Clinical Psychology, Islamic Azad University, Science and Research Branch, Saveh, Iran*
[4.] *Qazvin University of Medical Sciences, Qazvin, Iran*
[5.] *Firoozgar Clinical Research and Development Center, Iran University of Medical Sciences, Tehran, Iran*

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Abstract

Background and Objective: Respiratory disorders affect the personality traits and quality of sleep-in pulmonary patients. The purpose of this study was to compare sleep quality and personality factors in patients with chronic obstructive pulmonary disease (COPD) and healthy individuals.

Materials and Methods: In this cross-sectional project, 70 participants with convenience sampling were enrolled. These participants were divided into 2 groups. Group 1 consisted of 35 patients with respiratory disorders who were admitted to Firoozgar Hospital, Tehran, Iran, to take pulmonary care and group 2 consisted of 35 healthy people from the patients' families. All were assessed using the Pittsburgh Sleep Quality Index (PSQI) and the Sixteen Personality Factor Questionnaire (16PF). Statistical analysis was performed by SPSS.

Results: There was a significant difference between personality factors in two groups, so that mean of B (reasoning), C (emotional stability), E (dominance), F (liveliness), G (rule consciousness), H (social boldness, and Q3 (perfectionism) factors in the healthy group was higher than the patient group and the mean of M (abstractedness), O (apprehension), and Q4 (tension) factors in the patient group was higher than the healthy group. The mean difference in sleep quality was also significant ($P < 0.01$) and indicated that patient group had more sleep problems and their sleep quality was poor.

Conclusion: In order to help patients with pulmonary disorders, evaluation of personality status and quality of sleep should be considered. This consideration can help the patients to receive better treatment and their psychological and physical problems would be considered simultaneously.

Keywords: Personality; Sleep quality; Pulmonary disease; Cattell personality factor questionnaire

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Introduction

Nowadays, respiratory diseases have become one of the main concerns for the human beings (1). Accordingly, there are possible morbidities and mortalities due to pulmonary disease (2). Besides dyspnea and fatigue which are the most common symptoms of respiratory problems, sleep disturbances also have been considered during recent decades (3). Sleep quality influences so many mental aspects of patients including memory, concentration, learning, and many other parts that could be correlated with the efficiency of people in their personal and social life (4, 5). Hence, long-term irregularities in sleep patterns pose detrimental effects on physiological, psychological, and social functions which lead to anxiety, depression, and body aches (6). Moreover, poor sleep quality could cause adverse influences

***Corresponding author**: SF. Shojaei, Firoozgar Clinical Research and Development Center, Iran University of Medical Sciences, Tehran, Iran*
Tel: +98 936 462 1025, Fax: +98 21 82141795
Email: shojaee.fahimeh@yahoo.com

on patients with specific respiratory problems such as patients with asthma and chronic obstructive pulmonary disease (COPD) who may experience a substantial amount of mental pressure and stress. Consequently, these symptoms make patients susceptible to psychological changes affecting the mood and quality of their lives (7, 8).

On the other hand, consideration of personality traits in patients with COPD can be connected to early detection and appropriate treatment (9). Personality assessment predicts a wide range of behaviors, for example, depression and low mood. Moreover, there is a link between the personality profile and pulmonary diseases in various studies, including the study of Singer et al. (10). In fact, personality traits are associated with lung function [peak expiratory flow (PEF)], lung disease (COPD), and its symptoms (dyspnea). It means that, for example, older adults with higher neuroticism and lower conscientiousness are more likely to have lower PEF, a steeper PEF decline over time, or COPD, and suffer from dyspnea (11). The researchers pointed out that patients in the later stages of the pulmonary disorder had a higher risk of psychological problems (12). Therefore, in the current study, we aimed to evaluate the correlations between psychological or personality disorders and respiratory conditions which might be accompanied by sleep disturbances together or separately. Therefore, this study was designed to examine the personality profile and quality of sleep in patients with pulmonary disease compared with healthy people.

Materials and Methods

A convenience sample of a total of 70 individuals with and without pulmonary diseases was recruited via a selection of patients admitted to "Educational, Research, and Treatment Center for Tuberculosis and Lung Diseases, Firoozgar Hospital", Tehran, Iran, and a group of healthy people who were selected from patients' accompanies. They were assigned to two groups of healthy individuals (n = 35) and patients (n = 35). This was a comparative and cross-sectional study. It was based on the Declaration of Helsinki; thus, all the patients were asked to fill the consent form following the explanation which was given to them with details. There were two questionnaires provided for each participant to be filled: Sixteen Personality Factor Questionnaire (16PF) to detect psychological status and Pittsburgh Sleep Quality Index (PSQI) to evaluate the quality of sleep in both groups. Patients with pulmonary diseases were included as a group of patients and their relatives or families with no history of respiratory problems were added to another group, the group of healthy people. Patients with underlying diseases which were not related to the respiratory category were also excluded. Patients who resented to continue the project were excluded according to their refusal. Finally, we used independent t-test, chi-square test, and SPSS software (version 22, IBM Corporation, Armonk, NY, USA) for statistical analysis. In the following, the tools used in this research are discussed in more detail. This research was approved by the ethics committee of Iran University of Medical Sciences with the ethics code of IR.IUMS.REC1395.03.143.29655.

16PF questionnaire: is also named as Cattell's 16 Factors. This questionnaire is used to determine personality profiles. It has been developed since 1965 by Cattell and deployed in various studies such as Mahlern 1975, Sung 1973, and Shalman and Carpenter 1982. 16PF has been translated into various languages, and intercultural studies in Eastern Europe, the Middle East, Australia, Canada, and various studies have demonstrated the validity of the test (13). This test has 187 items that measure 16 personality factors. Persian version of 16PF has been standardized for the Iranian population. Barzegar standardized this questionnaire in a sample of 313 second and third grade high school students in Shiraz, Iran. Its average validity coefficient by the test-retest method with two-week interval was 0.65, and with an interval of three months was equal to 0.52, and its Cronbach's alpha was 0.54 (14). 16PF consists of 184 questions, with 3 additional questions (two questions at the beginning and one at the end); thus, the total number of questions reaches 187 questions, the first two additional questions are to put the people in the test atmosphere and the last additional question is used to check the feedback at the end of the test. Each question has 3 answer options that are specified as A, B, and C. Each response has 2 scores. In this questionnaire, each question can only be scored in terms of a score factor, but there are also questions that can provide information about 2 or even 3 factors. The 16 factors of this questionnaire are graded in two ways: 1) factor A (number one) and factors C to Q4 from number 3 to number 16, options A each have 2 positive points, options C each have 2 negative points, and options B each have 1 point, 2) factor B (number 2) gives the correct answer 1 score and other answers are given zero. A variety of Cattell test factors are specified in the table 1 (15).

Table 1. Cattell test factors

Factor	Descriptors		
A	Warmth	Reserved	Outgoing
B	Reasoning	Less intelligent	More intelligent
C	Emotional stability	Affected by feelings	Emotionally stable
E	Dominance	Humble	Assertive
F	Liveliness	Sober	Happy-go-lucky
G	Rule consciousness	Expedient	Conscientious
H	Social boldness	Shy	Venturesome
I	Sensetivity	Tough-minded	Tender-minded
L	Vigilance	Trusting	Suspicious
M	Abstractedness	Practical	Imaginative
N	Privateness	Straightforward	Shrewd
O	Apprehension	Self-assured	Apprehensive
Q1	Openness to change	Conservative	Experimenting
Q2	Self-reliance	Group-dependent	Self-sufficient
Q3	Perfectionism	Self-conflicting	Self-controlled
Q4	Tension	Relaxed	Tense

PSQI: is one of the well-designed questionnaires to measure sleep quality. This self-rated questionnaire was developed by Buysse et al. (16). This questionnaire generally has 9 items, but because item 5 itself contains 10 sub-items, the whole questionnaire has 19 items. This questionnaire has 7 subscales which are: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The total score is between 0 and 21. The score of 0 to 4 is considered as good sleep quality and the global score of 5 and greater indicates poor sleep quality. Buysse et al. who first developed and introduced the questionnaire obtained the internal consistency of the questionnaire using Cronbach's alpha of 0.83 (17). For the Persian version of the questionnaire in the study of Farrahi et al., Cronbach's alpha coefficient of 0.77 was obtained (18).

PSQI examines the patient's attitude about sleep quality over the past four weeks. The response time of this questionnaire is 5 to 10 minutes. This questionnaire has a reliability of 86.5 (19).

Results

Table 2 shows the gender and level of education of the research sample in both healthy and patient groups.

According to the table 1, in terms of education level, most people in the patient group had middle school education (37.1%) and in the healthy group, most people had bachelor's degrees (42.9%). Besides, in terms of gender, most of the patients were male patients (57.1%) and male healthy groups (62.9%). Table 3 presents the descriptive findings of the variables of personality factors/traits and sleep quality by two groups.

According to the information in table 2, among the 16 personality factors in the patient group, factor Q4 (tension) with mean and standard deviation (SD) of 14.00 ± 3.78 was higher than other factors and factor I (sensitivity) with mean ± SD of 4.94 ± 1.69 was lower than the rest and in the healthy group, factor H (social boldness) with mean ± SD of 16.88 ± 3.15 had the highest average and factor I (sensitivity) with mean ± SD of 5.57 ± 4.56 had the lowest average. The sleep quality index in the patient group had an average of 6.67 and in the healthy group 3.28.

Table 2. Demographic characteristics of the two study groups

Characteristic		Patient n (%)	Healthy n (%)	P-value (2-tailed)
Education	Elementary	12 (34.3)	0 (0)	< 0.01
	Middle school	13 (37.1)	0 (0)	
	Diploma	5 (14.3)	12 (34.3)	
	Associate	3 (8.6)	4 (11.4)	
	Bachelor	1 (2.9)	15 (42.9)	
	Master's degree and above	1 (2.9)	4 (11.4)	
Gender	Women	15 (42.9)	13 (37.1)	< 0.01
	Men	20 (57.1)	22 (62.9)	

Table 3. Mean and standard deviation (SD) of personality factors and sleep quality by two groups of patients and healthy subjects

Variable		Patients	Healthy
		Mean ± SD	Mean ± SD
Personality factors	Warmth	8.28 ± 3.68	9.08 ± 1.57
	Reasoning	5.77 ± 3.37	9.54 ± 1.24
	Emotional stability	11.77 ± 2.75	15.40 ± 2.92
	Dominance	10.91 ± 3.07	13.82 ± 1.50
	Liveliness	12.51 ± 3.25	14.25 ± 1.73
	Rule consciousness	12.14 ± 2.87	13.91 ± 0.91
	Social boldness	13.37 ± 3.82	16.88 ± 3.15
	Sensitivity	4.94 ± 1.69	5.57 ± 4.56
	Vigilance	8.60 ± 2.25	7.85 ± 1.78
	Abstractedness	11.88 ± 3.13	9.17 ± 3.82
	Privateness	10.65 ± 2.02	10.22 ± 2.52
	Apprehension	11.77 ± 3.88	6.08 ± 2.80
	Openness to change	8.62 ± 2.90	9.57 ± 2.00
	Self-reliance	10.28 ± 2.35	9.45 ± 1.48
	Perfectionism	13.42 ± 3.93	15.65 ± 2.60
	Tension	14.00 ± 3.78	7.45 ± 4.14
Sleep quality		6.67 ± 0.35	3.28 ± 0.45

SD: Standard deviation

Table 4 shows the results of the independent t-test to examine the differences between the two study groups.

Table 3 shows that a significant difference exists between personality factors of B (reasoning), C (emotional stability), E (dominance), F (liveliness), G (rule consciousness), H (social boldness), M (abstractedness), O (apprehension), Q3 (perfectionism), and Q4 (tension) in two groups of patients and healthy individuals ($P < 0.01$) and the difference between other personality factors was not significant ($P > 0.01$). Based on the mean difference between these factors, the mean of B (reasoning), C (emotional stability), E (dominance), F (liveliness), G (rule consciousness), H (social boldness), and Q3 (perfectionism) factors in the healthy group was higher than the patient group and the mean of M (abstractedness), O (apprehension), and Q4 (tension) factors in the patient group was higher than the healthy group. The mean difference in sleep quality was also significant ($P < 0.01$) indicating that this index was higher in the patient group than in healthy group. In other words, since the high-quality score in the sleep quality index indicates poor sleep quality, the high sleep quality score in the patient group compared to the healthy one indicates that they have more sleep problems and their sleep quality is poor.

Discussion

This study compared the personality traits and sleep quality among patients with COPD and healthy individual by using Cattell's 16PF questionnaire and PSQI.

Table 4. The differences between the two groups in terms of personality factors and sleep quality

Variable		Mean difference	SE difference	df	t	P-value (2-tailed)
Personality factors	Warmth	-0.80	0.67	68	-1.18	0.240
	Reasoning	-3.77	0.60	68	-6.21	0.001
	Emotional stability	-3.62	0.67	68	-5.34	0.001
	Dominance	-2.91	0.57	68	-5.04	0.001
	Liveliness	-1.74	0.62	68	-2.79	0.007
	Rule consciousness	-1.77	0.50	68	-3.47	0.001
	Social boldness	-3.51	0.83	68	-4.19	0.001
	Sensitivity	-0.62	0.82	68	-0.76	0.440
	Vigilance	0.74	0.48	68	1.53	0.130
	Abstractedness	2.71	0.83	68	3.24	0.002
	Privateness	0.42	0.54	68	0.78	0.430
	Apprehension	5.68	0.80	68	7.02	0.001
	Openness to change	-0.94	0.59	68	-1.58	0.110
	Self-reliance	0.82	0.47	68	1.76	0.080
	Perfectionism	-2.22	0.79	68	-2.79	0.007
	Tension	6.54	0.94	68	6.89	0.001
Sleep quality			28.39	2.08	67	13.70

SE: Standard error; df: Degree of freedom

In this study, a significant difference was between some personality factors in the two groups of patients and healthy individuals ($P < 0.01$). It means that based on the mean difference between these factors, the mean of B (reasoning), C (emotional stability), E (dominance), F (liveliness), G (rule consciousness), H (social boldness), and Q3 (perfectionism) factors in the healthy group was higher than the patient group and the mean of M (abstractedness), O (apprehension), and Q4 (tension) factors in the patient group was higher than the healthy group. In addition, we found that the mean difference in sleep quality was significant ($P < 0.01$) and patient group had more sleep problems and their sleep quality was poor.

According to these results and high scores of patients in M, O, and Q4 factors, it can be said that getting high score in M factor shows that patients with COPD are more imaginative, absent-minded, impractical, and absorbed in ideas. Their high scores on factor O also indicates that they are more apprehensive, self-doubting, worried, guilt-prone, insecure, worrying, and self-blaming. Finally, high scores on factor Q4 also shows that they are more high-energy, impatient, driven, frustrated, over-wrought, and time-driven (20). In this regard, de Souza et al. concluded that patients with COPD had severe emotional control, many emotional difficulties in establishing intense personal relationship with exchange of tenderness, and difficulties in expressing their emotions, and also they had a high prevalence of anxiety and depression as personality characteristics (21).

We could expect these results in patients with COPD because of the high rate of complications and comorbidities of chronic diseases particularly respiratory disorders. In other words, the personality profile of healthy individuals in this study indicates that they have a more stable and normal profile, for example, they have better reasoning (B), are emotionally stable, adaptive, and mature (C), dominant (E), lively, animated, spontaneous (F), rule-conscious, dutiful, conscientious, (G), socially bold, venturesome (H), and organized, self-disciplined, exacting will power (Q3) (20). The most obvious conclusion from these findings is that COPD has a disruptive effect on the personality state and quality of sleep. In a similar study by Terracciano et al., they realized that individuals with COPD had higher scores on neuroticism and lower scores on extraversion, openness, and conscientiousness compared with those who did not report COPD. They suggest that personality traits are likely to contribute to the etiology of COPD, but cigarette smoking and lung disease may also be associated with change in personality (11). This seems to be a reciprocal influence, although it is clearer that chronic diseases have impact on psychological aspects. For example, Kang et al. assessed the relationship between mood disorders and asthma. Their study specified the anxiety and depression prevalence in populations with obstructive lung diseases. They found that asthma could pose a high likelihood of mood changes and anxiety disorders (22).

Moreover, in this study, we found that patients with COPD suffer from poor sleep quality, which itself might be related to the health status and certain personality traits. Kara et al. performed a trial on 61 patients and examined sleep quality, obstructive lung diseases, and personality changes toward each other. Kara et al. study showed that sleep quality affects respiratory diseases and mood alterations (23), but tests used in this study were different from our questionnaires. In a cohort study, Shorofsky et al. concluded that higher baseline PSQI scores were associated with increased risk of COPD exacerbation over 18-month prospective follow-up (24).

In general, psychological disorders and status can truly affect the lifestyle of patients. It is highly important for patients with chronic diseases such as COPD to overcome their disease and manage their situation by keeping their drug-compliance and lifestyle modification. Hence, psychological therapies should be considered for patients with COPD, and on the other hand, regardless of COPD as a disease, sleep disturbances due to pulmonary diseases can also affect a patient's mood. In this regard, more studies with precise methodology and larger sample size should be implemented in this field.

The weakness of this study was the small sample size of patients because there are many pages and questions for patients to answer. Since this study needed a great amount of time for each individual to answer, the cooperation of patients with the trial may be affected. It can also be said that not assessing the psychiatric comorbidities, history of sleeping medicine, and history of substance abuse which affect the sleep status, is other limitation of the study. However, 16PF questionnaire makes this study different from other similar trials. By using 16PF, we could describe the

personality traits of patients with COPD more specifi1cally and separately.

Conclusion

Evaluation of personality status and quality of sleep should be considered to help patients with pulmonary disorders. There is a close and reciprocal relationship among COPD, personality traits, and sleep problems. Therefore, this consideration can help these patients to receive better treatment and their psychological and physical problems would be considered simultaneously.

Conflict of Interests

Authors have no conflict of interests.

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