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Research Article

A Closer Look into the Correlates of Spiritual Well-Being in Women with Breast Cancer: The Mediating Role of Social Support

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Abstract
The aim of this study was to obtain insight into the relationships between spiritual well-being, social support, psychological flexibility, and personality traits in women with breast cancer. The study was conducted on 64 women from Serbia (Mage = 58.36, SD = 11.30) who were undergoing radiation therapy. The Quality of Life Instrument – Breast Cancer Patient Version (QOL-BC) was used to assess spiritual well-being (religious and spiritual activities, changes in spiritual life after the cancer diagnosis, uncertainty about the future, positive changes in life following the illness, a sense of purpose/reason for being alive, and hope). Perceived social support was measured with the Medical Outcomes Study Social Support Survey (MOS-SSS), psychological inflexibility was evaluated with the Acceptance and Action Questionnaire (AAQ II), and personality traits were assessed with the Big Five Inventory (BFI). Demographic and clinical data were also collected. Multiple regression analysis showed that younger, less agreeable, and more conscientious patients were more likely to experience positive changes in life after the illness; greater perceived social support positively predicted a sense of purpose/reason for being alive, and younger, more open to experience patients tended to be more hopeful. Full mediation effect of perceived social support was revealed – participants who were more agreeable and open to experience, through greater perceived support, achieved a higher sense of purpose/reason for being alive. In contrast, conscientious and psychologically inflexible individuals perceived less support, which resulted in a reduced sense of purpose. Our results highlight the pivotal role of perceived social support, which could modulate and diminish negative psychological, spiritual, and existential consequences of breast cancer.

Keywords:
Spiritual well-being • Social support • Breast cancer • Psychological inflexibility • Personality traits

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Introduction

There are indices that spirituality and religiosity might be positively related to various indicators of mental health, and play a significant role in recovering from life crises, such as serious illness (Garssen et al., 2021; Marks, 2005; Palmer Kelly et al., 2022; Tanhan & Young, 2022; Unterrainer et al., 2014). Thus, it has been shown that spiritual well-being is positively associated with quality of life in cancer patients (Kamijo & Miyamura, 2020; Yilmaz & Cengiz, 2020). Breast cancer, as the most prevalent malignant disease in women (McGuire, 2016; WHO, 2023), brings with it a psychological and emotional burden such as distress, anxiety, depression, fatigue, decreased social interactions, and vulnerability to emotional disorders (Guarino et al., 2020). Diagnosis and demanding treatment of breast cancer challenge both the physical and mental health of an individual. When confronted with such a crisis, a person often experiences a wide range of intense and unpleasant emotional reactions, concerns, and fears. Among many psychological challenges, patients usually experience survival concerns, existential suffering, impaired body-image, diminished self-esteem, decreased faith (Mohebbifar et al., 2015), symptoms of depression and anxiety (Tsaras et al., 2018), and overall worsened quality of life (Tsaras et al., 2018; Yilmaz & Cengiz, 2020). Many patients facing the experience of cancer feel the need to address spiritual issues with their healthcare providers (Pearce et al., 2012). However, in the context of clinical oncology, the spiritual needs of the patients are frequently underestimated (Peteet & Amonoo, 2023), and patients often receive far less spiritual care than they desire (Pearce et al., 2012). According to recent guidelines from the National Comprehensive Cancer Network, addressing the spiritual needs of patients in oncology is recognized as one of the highest priorities in providing them with full psychosocial support (Riba et al., 2019).

Spirituality may be described as a complex construct, referring to the purpose and meaning in life, seen through the perspective of interaction with self, others, and the world (Timmins & Caldeira, 2017). This construct specifically gains importance in life-threatening situations or serious life challenges, such are health issues (Timmins & Caldeira, 2017). Religiosity has commonly been defined as a concept more directed toward institutions and traditions, while spirituality is often described as a broader construct that is not necessarily tied to confessional bonds (Sulmasy, 2002). Therefore, both religiosity and spirituality can be considered an important aspect of human existence, creating the context for purpose and meaning in life (Unterrainer et al., 2014).

Spiritual well-being and personality traits

It is known that notable individual differences exist in how spirituality and religion are central to people, and how they experience them. Previous studies examining the relationship between spirituality and personality from the Big Five perspective in

nonclinical population have yielded intriguing findings. Some authors have observed significant correlations between spiritual/religious well-being and all five personality dimensions (Unterrainer et al., 2010). However, those personality dimensions that are more temperamental in their nature, such as Extraversion and Neuroticism, seem to be less relevant for understanding individual differences in religion and spirituality (Saroglou & Muñoz-García, 2008). At the same time, traits that seem to be more character and virtue-related, such as Agreeableness and Conscientiousness, have a much clearer and more consistent relationship with religiosity, while Openness to experience seems to distinguish between a tendency toward traditional religiosity and modern spirituality (Lace et al., 2020; Saroglou, 2002; Saroglou & Muñoz-García, 2008). Löckenhoff and colleagues (2009) obtained results somewhat consistent with these insights, finding that among people living with HIV spirituality/religiousness was more strongly associated with Conscientiousness, Agreeableness, and Openness, rather than Extraversion and Neuroticism. Nevertheless, little is known about the relationship between personality and spiritual well-being when it comes to patients treated for breast cancer. Exploring this question was one of the aims of the current study.

Spiritual well-being and psychological flexibility

One of the constructs that is often associated with mental health and well-being is psychological flexibility. This concept originates from Acceptance and commitment therapy (ACT) and reflects the ability of an individual to be fully in contact with the present moment, including unpleasant private events, such as thoughts, feelings, and bodily sensations, while at the same time engaging in behaviors which are consistent to one's personal goals and values (Bond et al., 2011). On the other hand, psychological inflexibility occurs when individual attempts to avoid these unwanted personal experiences, which leads to a paradoxical effect, increasing psychological and emotional distress in return (Hayes et al., 2004). It has already been shown that psychological flexibility is a relevant resource for adaptive coping with adverse experiences (Polizzi et al., 2020), as well as being a protective factor regarding anxiety, depression, and negative affect in breast cancer patients (Berrocal Montiel et al., 2016). Some authors have even addressed the possibilities of the potential relationship between ACT and spirituality (Kaplaner, 2019). However, there is still a significant lack of empirical research on the relationship between psychological flexibility as a core ACT concept, and spiritual well-being, especially in the population of breast cancer patients.

Spiritual well-being and social support

Although the link between spiritual well-being, personality traits, and psychological flexibility in breast cancer lacks sufficient research, it has been well established that

social support is a crucial coping resource for breast cancer patients, being positively associated with quality of life, emotional well-being, and survival (Fong et al., 2017; Kroenke et al., 2006; Wang et al., 2023). Furthermore, previous studies have demonstrated a positive relationship between social support and meaning in life (Jadidi & Ameri, 2022) and post-traumatic growth in breast cancer patients (Fekih-Romdhane et al., 2022; Yeung & Lu, 2018). It has also been found that social support is negatively related to symptoms of depression and anxiety in women with breast cancer (Du et al., 2022; Hajian-Tilaki et al., 2022). Still, the role of social support in the spiritual well-being of breast cancer patients is yet to be fully understood. Therefore, one of the goals of this study was to shed more light on this question.

Aims of the study

The body of previous literature leaves an impression of scarce insight into the association between personality traits related to spirituality/religiosity, psychological flexibility, social support, and spiritual well-being of breast cancer patients. The problem of the current study revolved around the intention to address this perceived gap in the existing literature. Consequently, the aims of this research were multiple: 1) to examine which aspects of spiritual well-being measured in our study were the most/the least prominent among breast cancer patients, 2) to explore predictors (with emphasis on personality traits, psychological inflexibility, and perceived social support) of various aspects of spiritual well-being in breast cancer patients, and 3) to examine if there was a mediating role of perceived social support between personal characteristics of patients, and their spiritual well-being.

Method

Sample and procedure

The research was conducted on 64 women, aged from 33 to 79 years (M_{age} = 58.36, *SD* = 11.30) while undergoing radiation therapy at the Oncology Institute of Vojvodina, Serbia. Inclusion criteria for the study were that this was the first breast cancer onset, that participants were not previously diagnosed with any other malignant disease, and that at the time of the study, the presence of metastasis was not detected. Regarding education, 26.6% of participants completed elementary school, 54.7% secondary school, 7.8% a college, while 11% had a university degree. Women mainly reported that they were retired (48.4%), after which the most represented were employed participants (26.6%), and finally, those unemployed (25%). In terms of marital status, 71.9% of participants had a partner, while 28.1% were single, divorced or widowed. Before radiation treatment, 18.8% of women received neoadjuvant chemotherapy and 50% of them received adjuvant chemotherapy. All participants had undergone breast cancer surgery. As for comorbidities,

62.5% of participants reported that they had nonmalignant comorbid conditions, such as hypertension, diabetes, cardiovascular disease, etc.

This cross-sectional research was conducted with the approval of the ethical committee of the Oncology Institute of Vojvodina, under ethical clearance number 4/17-789/2-8. The data were collected from patients at the beginning of their entry at the Clinic for Radiotherapy within the Oncology Institute of Vojvodina. Participants were recruited through a combination of convenient and purposeful sampling, respecting the principles of voluntary participation. Before filling in the questionnaires, all participants were informed about the main goals of the study, and they signed an informed consent.

Instruments

Spiritual well-being was measured with the subscale from the **Quality of Life Instrument – Breast Cancer Patient Version** (QOL-BC; Ferrell et al., 2012), based on a previous version of the QOL instrument developed by researchers at the City of Hope National Medical Center (Ferrell et al., 1995). The QOL-BC is a 46-item instrument, covering physical, psychological, social, and spiritual well-being. The subscale which measures spiritual well-being consists of 7 items, presented on a 10-point scale. Participants are asked to report the following: how important for them are religious activities such as praying or going to church/temple, how important for them are other spiritual activities such as meditation/praying, how much their spiritual life changed after the cancer diagnosis, how much uncertainty do they feel about the future, to what extent have they made positive changes in life due to the illness, do they have a sense of purpose/mission for life or a reason for being alive, and finally, how hopeful do they feel. Cronbach's alpha for the subscale on the sample in our study is .642. As internal consistency is acceptable, but clearly points out that this subscale contains some highly heterogeneous concepts, we rather used item scores as separate variables, instead of a total score. Additionally, we hoped that this approach would enable a more detailed and useful insight into determinants of various aspects of spiritual well-being in breast cancer patients.

Agreeableness, Conscientiousness, and Openness to experience were assessed with **The Big Five Inventory** (BFI; John et al., 1991). The BFI consists of 44 five-point Likert scale items that measure the Big Five dimensions of personality. The Agreeableness subscale includes 9 items, measuring characteristics such as compliance, tender-mindedness, forgiveness, altruism, modesty, etc. The Conscientiousness subscale contains 9 items covering tendency toward order, self-discipline, being efficient, etc. The Openness to experience subscale has 10 items and refers to the facets such as ideas/curiosity, fantasy, aesthetics, a wide range of interests, excitability, and unconventional values, among others (John & Srivastava,

1999). Cronbach's alpha for these subscales on the sample in our study was .816, .747, and .840 respectively. We focused on those personality traits that previous literature suggests are more relevant for understanding individual differences concerning religion and spirituality.

Psychological inflexibility was evaluated with the **Acceptance and Action Questionnaire** (AAQ II; Bond et al., 2011; Serbian adaptation Lazić et al., 2013). The AAQ II is a measure of psychological inflexibility, which reflects a tendency toward experiential avoidance of unpleasant private events such as unwanted thoughts, emotions, or bodily sensations. Serbian adaptation of the AAQ II consists of 8 items on a seven-point scale. A higher score indicates a greater level of psychological inflexibility. Cronbach's alpha for this instrument on the sample in the current research was .917.

Social support was measured with **The Medical Outcomes Study Social Support Survey** (MOS-SSS; Sherbourne & Stewart, 1991; Serbian adaptation Jovanović & Gavrilov-Jerković, 2015). The scale consists of 19 Likert-type items, measuring perceived, rather than received social support (Sherbourne & Stewart, 1991). The MOS-SSS covers four dimensions of functional social support: emotional/ informational support, instrumental support, positive social interaction, and affective support, while the total score, which was used for the purpose of this research, can also be calculated. Cronbach's alpha on the sample in our study is .969.

Data analysis

First, the descriptive statistics indicators and Pearson's correlation coefficients were calculated, to obtain basic information about the characteristics and relationships between the variables. One-way MANOVA was used to investigate potential differences in spiritual well-being domains with respect to demographic and clinical variables. Afterward, the repeated measures ANOVA with Greenhouse-Geisser correction was conducted, followed by the post hoc analysis with Bonferroni adjustment, in order to explore if there were statistically significant differences in the manifestations of various facets of spiritual well-being among breast cancer patients. Furthermore, we were interested in investigating predictors of diverse spiritual well-being domains, therefore 7 multiple regression analyses were conducted, with each aspect of spiritual well-being set as a criterion variable, while predictors in all models were age, Agreeableness, Conscientiousness, Openness to experiences, psychological inflexibility, and social support. Data were previously checked for multicollinearity. VIF values ranged from 1.063 to 3.114, which indicates an acceptable result according to a more conservative threshold of VIF > 5 being considered problematic for smaller samples (James et al., 2017). Finally, based on the results obtained through regression analysis, relying on the approach postulated

by Baron and Kenny (1986), we hypothesized a mediation model in order to explore whether there was a mediating role of perceived social support between personal characteristics of patients and sense of meaning and purpose in life as an indicator of spiritual well-being. A mediation model (4 predictors x 1 mediator x 1 outcome) was tested, with Agreeableness, Conscientiousness, Openness to experiences, and psychological inflexibility as predictor variables, perceived social support as a mediator, and sense of purpose or reason for being alive as an outcome variable. According to Cohen (1992) minimum sample size required to detect an R^2 value of 0.25 in any endogenous variable for a significance level of 5%, with statistical power of 80% and a number of independent variables in the model being 5 is 45 (sample in our research was $N = 64$). Data were analyzed using jamovi version 2.3.28 (The jamovi project, 2023).

Results

Descriptive measures for all variables in our study, along with Pearson correlations, are shown in Table 1 and Table 2. It can be seen in Table 1 that values of skewness and kurtosis for all variables fall around the acceptable range of -2 and +2 (George & Mallery, 2010). Regarding spiritual well-being, it turned out that participants manifest the lowest score on changes in spiritual life, while they score the highest on purpose/reason for being alive and hope. As can be seen in Table 2, Agreeableness correlates positively and significantly with religious activities, purpose/reason for being alive, and hope. Conscientiousness is positively related to religious activities, positive changes in life, and purpose/reason for being alive. Openness to experience correlates positively and significantly with positive changes in life and hope. Psychological inflexibility is positively and significantly related to spiritual life changes, and negatively to uncertainty, purpose/reason for being alive, and hope, while social support correlates positively and significantly with purpose/reason for being alive and hope. We also analyzed the relationship of demographic variables with different aspects of spiritual well-being. Age of participants correlated significantly and negatively with making positive changes in life due to the illness ($r = -.293$, $p = .019$), and with hope ($r = -.246$, $p = .050$), meaning that younger patients are more likely to experience positive life changes, and remain more hopeful. Furthermore, we explored possible differences in spiritual well-being domains regarding demographic/clinical variables such as work and marital status, chemotherapy status, and comorbid health conditions. One-way MANOVA showed that no significant differences in spiritual well-being were detected regarding work status, $F(14, 112) = .872$, $p = .591$, $\eta_p^2 = .098$, nor comorbidity, $F(7, 56) = 1.175$, $p = .332$, $\eta_p^2 = .128$. Marginally significant differences were found regarding chemotherapy status, $F(7, 56) = 2.172$, $p = .051$, $\eta_p^2 = .213$, with significant differences for uncertainty, $F(1, 62) = 4.374$, $p = .041$, $\eta_p^2 = .066$, meaning that patients who did not receive chemotherapy reported higher

levels of uncertainty about the future (M = 6.875, SD = 2.871), compared to those who did (M = 5.406, SD = 2.746). In addition, differences were found for positive changes in life due to the illness, $F(1, 62) = 4.621$, $p = .035$, $\eta_p^2 = .069$, with patients who received chemotherapy reporting greater levels of positive changes (M = 6.219, SD = 2.915), than those who did not (M = 4.406, SD = 3.774). Eventually, significant differences were obtained regarding marital status, $F(7, 56) = 2.310$, $p = .038$, $\eta_p^2 = .224$, specifically, for participation in religious activities such as praying or going to church/temple, $F(1, 42) = 9.136$, $p = .004$, $\eta_p^2 = .128$, with married women achieving higher scores (M = 6.500, SD = 3.953), than women who were single, divorced or widowed (M = 3.389, SD = 2.933).

Table 1.
Descriptive measures for spiritual well-being domains, personality traits, psychological inflexibility, and perceived social support

Variables	*M*	*SD*	*Sk*	*Ku*
Religious activities	5.625	3.934	-0.204	-1.559
Spiritual activities	5.375	3.885	-0.137	-1.575
Spiritual life changed	3.953	3.653	0.311	-1.421
Uncertainty	6.141	2.883	-0.284	-0.935
Positive changes in life	5.312	3.468	-0.267	-1.232
Purpose/Reason for being alive	8.359	2.242	-1.557	2.288
Hope	8.969	1.553	-1.679	2.132
Agreeableness	38.547	5.240	-0.625	-0.084
Conscientiousness	35.812	5.485	-0.111	-0.868
Openness to experience	36.328	7.107	-0.386	-0.079
Psychological inflexibility	21.234	10.512	0.675	-0.426
Perceived social support	82.172	11.541	-1.715	2.128

Table 2.
Pearson correlations between spiritual well-being domains, personality traits, psychological inflexibility, and perceived social support

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Religious activities (1)											
Spiritual activities (2)	.680**										
Spiritual life changed (3)	.413**	.502**									
Uncertainty (4)	-.076	-.012	-.304*								
Positive changes in life (5)	.308*	.149	.308*	.034							
Purpose/Reason for being alive (6)	.302*	.185	-.037	.191	.065						
Hope (7)	.320**	.257*	.134	.221	.302*	.441**					
Agreeableness (8)	.388**	.143	.034	.072	-.013	.414**	.260*				
Conscientiousness (9)	.274*	.048	.099	-.010	.250*	.328**	.186	.759**			
Openness to experience (10)	.109	-.032	.025	.043	.284*	.178	.358**	.458**	.578**		
Psychological inflexibility (11)	-.142	.045	.310*	-.301*	-.106	-.273*	-.253*	-.406**	-.369**	-.318*	
Perceived social support (12)	.125	-.057	-.144	.210	.133	.573**	.271*	.359**	.190	.346**	-.442**

Note. * $p < .05$, ** $p < .01$.

Repeated measures ANOVA with Greenhouse-Geisser correction yielded statistically significant differences regarding various aspects of spiritual well-being, $F(3.954, 249.130) = 25.065$, $p < .001$, $\eta_p^2 = .285$. Results of the post hoc analysis with a Bonferroni adjustment have shown that breast cancer patients score significantly higher on purpose/reason for being alive and hope compared to all other spiritual well-being domains ($p < .001$).

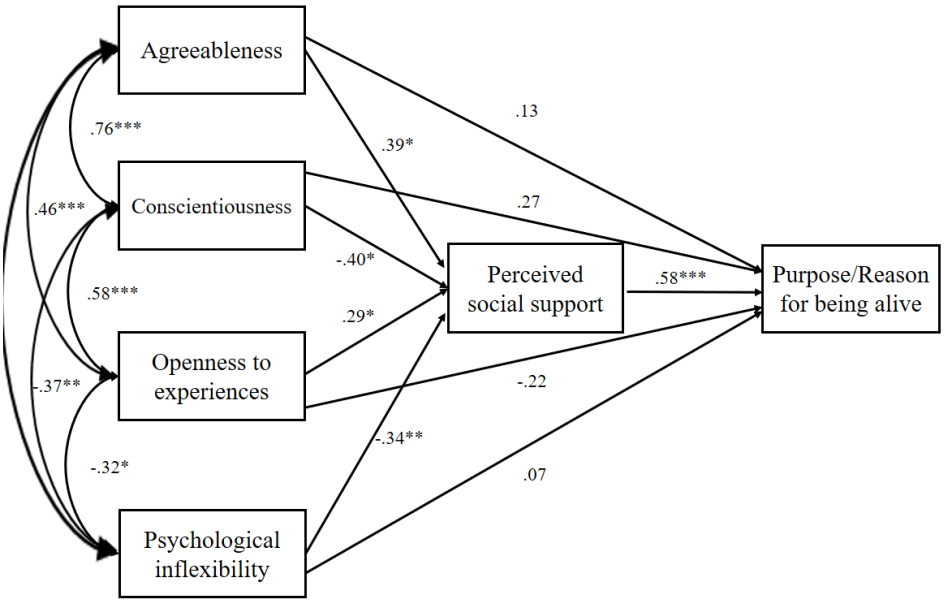
Table 3 shows the results of multiple regression analysis for different aspects of spiritual well-being in women with breast cancer. We can see that, among seven domains, statistically significant models were obtained for: positive changes in life (model explains about 31% of the variance – younger, less agreeable, that is more antagonistic, and more conscientious patients are more likely to experience positive changes in life after the illness), purpose/reason for being alive (model explains about 42% of criterion variance – patients with greater perceived social support manifested greater sense of purpose and reason for being alive), and for hope (model explains around 26% of criterion variance – younger and more open patients tend to be more hopeful).

Table 3.
Multiple regression analysis results for seven aspects of spiritual well-being

Model	Criterion variable	F	df_1	df_2	p	R^2	Predictors	**β**	p
1.	Religious activities	1.902	6	57	.096	.167			
2.	Spiritual activities	.517	6	57	.793	.052			
3.	Spiritual life changed	1.874	6	57	.101	.165			
4.	Uncertainty	1.275	6	57	.283	.118			
5.	Positive changes in life	4.194	6	57	.001	.306	Age	-.308	.009
							Agreeableness	-.581	.002
							Conscientiousness	.477	.017
							Openness to experience	.231	.114
							Psychological inflexibility	-.047	.721
							Perceived social support	.139	.302
6.	Purpose/Reason for being alive	6.985	6	57	.000	.424	Age	-.083	.428
							Agreeableness	.124	.457
							Conscientiousness	.251	.163
							Openness to experiences	-.199	.136
							Psychological inflexibility	.054	.652
							Perceived social support	.571	.000
7.	Hope	3.316	6	57	.007	.259	Age	-.293	.016
							Agreeableness	.187	.323
							Conscientiousness	-.281	.168
							Openness to experiences	.389	.011
							Psychological inflexibility	-.153	.265
							Perceived social support	.045	.744

Finally, we were interested to examine if there was a mediating role of perceived social support between personal characteristics such as Agreeableness, Conscientiousness, Openness to experiences and psychological inflexibility, and purpose/reason for being alive, as an indicator of spiritual well-being. The results of the analysis are shown in Figure 1 and in Table 4. It can be seen in Table 4 that statistically significant indirect effects were obtained for all predictors in the model. As direct effects were insignificant, full mediation of perceived social support is indicated (Kenny & Judd, 2014). The results suggest that patients who are more agreeable and open to experience, through greater perceived social support, achieve a higher sense of purpose or reason for being alive. At the same time, patients who are conscientious and psychologically inflexible perceive less social support, which results in a diminished sense of purpose or reason for being alive.

Figure 1.
Mediation model plot – mediating role of perceived social support



Note. Betas are completely standardized effect sizes, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4.

Mediation analysis effects

Predictors	Mediator	Outcome	Effects	Estimate	S.E	β	*Z*-value	*p*	95% C.I.	
									lower	upper
Agree-ableness	Social support	Purpose/ Reason for being alive	Direct	0.053	0.067	0.125	0.799	0.424	-0.078	0.185
			Indi-rect	0.097	0.045	0.227	2.174	0.030	0.010	0.185
			Total	0.151	0.076	0.352	1.974	0.047	0.001	0.300
Conscien-tiousness	Social support	Purpose/ Reason for being alive	Direct	0.111	0.068	0.272	1.638	0.101	-0.022	0.245
			Indi-rect	-0.095	0.045	-0.232	-2.094	0.036	-0.183	-0.006
			Total	0.017	0.078	0.041	0.214	0.831	-0.136	0.169
Openness to experi-ence	Social support	Purpose/ Reason for being alive	Direct	-0.068	0.039	-0.217	-1.768	0.077	-0.144	0.007
			Indi-rect	0.053	0.026	0.168	2.065	0.039	0.003	0.103
			Total	-0.015	0.044	-0.049	-0.346	0.729	-0.102	0.071
Psycho-logical inflexi-bility	Social support	Purpose/ Reason for being alive	Direct	0.014	0.024	0.066	0.583	0.560	-0.033	0.061
			Indi-rect	-0.042	0.016	-0.196	-2.540	0.011	-0.074	-0.010
			Total	-0.028	0.027	-0.130	-1.033	0.301	-0.080	0.025

Discussion

Spiritual well-being is considered to be an important resource for people with the experience of cancer, with a significant role in their life satisfaction, psychological adjustment to illness, and quality of life (Jafari et al., 2010; Kamijo & Miyamura, 2020; Wnuk, 2022; Yilmaz & Cengiz, 2020). Given that knowledge about correlates and mechanisms of spiritual well-being in breast cancer is still scarce, especially when it comes to the relationship with personality traits, psychological inflexibility, and social support, this study aimed to 1) examine which aspects of spiritual well-being measured in this research were the most/the least prevalent among breast cancer patients, 2) explore predictors of various aspects of spiritual well-being, and 3) investigate if perceived social support mediates the relationship between patients' characteristics and their sense of purpose and meaning in life.

Our results have shown that the most expressed aspects of spiritual well-being among breast cancer patients were the sense of purpose/reason for being alive and

hope. This could possibly indicate that these two aspects are of special importance for patients in the process of coping with breast cancer. Our results could be in accordance with statements of Scheier & Carver (2001), who argued that patients who adapt well to cancer diagnosis are those who manage to be hopeful, continue to find purpose, and remain engaged in life. Wnuk and colleagues (2012) have shown that purpose in life and hope were positively correlated with happiness and life satisfaction among cancer patients. Therefore, it is of particular importance to meet the spiritual needs of patients in clinical practice, in order to establish holistic support in oncology (Martins et al., 2020). Our finding might be useful in creating psychological support treatments for breast cancer patients, where successful psychological interventions could include specifically designed techniques, aimed at fostering hope and sense of purpose in life, as core resources in spiritual coping.

The relationship between certain aspects of spiritual well-being and demographic/clinical variables also revealed some relevant insights. Thus, patients who received chemotherapy tended to manifest lower levels of uncertainty, and higher levels of positive changes in life due to the illness. It may be that receiving chemotherapy, although psychologically very challenging, might have some positive effects on the spiritual well-being of patients. This finding sheds a rather new light on the psychological outcomes of chemotherapy. Furthermore, married women reported higher scores on participating in religious activities, such as going to church, praying, etc. It may be that having a partner could act as an encouraging factor when it comes to integration into the social community gathered around traditional values, religious practices, and interactions.

Our results regarding personality traits and their relationship with different domains of spiritual well-being among breast cancer patients are consistent with previous findings on non-clinical samples. As demonstrated in earlier studies (Saroglou, 2002; Saroglou & Muñoz-García, 2008), Agreeableness and Conscientiousness do correlate positively with religious aspects of spiritual well-being, which is not the case with Openness to experience (Saroglou, 2002; Saroglou & Muñoz-García, 2008). At the same time, all three personality traits also correlate positively with some of the non-religiously determined facets of spiritual well-being, such as positive changes in life, purpose/reason for being alive, and hope.

As for the predictors of different aspects of spiritual well-being, significant results were obtained for positive changes in life, purpose/reason for being alive, and hope. It turned out that younger, more conscientious, and, interestingly, less agreeable individuals, are more likely to make positive changes in life due to the illness. It has already been shown that younger age in women with breast cancer predicted effective stress management (Ozdemir & Tas Arslan, 2018). It is also possible that more organized, efficient, self-disciplined women are more likely to establish better compliance with medical professionals, and being

younger may help them to adopt more easily new, health-promoting habits. At the same time, it seems that those women who are nonconformists, ready to set healthy boundaries in social situations, and to give priority to their own needs, are more likely to make positive changes in life after the experience of illness. This finding is of special relevance in the context of previous literature which indicates that self-care behaviors such as preventive practices and taking care of own physical, psychological, and social needs are of great importance for the quality of life in breast cancer patients (Abdollahi et al., 2022; Chin et al., 2021). Sense of purpose or reason for being alive was positively predicted only by perceived social support. This result highlights the crucial importance of interpersonal relationships for breast cancer patients. Our finding is in line with the previous studies conducted on different samples; for example, one study showed that social support is strongly related to meaning in life in the elderly (Krause, 2007), while it was also demonstrated that social support for the terminally ill patients provided by close relatives had a positive influence on patients' meaning in life and life satisfaction (Dobríková et al., 2015). Similar results were observed in the sample of women with breast cancer, where a strong positive correlation between social support and meaning in life was found (Jadidi & Ameri, 2022). Also, social support has been found to be of key importance for effective stress management in women with the experience of breast cancer (Ozdemir & Tas Arslan, 2018). Our finding underscores the necessity of evaluating and addressing perceived social support of breast cancer patients during psychosocial assessment and support programs, in order to empower essential aspects of spiritual well-being. Finally, our results demonstrated that patients who are younger and more open to experience are more likely to be hopeful. This finding indicates that younger patients with personality characteristics such as curiosity, wide interests, and imaginativeness are more likely to remain hopeful in the face of adversities. Thus, it might be useful to evaluate Openness to experience among patients, as a potentially relevant factor for mental health and spiritual well-being outcomes.

Interestingly, psychological inflexibility was not found to be a significant predictor of any of the spiritual well-being domains when other variables such as age, personality, and perceived social support were taken into account. However, we can see that psychological inflexibility correlates negatively with the purpose/reason for being alive and hope. These results are in accordance with previous literature, showing that psychological inflexibility and avoidance of thoughts are related to worse mental health outcomes and psychological distress in breast cancer patients (González-Fernández et al., 2017), and in cancer patients in general (Brown et al., 2020). Meanwhile, an interesting finding emerged with the fact that psychological inflexibility correlates negatively with uncertainty - more psychologically inflexible patients report less uncertainty. Perhaps this is because psychologically flexible individuals allow themselves to be in contact with both pleasant and unpleasant inner content, such as worries, fears, and insecurities. In addition, our results indicate that psychological inflexibility correlates positively with changes in spiritual life,

although the applied questionnaire does not provide the information on what kind of change is in question, or whether people experience that change in a positive or negative way. Therefore, this should be further explored in future studies.

Finally, our results showed that patients who are more agreeable and more open to experience, through greater perceived social support, achieve a higher sense of purpose or reason for being alive. On the other hand, patients who are conscientious and psychologically inflexible perceive less social support, which results in a diminished sense of purpose. It seems that psychological determinants related to rigidity, inflexibility, lack of adaptability, and acceptance of constantly changing environment, are risk factors for perceiving less social support, which leads to a diminished sense of purpose in life. This finding is of great importance, as it draws attention to the fact that perceived social support might be an underlying mechanism in the relationship between personality and spiritual well-being – specifically the sense of purpose and meaning in life. Social support could modulate mental health outcomes, with the possibility of diminishing the negative psychological consequences of breast cancer, as Fekih-Romdhane and colleagues (2022) argue. Specific ACT and mindfulness-based techniques aimed at the enhancement of flexibility, acceptance, and openness could be employed, together with encouraging patients to openly and directly express their needs, seek support from those who are willing to provide it and recognize the support they receive (e.g. thank you lists, gratitude journals, etc).

Limitations and recommendations for future research

Lastly, besides many useful insights, our study has also some important limitations, such as a relatively small sample size and cross-sectional design, which hinders drawing conclusions about causality, and rather leaves space for generating hypotheses around causal relationships. Future studies could examine the role of social support in spiritual well-being among breast cancer patients from a longitudinal perspective, taking into account the relationship of patients with spiritual/religious content prior to disease. This is especially significant having in mind findings that negative religious coping by those who previously had minimal religious/spiritual engagement may lead to diminished well-being, and that spiritual/religious struggle in early phases of survivorship may be associated with reduced well-being, which might be resolved over time (Schreiber & Brockopp, 2012). These changing trajectories in spiritual well-being among breast cancer patients could be the focus of future studies. Furthermore, to gain more subtle and sophisticated insight into the relationship between spiritual well-being and personality, future research could focus on other personality models or on examining Big Five personality traits on facet rather than on factor level, as was done in some studies conducted on nonclinical samples (Saroglou & Muñoz-García, 2008). Finally, as this research is quantitative, subsequent studies could employ a

qualitative or mixed-method approach to gain a deeper understanding of patients' personal experiences – thoughts, feelings, and behaviors related to spiritual well-being and perceived social support. Researchers could use some more innovative approaches such as online photovoice, online interpretative phenomenological analysis, or community-based participatory research (Dari et al., 2023; Doyumgaç et al., 2021; Subasi, 2023), to set the ground for more effective healthcare services and holistic psychosocial support, tailored to the unique needs of breast cancer patients.

Conclusions

- Spiritual well-being is of great importance for patients who are being treated for breast cancer, especially those aspects related to the purpose/reason for being alive and hope. This fact should not be overlooked by healthcare providers and should be considered while planning and implementing programs of psychosocial support for breast cancer patients, in the manner of holistic approach to medical care.
- Personality traits, quality of social network, demographic and clinical factors should be taken into account in screening procedures, in order to detect patients who are at potential risk of developing mental health problems and spiritual distress, so they could be provided with support as early as possible.
- The inclusion of therapeutic techniques that could foster flexibility and openness, and provide patients with skills to establish, cultivate, and recognize supporting interpersonal relationships is of crucial importance, as perceived social support might be an underlying factor that intervenes between the capacity of an individual to be flexible, accepting and open, and sense of purpose and meaning in life.

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