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The mediating role of spiritual well-being in the relationship between self-care agency and hope in patients diagnosed with schizophrenia: a cross-sectional and correlational study

Zeynep Öztürk^{1*}, Mustafa Durmuş², Emrah Ay³ and Ayşe Okanlı⁴

Abstract

Background/Aims Research shows that low self-care ability and hopelessness are common in schizophrenia patients. Spirituality can be a key coping resource in managing mental illnesses. However, the mediating effect of spirituality on the relationship between self-care ability and hope in schizophrenia patients is unknown. This study aims to explore the mediating role of spiritual well-being in the relationship between self-care agency and hope in schizophrenia.

Method This study is cross-sectional and correlational study with a descriptive design. The study was conducted with 116 schizophrenia patients who presented to the psychiatry outpatient clinic of a university hospital in eastern Turkey between 10.02. 2023 and 10.01. 2024. Descriptive Information Form, Self-Care Agency Scale, Herth Hope Index and Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being Scale were used to collect the data. Structural equation modelling and bootstrapping method were used to analyse the data.

Results In this study, the effect of self-care agency on hope ($\beta=0.12$) was positive but not significant. However, self-care agency positively influenced spiritual well-being ($\beta=0.47$), and spiritual well-being had a significant positive effect on hope ($\beta=0.83$). Spiritual well-being fully mediated the relationship between self-care agency and hope, with the total mediated effect on hope being significant ($\beta=0.52$). The model explained 23% of the variance in spiritual well-being and 80% of the variance in hope.

Conclusion It was determined that self-care agency affected spiritual well-being positively and spiritual well-being affected hope positively in schizophrenia patients. It was also found that spiritual well-being mediated the relationship between self-care agency and hope. It is expected that this research model will be useful in formulating strategies to improve hope and self-care in schizophrenia patients.

Keywords Schizophrenia, Self-care agency, Spirituality, Hope

*Correspondence:

Zeynep Öztürk
zeynep.ozturk@erzurum.edu.tr

Full list of author information is available at the end of the article



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Background

Schizophrenia is a chronic mental disorder in which symptoms such as delusions, hallucinations and abnormal behaviours are observed and which causes serious impairments in the feelings, thoughts, behaviours and interpersonal relationships of individuals. Schizophrenia is an important public health problem that affects more than 24 million people worldwide; it recurs frequently, causes disability in most patients and may require hospitalisation [1, 2]. Schizophrenia can significantly affect patients' functioning and their ability to maintain activities of daily living [3, 4]. Therefore, in addition to pharmacological treatment, the main goals of schizophrenia treatment include the development of healthy life behaviours and the maintenance of self-care [5, 6].

Self-care has been defined as "The ability to care for oneself through awareness, self-control, and self-reliance in order to achieve, maintain, or promote optimal health and well-being" [7]. High self-care agency of schizophrenia patients reduces symptom severity, facilitates disease management and reduces disability [8]. It has been reported that schizophrenia patients have lower self-care skills compared to individuals with other mental illnesses [6]. It is important that patients with schizophrenia are supported by psychiatric nurses to improve their self-care skills and to maintain their daily lives independently [5, 9]. Therefore, it is thought that revealing the factors that affect self-care in patients with schizophrenia will be useful in determining interventions to increase self-care skills of patients.

It has been suggested that hope may be effective for schizophrenia patients to manage the disease process successfully and to maintain their self-care [10]. In the broadest sense, hope is defined as finding meaning in life and having positive expectations for the future [11]. It is reported in the literature that schizophrenia patients with high levels of hope have higher coping skills, treatment compliance, functionality, insight and social functionality levels [12–14]. Hope also strengthens the capacity of schizophrenia patients to adapt to the disease and increases their knowledge and skills to manage the disease [15]. Due to the important effects of hope in psychosocial rehabilitation, it is thought to be effective on the self-care skills of schizophrenia patients. There are limited number of studies examining the relationship between hope and self-care levels in patients with schizophrenia [10]. Further studies are needed in this field.

In mental illnesses such as schizophrenia, religious belief and spirituality are among the effective components in developing hope [16]. Although religion and spirituality can often be used interchangeably in the literature, spirituality cannot be solely associated with religion; it also refers to closeness to the sacred, a sense of devotion, finding meaning and purpose in life, and inner

peace [17]. Spirituality promotes hope by enabling optimistic thinking and finding purpose in life [16, 17]. It has been reported that spiritual well-being increases the quality of life and social cohesion, facilitates the struggle with symptoms and accelerates the recovery process in schizophrenia patients [18, 19]. Research with individuals who have chronic diseases has shown that spirituality encourages patients to take responsibility for their health and increases their self-care agency [20, 21]. No studies have been found examining the relationship between spirituality and self-care in patients with schizophrenia. Therefore, it is thought that the spiritual well-being of schizophrenia patients may also affect their self-care agency.

While there are some studies in the literature which examine the relationship between self-care and hope in schizophrenia patients, whether spirituality plays a mediating role in this relationship has not been investigated [10]. The conceptual framework of the study is inspired by the concept of spiritual well-being. In this model, it is emphasised that spirituality is an important resource in dealing with difficulties in life [16, 17]. Spirituality can be a source of coping that provides hope for individuals with mental illness [16]. Although there are many studies examining spirituality in schizophrenia patients, there is no study examining spirituality as a mediating factor [18, 19, 22]. Research shows that spirituality promotes positive psychological traits for people who are diagnosed with a challenging illness and who experience difficult life circumstances [23, 24]. Considering the previous studies and the conceptual model of the study based on the theory of spiritual well-being, it is thought that spirituality can act as a mediating variable in the relationship between self-care agency and hope. This study aims to explore the mediating role of spiritual well-being in the relationship between self-care agency and hope in schizophrenia. This study is the first study to examine the mediating role of spirituality in the effect of hope on self-care agency in patients with schizophrenia. As a requirement of holistic nursing care, nurses have an important role in meeting the spiritual needs of patients and providing spiritual care [25]. Therefore, it is thought that the data obtained from this study will shed light on the relationship between the concepts of self-care agency, hope and spirituality, which have an important place in the course of schizophrenia, and provide information about the mediating role of spirituality. In this way, research findings will provide important data for nursing interventions and studies.

The hypothesis of the study

- Spiritual well-being plays a mediating role in the effect of self-care agency on hope in schizophrenia patients.

Methods

Study design and participants

The study has a cross-sectional design. The population of the study consists of 116 schizophrenia patients who applied to the Psychiatry Outpatient Clinic of a University Hospital located in Eastern Turkey between the dates of 10.02.2023 and 10.01.2024, and who met the inclusion criteria for the research. The participants were recruited from a psychiatry outpatient clinic of a university hospital, located in Erzurum province. The recruitment process involved screening patients who visited these centres for their routine follow-up appointments and inviting those who met the inclusion criteria to participate in the study after obtaining their informed consent.

Inclusion criteria Being over 18 years old, having been diagnosed with schizophrenia according to DSM-5 diagnostic criteria, being open to communication and cooperation, and being in remission (a period when the disease is not active, that is, the symptoms have significantly decreased or disappeared) for at least 1 month. Individuals who were diagnosed with dementia and/or other organic origin disorders, who were using alcohol or a psychoactive substance, and who were determined to have mental retardation according to hospital records were excluded from the study.

Participants were selected from the Psychiatry Outpatient Clinic of a university hospital located in Erzurum. The recruitment process involved screening patients who visited the center for routine follow-up appointments. After obtaining informed consent, patients who met the inclusion criteria were invited to participate in the study. The sample group consisted of patients who met the inclusion criteria and agreed to participate. 14 patients declined to participate, and 4 patients filled out the research forms incompletely, so the study was completed with 116 patients (an 86.6% participation rate). The participation rate in this study is high. To avoid missing data, the data of those who filled out the research forms incompletely were excluded from the study and not included in the analysis.

In the study, G*Power 3.1.9.2 software was used to calculate the sample size. Cohen's f^2 , calculated as $R^2/(1-R^2)$, where R^2 is the model variance explained, was set to 0.15, a medium effect size according to Cohen's (1988) guidelines [26]. With $\alpha=0.05$ for a 95% confidence interval and power of 0.9, the resultant minimum sample size was determined as 88 individuals. The study was

conducted with 116 individuals diagnosed with schizophrenia in the determined date range, taking into account missing data and a sample size of at least 100 people.

Measurements

Research data were collected by face-to-face interviews with patients in 10–15 min using the non-probability sampling method. “Descriptive Information Form”, “Self-Care Agency Scale (SCAS)”, “Herth Hope Index (HHI)” and “Spiritual Well-Being Scale (FACIT Sp-12)” were used to collect data.

Descriptive information form This form prepared by the researchers consists of a total of 7 questions (age, gender, marital status, educational status, employment status, income level, time of diagnosis of the disease).

Self-Care agency scale (SCAS) It was developed by Kearney & Fleischer, (1979) to evaluate the ability or power of individuals to perform self-care actions [27]. It was adapted into Turkish by Nahcivan (1994) [28]. The 5-point Likert-type scale consists of 35 items in total, with each statement scored between 0 and 4. The maximum possible score is 140, with a total score below 82 considered as low self-care agency, 82–120 points considered as moderate self-care agency, and a total score above 120 considered as high self-care agency. As the score increases, patients' self-care agency also increases. Cronbach's alpha value was 0.89 in the Turkish validity and reliability study [28]. Cronbach's alpha was found to be 0.92 in the present study.

Herth hope index (HHI) It was developed by Dr. Herth in 1991 to determine the hope levels of individuals [29]. The scale was adapted into Turkish by Aslan et al. (2006). The scale consists of 30 items. The items in the scale are answered on a four-point Likert scale as: “Not suitable” (0 points), “Rarely suitable” (1 point), “Sometimes suitable” (2 points), and “Always suitable” (3 points). The scale consists of three sub dimensions: “Temporality and Future,” “Positive readiness and expectancy,” and “Interconnectedness” [30]. The scale's total score is calculated by adding the scores obtained from the answers given to all items. The subscales score is calculated by adding the scores of the answers given to the items corresponding to each subscale. The total hope score ranges between 0 and 90, while each subscale's total score ranges between 0 and 30. High scores from the scale indicate that the level of hope is high. In the reliability phase of the Turkish form of the scale, the Cronbach's alpha was determined to be 0.84 [30]. In this study, the Cronbach's alpha of the scale was found to be 0.94.

Functional assessment of chronic illness therapy - spiritual well-being scale (FACIT Sp-12) The scale was developed in 2002 with the purpose of evaluating the spiritual well-being of individuals by Peterman et al. (2002) [31]. Akturk et al. conducted the validity and

reliability study of the Turkish version in 2017 [32]. The scale, which consists of 12 questions and 3 sub-dimensions, is a 5 Likert-type scale, with each statement scored between 0 and 4. Items 4 and 8 are reverse coded. Sub-dimensions of the scale, which are scored between 0 and 16, are called faith, peace and meaning. Total possible score of the scale is between 0 and 48. As the score increases, the level of spiritual well-being also increases. Turkish validity and reliability study had a Cronbach's alpha value of 0.87 [32]. Cronbach's alpha value was found to be 0.88 in the present study.

Data collection

Individuals who would participate in the study were informed about the purpose and method of the study, the time they would spend on the study, that participation in the study would not harm them in any way and that it was completely voluntary. Then, verbal and written consents were obtained from the participants. The research questionnaires were filled out by the participants in a private room. It took about 10–15 min to fill out the research forms.

Data assessment

Descriptive analyses of the study were performed by using SPSS 22.00 statistical package program and Structural Equation Model was performed by using Mplus 8.10 statistical analysis program by using maximum likelihood parameter estimation method. Descriptive statistics of percentage, mean and standard deviation were

used. Skewness and Kurtosis coefficients were used to analyse the normality distribution of the data. Cronbach's alpha coefficient was used to determine the internal consistency of the scales. Correlation analysis was used to determine the relationship between the variables related to the scales and sub-dimensions. Level of significance was $p < 0.05$. Harman's single factor test was used to determine whether there was common method bias in the data set. Chi-square/degree of freedom (χ^2/df), root mean square error of approximation (RMSEA), root mean square residuals (SRMR), comparative fit index (CFI) and Tucker-Lewis index (TLI) indices were used to evaluate the fit of measurement models and SEM with respect to the structural equation model. Finally, the bootstrap method, which estimates indirect effects between variables through repeated random sampling based on the original data set, was used to determine whether indirect associations were significant in the SEM. To determine the significance of indirect effects, a 95% CI with 5000 bootstraps was calculated for the confidence interval.

Results

Table 1 includes descriptive characteristics of the participants. The results of the descriptive analyses of the variables in the study are shown in Table 2. Since it was found that Skewness and Kurtosis values were within the range of ± 1.5 , it was determined that the assumption of single normality was met in the research [33]. Skewness and Kurtosis values showed that the data met the normality assumption. Cronbach's alpha internal consistency coefficient values for the scales were then calculated. The threshold value for Cronbach alpha internal consistency was 0.70 [34]. In the study, Cronbach's alpha internal consistency coefficients for all scale total scores and sub-dimensions ranged between 0.71 and 0.94 and Cronbach's alpha was above the threshold value. Variance in the data set due to the measurement instruments is referred to as common method bias [35]. One of the ways to determine whether there is common method bias in the research data set is Harman's single factor test. The single factor test, which was performed by forcing the data set under a single factor, showed that the entire data set explained less than 50% of the variance (35.275%) and that common method bias was not a significant problem [36].

Figure 1. shows the Structural Equation Model Diagram. Table 3 shows the relationships and fit values of the model. Regarding the structural equation model, first the measurement model and then the structural model were tested. The measurement model is an analysis performed without testing the relationships between all variables included in the structural model and provides some indication of whether the data set is suitable for the structural model. In addition, before proceeding to the

Table 1 Descriptive characteristics of the patients

Characteristics	Number (n = 184)	%
Gender		
Male	63	54.3
Female	53	45.7
Marital status		
Married	39	33.6
Single	77	66.4
Educational status		
Literate	16	13.8
Primary education	41	35.3
High school	39	33.6
Undergraduate education	20	17.2
Income status		
Income < expense	20	17.2
Income = expense	77	66.4
Income > expense	19	16.4
Employment status		
Employed	41	35.3
Unemployed	75	64.7
	X ± SD	Min-Max
Age	37.76 ± 12.21	18–69
Diagnosis year	13.76 ± 10.92	1–49

Table 2 Research descriptive analyzes

Questionnaires	M (SD)	Skewness	Kurtosis	α	1	2	3	4	5	6	7	8	9
SCAS	2.28 (0.80)	-0.61	-0.40	0.92	1								
FACT Sp-12	2.09 (0.78)	-0.05	-0.97	0.88	0.42**	1							
Meaning	2.29 (0.74)	-0.13	-0.60	0.71	0.42**	0.84**	1						
Peace	1.85 (0.85)	0.13	-0.28	0.75	0.25**	0.80**	0.60**	1					
Belief	2.12 (1.18)	-0.29	-1.16	0.91	0.39**	0.87**	0.58**	0.48**	1				
HHI	1.84 (0.71)	-0.49	-0.91	0.94	0.52**	0.80**	0.64**	0.52**	0.73**	1			
Future	1.88 (0.88)	-0.53	-1.17	0.85	0.55**	0.75**	0.65**	0.45**	0.75**	0.94**	1		
Positive readiness	1.77 (0.64)	-0.06	-0.82	0.73	0.46**	0.74**	0.61**	0.58**	0.66**	0.95**	0.84**	1	
Interconnectedness	1.88 (0.74)	0.41	-0.86	0.81	0.46**	0.69**	0.56*	0.47**	0.66**	0.94**	0.81**	0.86**	1

** $p < 0.01$; SCAS: Self-Care Agency Scale; FACT Sp-12: Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being Scale; HHI: Herth Hope Index

model test, item parcellation was performed on the items related to the scale dimensions in order to minimise the problems resulting from the large number of scale items and the cross-correlations of the items, and the analyses were continued over the structures obtained as a result of parcellation. Chi-square/degree of freedom (χ^2/df), root mean square error of approximation (RMSEA), root mean square residuals (SRMR), comparative fit index (CFI) and Tucker-Lewis index (TLI) indices were used to evaluate the fit of the measurement models and SEM. χ^2/df value < 5 indicates acceptable fit; χ^2/df value < 3 indicates good fit; SRMR and RMSEA values < 0.08 and CFI and TLI values > 0.90 indicate that the data fit the model well [37].

The measurement model fit values for the variables ($\chi^2/df = 3.34$; RMSEA = 0.07, SRMR = 0.07, CFI = 0.92 and TLI = 0.91) showed that the variables were suitable for the structural model, and then the structural model was started. The fit values for the tested SEM were found to be good ($\chi^2/df = 3.19$; RMSEA = 0.06, SRMR = 0.07, CFI = 0.94 and TLI = 0.92). Table 3 shows the relationships and fit values for the model. Finally, bootstrap method, which estimates indirect effects between variables through repeated random sampling based on the original data set, was used to determine whether indirect associations were significant in the SEM. Indirect effects in the analysis are significant when confidence intervals (CI's) do not include zero [38]. Therefore, 95% CI with 5000 preloads was calculated for the confidence interval to determine the significance of indirect effects. The relationship coefficients between the variables and bootstrapping analysis with 5000 samples showed that the confidence intervals in the indirect paths did not contain zero values and the mediation effects in the model were significant. Thus, it was determined that spiritual well-being had a full mediating effect on the relationship between self-care agency and hope. The model explained 23% of the total variance explained for spiritual well-being and 80% of the total variance explained for hope.

Discussion

This study is the first study to examine the mediating role of spiritual well-being in the effect of self-care agency on hope in schizophrenia patients, and the findings of the study were discussed in the light of the relevant literature. In this study, it was found that the self-care levels of schizophrenia patients were low. Çiftçi et al. examined the self-care agency in individuals with mental illness and reported that schizophrenia patients had lower levels of self-care agency compared to other mental illnesses [6]. Aydın and Şahin Altun emphasised that schizophrenia patients had low levels of self-care agency [8]. In their study with schizophrenia patients, Permatasari, et al.

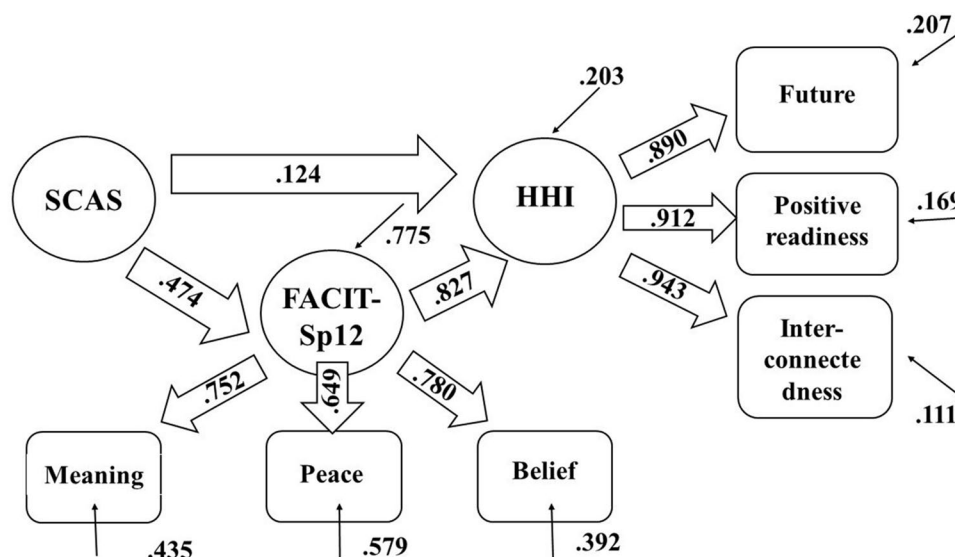


Fig. 1 Structural equation model diagram

Table 3 Structural equation model results

Specific Direct Effect	β	S.E.	z	95% CI		p	R ²
				Lower	Upper		
SCAS → HHI	0.12	0.08	1.48	0.07	0.32	0.134	
SCAS → FACIT-Sp12	0.47	0.10	4.60	0.30	0.64	0.00**	0.23
FACIT-Sp12 → HHI	0.83	0.08	10.37	0.69	0.94	0.00**	
Specific Indirect Effect							
SCAS → FACIT-Sp12 → HHI	0.39	0.09	4.45	0.26	0.55	0.00**	
Total Effect							
SCAS → HHI	0.52	0.10	5.04	0.34	0.68	0.00**	0.80
Model fits							
		χ ² /df	RMSEA	SRMR	CFI	TLI	
Measurement model fit indices		3.34	0.07(0.05–0.09)	0.07	0.92	0.91	
SEM fit indices		3.19	0.06 (0.04–0.08)	0.07	0.94	0.92	

** p < 0.001; SCAS: Self-Care Agency Scale; FACIT Sp-12: Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being Scale; HHI: Herth Hope Index; RMSEA: Root mean square error of approximation; SRMR: Root mean square residuals; CFI: comparative fit index; TLI: Tucker-Lewis index

found that patients’ self-care skills were low and 42.2% of patients who met their self-care needs needed assistive devices [39]. Lucock, et al. reviewed 20 studies on self-care in psychiatric disorders and suggested that more research should be conducted to investigate patients’ views on the basic elements of self-care and effective self-care support [40]. In this context, there is a need for studies that take into account the factors that may affect the self-care agency of schizophrenia patients.

In this study, schizophrenia patients were found to have moderate levels of hope. Similar to this study, it was found that patients with schizophrenia had moderate levels of hope in Turkey [14, 40–42]. It can be seen that there are different research findings in the international literature regarding the hope levels of schizophrenia patients. Mahmoud et al. reported in their study in Egypt that the hope levels of schizophrenia patients were at a

high level [43]. Vrbova et al. emphasised in their study with schizophrenia patients in Czech that the hope levels of patients were quite low [13]. In a study they conducted in China, Wang et al. determined that the hope levels of schizophrenia patients were at a medium level, similar to the results of this study [44]. These different results between the studies are thought to be due to the health systems and cultural differences of countries.

In this study, it was found that schizophrenia patients had moderate levels of spiritual well-being. Mohr et al. emphasised that spirituality was the most important element in patients’ lives for about half (46%) of 89 schizophrenia patients [19]. In their study with 103 schizophrenia patients, Borrás et al. reported that two thirds of the patients who participated in the study thought that spirituality was very important and even necessary in daily life [45]. These results are similar to the

results of previous research. Altun et al. determined that schizophrenia patients had a high level of religious belief strength [46]. Nolan et al., suggested that schizophrenia patients used high levels of religious coping among coping strategies [47]. Considering that schizophrenia is also a chronic illness, Machul et al. emphasized that patients with chronic illnesses have a high level of spiritual well-being [48]. These results differ from the findings of the research. Although the concepts of religion and spirituality are used interchangeably in the literature, the fact that spirituality includes many concepts such as compassion, love, hope, trust and peace as well as components such as prayer and belief may have an effect on this result [25, 49].

In this study, it was found that self-care agency had a positive effect on spiritual well-being in patients with schizophrenia. No studies examining the relationship between spirituality and self-care in patients with schizophrenia have been found. This study is the first study to reveal the relationship between self-care agency and spirituality in schizophrenia patients. In studies conducted with different patient groups in the literature, a positive and significant relationship was found between self-care agency and spiritual well-being [50–52]. The importance of spirituality and religious belief is emphasised in self-care activities in chronic diseases [51]. Poppa argued that self-care is at the basis of spirituality [53]. Therefore, individuals' ability to love the creator and others depends on how they love themselves. Each individual's understanding of self-care is determined by spirituality, personal belief system and belief practices [53]. There are similarities between the results of the study and the literature. This study provides a theoretical contribution to the literature on the relationship between these two concepts by revealing the positive effect of self-care power on spiritual well-being in schizophrenia patients. Increasing studies on self-care and spirituality in mental illnesses and especially in schizophrenia will provide a better understanding of the relationship between these two important concepts in psychiatric rehabilitation. Interventions that increase self-care power in schizophrenia patients may improve spiritual well-being.

In this study, it was determined that spiritual well-being strengthens hope in schizophrenia patients. Spirituality and hope are known to be interrelated and interacting concepts in the literature [54–56]. Although this relationship is recognised, studies examining these two concepts in schizophrenia patients are quite limited [18, 57]. It is also emphasised in the literature that spirituality in chronic diseases encourages hope by providing a meaning and purpose in life [55, 56, 58]. Revheim, and Greenberg reported that spirituality is a way to increase hope in individuals with serious psychiatric disorders [57]. Religion gives meaning and hope to the lives of schizophrenia

patients [18]. Öztürk and Altun Şahin included faith and spirituality among the strategies that increase hope in an experimental study with schizophrenia patients [41]. In a synthesis of reviews on hope in health services, it was mentioned that hope is a central issue in spiritual care [59]. Meeting the spiritual needs of patients in mental illnesses helps them maintain their hope [57]. There are similarities between the research results and the literature. In this context, it can be said that spirituality increases hope in schizophrenia patients.

In this study, it was determined that there was no direct effect between hope and self-care agency of schizophrenia patients. In the literature, only one study was found to examine the relationship between hope and self-care in schizophrenia patients. Song et al. found a significant relationship between hope level and self-care agency of patients in a study conducted with schizophrenia patients in Korea [10]. Oles et al. emphasised that as the level of hope increases in schizophrenia patients, patient activation, that is, knowledge and skills to manage the disease, also increases [15]. The results of this study differ from the findings of other studies. Different scales and samples used in the studies may have been an effective factor in this result [10, 55, 60, 61]. Another factor may be the difference of SEM analysis compared to Pearson correlation analysis used in previous research. While correlation analysis only examines relationships regardless of the direction of the variables, SEM analysis represents the combination of a series of cause-and-effect relationships between variables into compound testable models [62]. Previous research mostly used correlation analysis to investigate the relationship between self-care agency and the factors that influence it, therefore the complexity of SEM analysis may have led to this confusing result [63]. This research finding does not mean that self-care agency does not affect hope. The interaction of self-care with hope is emphasised in the literature [10, 55, 60]. Therefore, there is a need for additional studies examining the complex interaction between self-care agency and hope in schizophrenia patients to better understand this complex relationship.

According to the research model of this study, the effect of self-care agency on hope through spiritual well-being was found to be significant. Although self-care agency does not have a direct effect on hope, it strengthens hope through spirituality. This result suggests that spirituality may be an important factor on self-care agency. Spirituality can be a source of coping in individuals with mental illness [16]. Maraj et al. (2021) found that spirituality plays a strong mediator role in the relationship between resilience and hopelessness, increasing resilience and decreasing hopelessness in challenging conditions [23]. It has been emphasized that spiritual well-being mediates the relationship between psychological distress

and adaptation to illness in individuals diagnosed with a challenging chronic disease [24]. Research shows that spirituality promotes positive psychological traits for individuals diagnosed with a challenging illness who are experiencing difficult living conditions [23, 24, 64]. This study is the first to examine the mediating role of spirituality in the effect of self-care agency on hope in patients with schizophrenia. In the study, it was determined that although self-care agency does not directly affect hope in patients with schizophrenia, it strengthens hope through spiritual well-being. This result suggests that enhancing patients' self-care skills and providing spiritual care in mental illnesses may help foster hope among patients. Hopelessness is considered to be a nursing diagnosis and in the Nursing Initiative Classification System (NIC), Hope Inspiration is defined as a nursing intervention [65]. For this reason, it is thought that revealing the components that have an effect on hope in schizophrenia patients will be useful in shaping nursing interventions to increase hope [41]. Identifying strategies to enhance hope in patients with schizophrenia is essential for guiding nursing interventions in clinical practice. Consequently, this study offers a significant theoretical framework for mental health promotion by elucidating the relationships among self-care agency, spiritual well-being, and hope, which are key components in psychiatric rehabilitation for individuals with schizophrenia.

Limitations of the study

This study has some limitations. First, our study has a cross-sectional design, which excludes the possibility of drawing causal conclusions about the relationships regarding the variables entering our model. Therefore, our findings should be evaluated as exploratory, and future studies should use experimental and longitudinal methods. Secondly, our study cannot be generalized to different populations because it was a single-centre study and included only patients with schizophrenia. Multicentre studies can eliminate this limitation in future studies. Third, a limitation of this study is that the patients' religion and religious sects were not examined. Therefore, it is recommended that future research also explore these components. Finally, the measurement tools and control variables used in the study represent another source of limitation.

Conclusion

According to the research model carried out in this study, self-care agency affects spiritual well-being positively and spiritual well-being affects hope positively in schizophrenia patients. Spiritual well-being mediates the relationship between self-care agency and hope. It was also found in the study that schizophrenia patients had moderate levels of spiritual well-being and hope and low levels

of self-care agency. It is expected that the model of this study will be useful in formulating strategies to improve self-care and hope in schizophrenia patients. Based on the results of this study, it is recommended that nurses integrate spiritual care as a necessity of holistic care into their care processes. Additionally, nurses should provide education and counseling services to improve self-care skills in patients with schizophrenia. Furthermore, interventions aimed at increasing patients' hope levels should include the development of self-care skills and the provision of spiritual care. Lastly, it is recommended that self-care agency, hope, and spiritual well-being be regularly assessed in patients with schizophrenia, and that the study be repeated with different sample groups.

Abbreviations

CFI	Comparative fit index
CI	Confidence interval
DSM-5	Diagnostic and statistical manual of mental disorders- fifth edition
FACITSp-12	Functional assessment of chronic illness therapy - spiritual well-being Scale
HHI	Herth hope index
NIC	Nursing interventions classification
RMSEA	Root mean square error of approximation
SCAS	Self-care agency scale
SD	Standard deviation
SEM	Structural equation modelling
SPSS	Statistical package for the social sciences
SRMR	Standardized root mean square residual
TLI	Tucker-lewis index
α	Alpha (Significance Level)
B	Beta coefficient (Standardized Regression Coefficient)
χ^2/df	Chi-square divided by degrees of freedom

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Author contributions

ZÖ, MD, EA, AO participated in the conception of the idea, development, and amendment of the proposal. ZÖ and EA collected the data. ZÖ, MD, EA, AO analyzed the data and write up the results. ZÖ, MD, EA, AO prepared, interpreted and intellectually reviewed the manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Before starting the research, approval was obtained from the Clinical Research Ethics Committee of Muş Alparslan University (dated 13.10.2022 and numbered 67371) and permission was obtained from Atatürk University Research Hospital (dated 26.10.2022 and numbered E-42190979-000-2200348016) where the research was conducted. Patients included in the study signed an informed consent form. This study was conducted in accordance with the ethical standards of the Declaration of Helsinki. Volunteering participants were included in the study and their personal identity information was kept confidential.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

¹Faculty of Health Science, Department of Psychiatric Nursing, Erzurum Technical University, Erzurum, Türkiye

²Faculty of Health Sciences, Department of Nursing, Muş Alparslan University, Muş, Türkiye

³Faculty of Nursing, Department of Nursing Fundamentals, Ataturk University, Erzurum, Türkiye

⁴Faculty of Health Science, Department of Psychiatric Nursing, Istanbul Medeniyet University, Istanbul, Türkiye

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