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Factors Influencing Spiritual Well-Being among People with Chronic Obstructive Pulmonary Disease

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ABSTRACT:
Purpose: Chronic Obstructive Pulmonary Disease has a progressive nature that limits daily living activities. It is important that the patient's spiritual needs are not overlooked and are appropriately integrated into the daily clinical routine. This study was conducted to identify factors that affect the spiritual well-being among people with chronic obstructive pulmonary disease.
Material and Methods: In the cross-sectional analysis, participants were recruited from two pulmonary clinics between April 2018 and December 2018. The study's power was 83% with 144 participants. Comparative and relational analyses of spiritual well-being were calculated based on demographic-clinical characteristics, sleep quality, quality of life, and anxiety. Data collection tools were the Spiritual Well-Being Scale, Pittsburgh Sleep Quality Index, St. George Respiratory Questionnaire, and Spielberger State-Trait Anxiety Inventory. Further analysis was performed with multiple linear regression analysis.
Results: Those who did not take the recommended dosag of medication and did not use devices at home were associated with higher spiritual well-being. Sleep quality, quality of life, and trait anxiety had an explanatory value of 24% for spiritual well-being. The best predictive variable was found to be trait anxiety.
Conclusion: Identifying factors associated with spiritual well-being can help define health requirements for comprehensive health management in clinical practice. In-depth analyses of spiritual well-being, which should be be conducted with more variables, may reveal underlying mechanisms of health outcomes in people with chronic obstructive pulmonary disease.
Keywords: *Anxiety; chronic obstructive pulmonary disease; quality of life; sleep; spirituality*

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INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a common and preventable disease in which abnormalities of the small airways of the lungs leading to airflow (World Health Organization, 2021). With a global incidence of 212 million in 2019, the disease is responsible for 3.23 million deaths worldwide and is the third leading cause of death (Global Health Metrics, 2019; World Health Organization, 2021). COPD is also a major public health problem in Turkey. Not only has its incidence increased by 18.2% over the past ten years, but the fact that it is the fourth most common cause of death suggests that it imposes a high burden of morbidity and mortality (Köktürk et al., 2021). One of the most impacted areas of health that should not be overlooked in people with chronic illness is spirituality and the spiritual well-being (SWB) It is associated with two fundamental elements that remain relevant from the past to the present: (a) a belief system that reflects God or a religious vision, (b) the meaning attached to life or purpose existential (Ellison, 1983; Ekşi and Kardaş, 2017). Because current medicine focuseson the biological

or mechanical aspect of the human body in today's medicine, spiritual needs do not receive enough attention by healthcare professionals (Gergianaki et al, 2019). Participants with advanced COPD have been shown to have SWB levels similar to those with inoperable lung cancer. (Hasegawa et al., 2017). A qualitative interview found that participants were dissatisfied with the impact of COPD on their way of being and thinking (Sigurgeirsdottir et al., 2019). On the other hand, there is another that illustrates the ways in which COPD patients express their spiritual/religious beliefs and experiences (Tzounis et al., 2016). Because COPD is a progressive disease that affects activities of daily living in many aspects, the patient's' spiritual need to be properly integrated into daily clinical routine. In this way, not only are patients' comfort, adherence to treatment, and QoL improved their fear and anxiety can also be reduced (Gergianaki et al., 2019). In addition, it can contributeto the psychosocial adaptation of people with diseases with a poor prognosis (Unantenne et al., 2013). The World Health Organization (2018) also emphasizes the need to identify spiritual needs as well as physical and psychosocial needs as part of supportive care in people with serious illness. The limited number of studies evaluating the role of spirituality/SWB in patients with chronic lung disease have focused on its relationship with quality of life (QoL) (Silva et al., 2009; Zimermann Teixeira et al., 2017; Duarte et al., 2020), medical, physical, and psychosocial factors (Hasegawa et al., 2017; Mendes et al., 2021), symptom burden (Strada et al., 2013), and religious coping (Mesquita et al., 2021). Although COPD has been shown to be strongly associated with impaired sleep quality and mental health problems (Aldabayan, 2023, Barrueco-Otero et al., 2022), SWB studies there is no tendency to focus onthese variables. However, the primary endpoint in SBW-based measures for COPD patients is often QoL (Silva et al., 2009; Zimermann Teixeira et al., 2017; Duarte et al., 2020). In fact, examining COPD patients' SWB levels and related factors within a broader framework aimed at eliminatingtheir physiological and psychosocial problems could be a resource for research next intervention. In this way, symptom control as well as the patient's general health can be positively improved.. Therefore, this study aimed to identify factors that affect SWB in people with COPD.

MATERIAL and METHODS

Purpose and Type of the Study

This cross-sectional study aimed to identify factors that affect SWB in people with COPD. It includes a linear analysis of the relationship between SWB and several variables. This study may suggest focusing on care issues that are of less concern toSWB in health service delivery. Therefore, the following research question was posed: Do sleep, anxiety, and QoL as well as demographic characteristics have a predictive influence on SWB in COPD patients?

Sampling and participant

The study was conducted on COPD patients who were hospitalized from April 2018 to December 2018. Participants were recruited from two pulmonary clinics of a tertiary hospital. Inclusion criteria were being over 18 years old, being diagnosed with COPD, and speaking and understanding Turkish. Participants with severe physical and cognitive impairments that could affect responsesto the questions were excluded. In studies on the adaptation of measurement tools, a sample size 5 to 10 times larger than the number of scale items is sufficient (Tavşancıl, 2014). Therefore, a minimum sample size of 145 wase sufficient for the analysis of the 29-item SWBS in this study. After data collection, confirmatory factor analysis (CFA) was conducted to verify whether the sample confirmed the theoretical structure of SWBS. Additionally, power analysis was performed on the data obtained using G*Power 3.1 Data were collected through face-to-face interviews, in the interview room of the hospital, lasting an average of 20 minutes.

Data Collection Tools

Spiritual Well-Being Scale (SWBS)

The SWBS includes 29 items and three factors: transcendence, harmony with nature, and anomie. A total score is calculated by summing responsesto the items using a five-point Likert scale. Items collected in the anomie sub-dimension will be scored in reverse.. A total score of 29 to 145 can be obtained from the scale. High scores indicate high SWB (Ekşi

and Kardaş, 2017). The Cronbach's alpha coefficient for the SWBS was found to be 0.88, which demonstrated sufficient reliability. In this study, the alpha coefficient to be 0.90.

Pittsburgh Sleep Quality Index (PSQI)

Sleep quality was measured using Pittsburgh Sleep Quality Index (PSQI), which includes 24 questions, including 19 self-report questions. The 19th question of the scale is not taken into account when scoring. The first 18 questions include seven items assessing subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, sleep medication use, and dysfunction daytime ability. The scale's components range from 0 to 3, and the total score ranges from 0 to 21. A high score means poor sleep quality. PSQI scores ≥ 5 indicate poor sleep quality (Buysse et al., 1989). In the Turkish reliability and validity study conducted by Ağargün et al. (1996), the Cronbach's alpha coefficient was found to be 0.80 while in this study it was 0.73.

St. George Respiratory Questionnaire (SGRQ)

Quality of life was measured using the St. George Respiratory Questionnaire (SGRQ). The SGRQ consists of 50 items witha three-factor structure: symptoms, activity, and impacts. The three sub-dimensions are scored separately and the total score is calculated. Scores range from 0 to100. A score of 0 represents normal, while a score of 100 represents the maximum level of disability. A four-unit change in the SGRQ due to treatment was considered significant (Jones et al., 1991). The Cronbach's alphacoefficient of the Turkish version of the SGRQ was 0.88 (Polatlı et al., 2013), while in this study it was0.84.

Spielberger State-Trait Anxiety Inventory (STAI)

Anxiety was measured using the Spielberger State-Trait Anxiety Inventory (STAI). The 40-item STAI consists of two parts of 20 items each: state anxiety (S-anxiety) and trait anxiety (T-anxiety) (Spielberger et al., 1970). While S-anxiety aims to measure how a person feels at that moment, T-anxiety often determines how a person feels. In this study, only T-anxiety was measured. In T-anxiety, which is a 4-point Likert scale, there are seven reverse-coded items. 35 points are added to the score obtained and the total score ranging from 20 to 80 is retained.. A score of 0 to30 indicates low anxiety, a score of 31 to49 indicates moderate anxiety, and a score of 50 or higher indicates high anxiety.. The Kuder Richardson coefficient 20 of the Turkish version ranges from 0.94 to 0.96 (Öner and Le Compte, 1985). In this study, the Cronbach's alpha coefficient was calculated as 0.77.

Statistical Analysis

Data were analyzed using SPSS Statistic 26 and Lisrel 8.7. Descriptive statistics were calculated using counts, percentages, mean, standard deviation, and normality tests as skewness and kurtosis values (reference ±2). Comparisons between groups were performed using t test, Mann Whitney U test, and one-way analysis of variance (one-way ANOVA). Bivariate analyzes were performed with the Pearson's correlation and the Spearman's correlation test. The relationship between SWBS and independent variables was examined using multivariate linear regression analysis. Two regression analysis models were established. First, the predictive ability of the three independent variables was evaluated using the enter method. Second, we attempted to find the strongest predictor(s) of the dependent variable using a stepwise method.. Additionally, a CFA was performed. The theoretical structure is fully measured if the following fit indices are met: ratio of chi-square ($\chi 2$) to degrees of freedom (df)≤3, root mean-square error of approximation (RMSEA) 0.05-0.08, standardized root mean-square residual (SRMR)≤0.05, normed fit index (NFI)>0.90, non-NFI (NNFI)>0.90, goodness-of-fit index (GFI)>0.90 and adjusted GFI (AGFI)>0.90 (Byrne, 2016; Çelik and Yılmaz, 2016). The level of significance is taken as $p<0.05$.

Ethical Approval

Approval for the study was obtained from the Institutional Ethics Review Board (registration number 2017/212). This study was voluntary and the participants were informed in advance about the procedure and their written informed consent was

obtained. This study was conducted in accordance with the principles of the Declaration of Helsinki.

RESULTS

Finally, 144 participants were included. According to SWBS gender score, a power value of 83% was obtained with an effect size of 0.51, a pooled standard deviation of 8.72, and a power analysis calculated with a confidence interval of 95%.CFA performed to SWBS had an acceptable model fit (Figure 1). The CFA fit indices are: χ2/df ratio1.83, RMSEA=0.076, SRMR=0.05, NFI=0.95, NNFI=0.97, GFI=0.91, and AGFI=0.90.

Factor-1: transcendence, Factor-2: harmony with nature, Factor-3: anomie.

Characteristics of the population aresummarized in Table 1. The mean age was 71.99±10.83 years and most of them were over 65 years old (75.7%). While the majority are men (76.4%) and the diagnosis time is over 5 years (42.4%). The SWBS scores of the participants not taking COPD medications at the recommended doses (Mean Rank=109.67, p=0.006) and not using any COPD-related devices at home (130.56±17.97, p=0.008) was found to be statisticalsignificant and high.

The SWBS total score was 125.36±16.88. There was a low significant negative correlation between SWBS and both the PSQI overall score (r= -0.25, p<0.001) and the PSQI subscales; subjective sleep quality, sleep latency (r= -0.38, p<0.001), sleep disturbances (r= -0.19, p<0.05), and daytime dysfunction (r= -0.34, p<0.001). A low significant negative correlation was determined between SWBS and SGRQ overall score (r= -0.17, p<0.05) together with its subscale impacts (r= -0.19, p<0.001). Furthermore, a moderately significant negative correlation was observed between SWBS and T-anxiety score (r= -0.49, p<0.001) (Table 2).

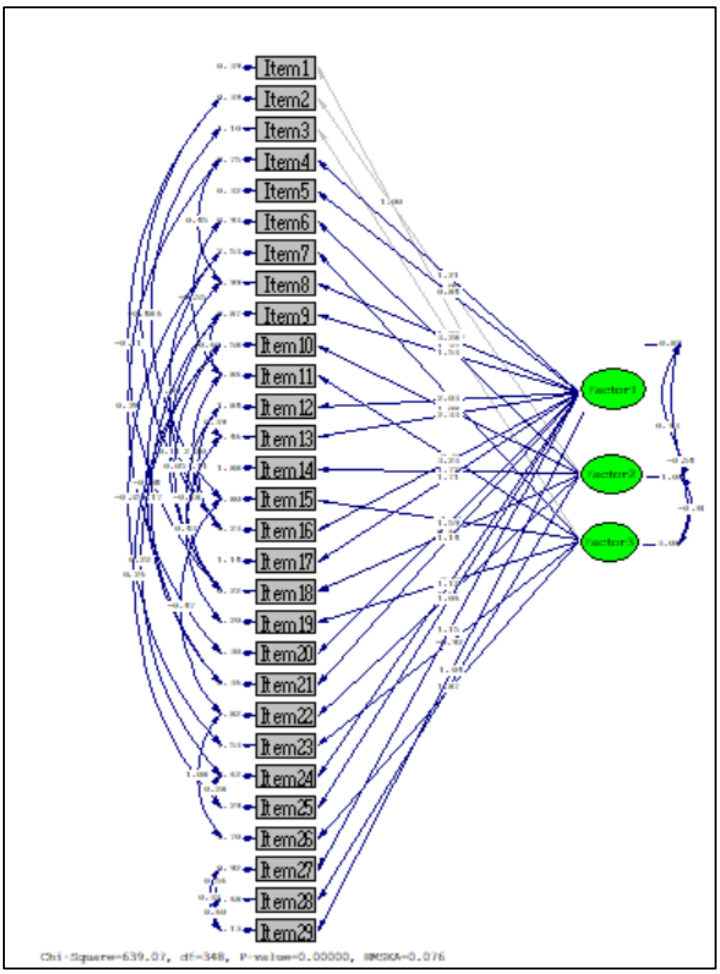

Figure 1. Confirmatory factor analysis of the 3-factor SWBS structural model

Table 1. Population characteristics (n=144)

Characteristics	n (%)	SWBS Mean (SD)	F/t	*p value*
Age (yrs)[a]	71.99±10.83 (min-max: 34-95)			
Age				
≤65 years	35 (24.3)	128.34±16.75	1.20	0.232
>65 years	109 (75.7)	124.41±16.89		
Gender				
Female	34 (23.6)	122.23±13.96	-1.24	0.217
Male	110 (76.4)	126.33±10.50		
Duration of diagnosis				
Less than a year	24 (16.6)	122.33±19.39	1.55	0.216
1-5 years	59 (41.0)	123.67±17.80		
Over 5 years	61 (42.4)	128.19±14.63		
Hospital admissions in the past year				
Once	55 (38.2)	124.89±18.64	2.99	0.053
Twice	61 (42.6)	122.75±15.36		
Three times and more	28 (19.4)	132.00±15.14		
Taking the medications at the recommended dose[b]				
Yes	130 (90.3)	70.02	-2.77	***0.006***
No	14 (9.7)	109.67		
Device use at home[c]				
None	48 (33.3)	130.56±17.97[1]	4.12	***0.008***[1>2]
Nebulizer	70 (48.6)	123.95±15.22		
Oxygen cylinder	8 (5.6)	110.25±22.48[2]		
Nebulizer+Oxygen cylinder	18 (12.5)	123.72±12.74		
Smoking status				
Non smoker	28 (19.4)	120.03±16.00	1.87	0.158
Smoker	28 (19.4)	128.00±17.21		
Smoking cessation	88 (61.2)	126.22±16.88		

[a] Mean±Standard Deviation (SD), [b] Mann-Whitney U Test (Mean Rank), [c] Tukey HSD (Post-Hoc test)
Abbreviations: SWBS, Spiritual Well-Being Scale

Table 2: SWBS, PSQI, SGRQ, T-Anxiety mean scores and bivariate results (n=144)

Variables	Mean±SD	Min.-Max. value	r
SWBS[a]	125.36±16.88	86-145	1
Transcendence	65.04±9.75	39-75	0.918**
Harmony with nature	30.18±4.59	16-35	0.853**
Anomie	30.14±6.67	7-35	0.603**
PSQI[a]	5.91±3.27	1-17	-0.25**
Subjective sleep quality	1.26±0.67	0-3	-0.16
Sleep latency	1.15±1.04	0-3	-0.38**
Sleep duration	0.65±0.83	0-3	0.07
Habitual sleep efficiency[b]	92.52±10.94	50-100	0.12
Sleep disturbances	1.43±0.51	0-2	-0.19*
Use of sleeping medications[b]	0.20±0.64	0-3	-0.16
Daytime dysfunction	0.92±0.78	0-3	-0.34**
SGRQ[a]	54.91±17.95	15.50-83.70	-0.17*
Symptoms	53.53±15.87	0-97.60	-0.12
Activity	74.61±27.88	13.14-100	-0.10
Impacts	43.62±18.69	6.17-81.83	-0.19*
T-anxiety[a]	38.52±9.07	24-62	-0.49**

[a] Total scale score, [b] Spearman correlation coefficient
Abbreviations: PSQI, Pittsburgh Sleep Quality Index; SGRQ, St. George Respiratory Questionnaire; SWBS, Spiritual Well-Being Scale; T-anxiety, Trait Anxiety Inventory; Mean±SD, Mean±Standard Deviation
**Correlation is significant at the 0.01 level (2-tailed), *Correlation is significant at the 0.05 level (2-tailed).

Table 3. The multiple linear regression model of the relationship between the SWBS and PSQI, SGRQ, and T-Anxiety

Model	Variables	SWBS				Correlations			Multiple Linearity Findings	
		Adjusted R-Square	Beta	t	p	Zero-Order	Partial	Part	Tolerance	VIF
1	Constant	0.236[a]	162.273	27.127	0.000					
	PSQI		-0.213	-0.487	0.627	-0.251	-0.041	-0.036	0.741	1.349
	SGRQ		-0.032	-0.421	0.674	-0.174	-0.036	-0.031	0.834	1.198
	T-anxiety		-0.880	-5.838	**0.000**	-0.499	-0.442	-0.427	0.815	1.227
2	Constant	0.249[b]	161.140	30.075	0.000					
	T-anxiety		-0.928	-6.858	**0.000**	-0.499	-0.499	-0.499	1.000	1.000

[a] Enter method, [b] Stepwise method, *Abbreviations:* PSQI, Pittsburgh Sleep Quality Index; SGRQ, St. George Respiratory Questionnaire; SWBS, SWB Scale; T-anxiety, Trait Anxiety Inventory

The multivariate linear regression model of the relationship between SWBS and PSQI, SGRQ, and T-anxiety was summarized in Table 3. In MODEL 1 calculate using the Enter method, it is found that three independent variables explain get 24% SWBS. T-anxiety was found to be an independent predictor of SWBS, and it was observed that as the anxiety levels increased, SWB levels decreased. Furthermore,, in MODEL2 generated using the stepwise method, it was found that T-anxiety was the variable that best explained SWBS and that it alone explained 25% of SWBS.

DISCUSSION

The research content requires a focus on two questions, regardless of the results.First, to our knowledge, this is the first study to provide insight into the combined effects of sleep quality, QoL, and anxiety levels on the SWB of COPD patients. While this may pave the way forwardresearchers in future field studies, it is important for clinicians to pay attention to areas neglected in spiritual health care process. Second, SWB can be influenced by the belief system and sociocultural structuresin which a person grows up. For this reason, the appropriateness of the measurement instrument applied to the spiritual awareness of the studied sample can contribute to the effective identification of spiritual needs. In this study, data were collected using the SWBS, which was developed for individuals raised in Turkish culture and in a society composed primarily of Muslims. On the other hand, the research results arediscussed under separate headings corresponding to each research question.

Spiritual well-being levels

The SWBS was developed as a means of assessing the fit between adults' life goals and their understanding of fundamental meaning in personal, environmental, social, and transcendental dimensions. The authors did not calculate the cut-off point when developing the SWBS. (Ekşi and Kardaş, 2017). However, since higher scores indicate the higher levels of SWB, as stated in the original article, this could be interpreted as the presence of a higher perception of SWB in the patients participating in the study. In accordance these results, it can be concluded that the patient believes in a transcendent being, feels the comforting effect of the feeling of protection and trust in it, that all negative experiences have a reason do or that everything is fine, and that their belief is a troubleshooting guide. On the other hand, it could be argued that the patients see themselves as a part of nature, respect every creature that is created, and adopt the view of solving problems and acting in line with the purpose of life, rather than unhappiness.

In previous studies in patients with chronic lung disease, it was found that the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale (FACIT-Sp-12), which measures the domains peace, meaning, and faith of SWB, are frequently used (Strada et al., 2013; Hasegawa et al., 2017; Duarte et al., 2020; Mendes et al., 2021). Similarly, there is no cut-off score in the FACIT-Sp-12 for COPD patients to be classified asSWB. Results of studies examining SWB levels in predominantly Catholic cases reported values that could be considered high (Silva et al., 2009; Duarte et al., 2020; Mendes et al., 2021). Considering the cultural context of SWB, religious beliefs and religious coping were found to be higher

in patients from Brazil, which is known to be one of the most religious in the world, compared to the Dutch population (Mesquita et al., 2021). It has been reported that people with advanced COPD have SWB similar to those with inoperable lung cancer (Hasegawa et al., 2017). Therefore, this aspect of care should also be addressed regularly for COPD patients as well, as in the case of cancer patients whose care needs are complex with their aggressive treatments and spiritual needs often mentioned in the context of palliative care.

In this study, patients who did not take COPD drugs at the prescribed dosageand did not utilize any COPD-related devices at home had a better level of SWB. This contrasted marginally from past studies.. Duarte et al. (2020) established a relationship between SWB and vital and functional capacity when compared with clinical parameters. It has been shown that the burden of symptoms related with dyspnea decreases levels of SWB (Strada et al., 2013; Hasegawa et al., 2017; Mendes et al., 2021). In addition, psychosocial distress, including anxiety and depression, has been related with negative SWB (Mendes et al., 2021). Mesquita et al. (2021), in their study conducted with people from two different cultures, showed that age and functional capacity were essentially related to religiosity and religious coping. It can be seen that physical and psychosocial wellbeing parameters essentially influence the SWB levels of COPD patients. In specific, spirituality may lose its defensive affect within the confront of expanding illnessburden with respiratory distress, which is the primary symptom of the illness (Strada et al., 2013). Hence, a person suffering from COPD may lose the drive and will to cope with the illness, and their value and commitment to the significance and purpose of life may be reduced. On the other hand, considering the findings of this study, insufficient medication adherence or the absence of the require for an extra device may be related with a better perception of physical health or less presentation to the symptom burden of COPD. To demonstrate, those who required an oxygen supplement within the home environment had the most reduced level of SWB. In further studies, questioning patients' medication adherence and use of devices may reveal the relationship between SWB and self-management. However, more frequent study of individual and clinical characteristics associated with COPD should be encouraged.

Spiritul well-being, sleep quality, anxiety and quality of life

The SWBS was related with sleep quality, anxiety, and QoL scores ranging from low to moderate. Whereas it was especially related with the sleep latency, sleep disturbances, and daytime dysfunction subscale of PSQI, it had a negative correlation with the impacts subscale of QoL. On the other hand, regression analysis revealed the joint impact of three factors on SWB, and it was concluded that anxiety alone was a stronger predictor. Increased anxiety was related with lower SWB in the study. This was consistent with the findings of a limited number of quantitative studies (Mendes et al., 2021; Mesquita et al., 2021). Mendes et al. (2021) reported that intrinsic religiosity is related to mental health and that strong religious beliefs may act as a protective factor against emotional distress caused by illness. Although Mesquita et al. (2021) did not show a correlation between spirituality and anxiety symptoms in people from two different cultures, they reported a significant correlation with negative religious coping. This is based on the notion that increased anxiety can lead to the existence of spiritual tensions within oneself or with the divine, while illness-related experiences can be a form of punishment from God. Qualitative research reveals several aspects of the nature of psychosocial stress in COPD patients, one of which is related to the inability to lead a normal life due to limitations in activities of daily living, fear of death and being a burden to the family. Second is guilt due to the impact of lifestyle choices, especially smoking, on the development of COPD, as well as feelings of shame and isolation associated with experiencing symptoms (Chang et al., 2016; Ali et al., 2018). Chang et al. (2016) found that this situation was associated with feelings of powerlessness and imprisonment. Therefore, our study shows that limitations in activities of daily living and the experience of symptoms may lead to an inability to cope with difficulties and behaviors such as avoidance, fear, panic, anxiety, and feelings of weakness and

powerlessness. Patients may tend to act with less confidence in themselves and their environment. They may also seek forgiveness from guilt and want to feel loved and cared for by taking refuge in God's power. Increased levels of anxiety in this study may have led to a person's sense of emptiness in their inner world, confusion of meaning, flight to divine power, and a loss of resilience and ability to cope. These results may suggest that attention should be paid to the effects of spiritual care in reducing anxiety.

Quality of life is a universal phenomenon, and the negative impact of COPD on QoL is well documented. It is used as the primary endpoint in most studies on SWB (Hasegawa et al., 2017; Zimermann Teixeira et al., 2017; Duarte et al., 2020; Mendes et al., 2021). Although a wealth of evidence has been presented regarding spirituality and QoL, information regarding people with chronic respiratory disease is still limited. A comparative study of patients with advanced COPD showed a correlation between the meaning and peace subscales of SWB and mental health (Duarte et al., 2020). Another study showed an association between higher meaning and improved emotional and mental health (Zimermann Teixeira et al., 2017). Mendes et al. (2021) correlated increased spirituality with improved QoL in the subscales of emotional functioning and mastery. Nevertheless, another study that showed a significant association between QoL and SWB reported that the SWB levels in advanced COPD patients were similar to those in lung cancer patients (Hasegawa et al., 2017). These were also consistent with previous research findings on their SWB in different populations (Pilger et al., 2017; Lee and Salman, 2018). These results can be explained by the fact that the mental health is a good predictor of SWB. A recent review discusses possible mechanisms of the association between mental health and SWB as social support, religious affiliation, meaning-making, and beliefs as cultural aspects of self-regulation that control thoughts and behaviors (Garssen et al., 2021). People with high levels of religiosity and spirituality reportedly develop internal and external mechanisms to cope with the negative things they encounter throughout their lives.. It also helps you deal with stressful situations, fear, suffering, sadness, anger and rage (Vitorino et al., 2018). Although mental health is not directly measured, given the meanings given to the items, it is possible that mental health is affected by experiencing symptoms behaviors such as loss of control, embarrassment, weakness, panic, and avoidance of activity. Additionally, patients' potentially negative attitudes toward treatment may have increased their sense of uncertainty and hopelessness about the future. In such environments, an individuals' perception of spirituality may be negatively affected, which may influence their attitudes and behaviors such as holding on to life more willingly, managing life, belonging to a religion and performing personal religious rituals.

To our knowledge, this study was the first to examine the relationship between SWB and sleep quality in patients with COPD. It was determined that COPD patients with poor sleep quality were found to have lower SWB awareness. Additionally, patients who experienced difficulty falling asleep, difficulty sleep problems due to symptoms, and difficulty maintaining daily living activities had lower SWB scores when considering the components. Currently, there is a lack of information regarding the association between SWB and sleep quality, making it difficult to explain and interpret the underlying mechanisms. However, the results were consistent with samples tested in different populations (Yang et al., 2008; Saiz et al., 2020; Miller et al., 2021). Patients with heart failure who were highly spiritual were associated with better sleep quality, less discomfort during sleep, less time to fall asleep, better performance, less trouble staying awake during daily activities, and duration (Saiz et al., 2020). A Taiwanese study of hemodialysis patients found that strong spiritual beliefs were associated with sleep problems, and stronger religious beliefs were associated with fewer problems with daily functioning. This study found that the relationship between spirituality and sleep is bidirectional and complex (Yang et al., 2008). However, in this study, SWB may be more related to patients' physical limitation. The mental and emotional burden caused by physical limitations may have had a negative impact on spiritual awareness. The nature of

spirituality and its aspects of peace, meaning and faith dimensions, helps individuals cope with stressful situations (Duarte et al., 2020). Given that sleep problems are a serious stressor of this disease, people who practice individualized religious rituals are better able to cope with physical and emotional distress. For example, Ghadampour et al. (2018) showed that spirituality therapy improved sleep quality and mental toughness among older individuals. This demonstrates the potential value of considering spirituality as part of comprehensive symptom management, as highlighted in Miller et al. (2021)' study addressing cancer patients' concern about sleep quality.

CONCLUSION

This study demonstrated moderate associations between SWB and key domains of sleep quality, anxiety, and QoL. Higher anxiety levels and lower sleep quality and QoL were associated with lower SWB scores. In addition, medication adherence and home device support were found to be effective factors for SWB scores. These results confirmed the close relationship between SWB and QoL. Furthermore, there is evidence of a linear relationship between SWB and the reported decline in sleep quality and mental health in people with COPD. Medication adherence and requirements for the use of home support devices have been more recent frameworks for SWB. It may be recommended to include these variables in SWB assessment tools for health professionals. Spiritual support services, which are becoming increasingly common in medical settings, issues such as adherence, sleep hygiene, and the use of supportive devices may need to be incorporated into spiritual support interventions. Research on SWB may highlight the need to assess the comprehensive care needs of COPD patients, who lead a stressful and difficult lives. Greater focus on this issue could draw the attention of medical professionals to neglected areas of care. Therefore, contributing to the emergence of new approaches in clinical practice may facilitate the care management of COPD patients. Nevertheless, healthcare managers and policy makers need to assist medical professionals in developing and implementing care tools (e.g., checklists, clinical practice guidelines, evidence-based protocols) that focus on SWB interventions. In the future, further studies can be planned to reveal the mediating or moderating relationships between these variables.

Limitations

This study had several limitations. First, this study was cross-sectional, so a causal relationship could not be established. However, these observations can serve a guide for further longitudinal and clinical studies. Second, this was the first study in which SWBS was used in a COPD population. Therefore, the results could have been compared with those of measurement tools developed and used in different populations. Additionally, sleep quality in this population was also investigated for the first time. Therefore, further research is needed that repeatedly analyses variables to determine the spiritual needs of individuals raised in a particular culture. Finally, the sample size was small and patients were recruited from a single institution.

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Conflict of Interest

No conflict of interest has been declared by the authors.

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