

ORIGINAL ARTICLE

The relationships between fear of cancer recurrence, spiritual well-being and psychological resilience in non-metastatic breast cancer survivors during the COVID-19 outbreak

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Abstract

Objectives: This study examines the relationships between fear of cancer recurrence (FCR), spiritual well-being (SWB) and psychological resilience in breast cancer survivors during the COVID-19 outbreak, and investigates to what extent breast cancer survivors' sociodemographic characteristics affect FCR, SWB and psychological resilience levels.

Methods: The study was conducted at Canakkale University Hospital in Turkey. Included in the study were 82 non-metastatic breast cancer patients whose clinical outcomes were followed-up after primary treatment, but suspended due to the COVID-19 outbreak. FCR, SWB and psychological resilience were assessed using the FCR inventory-short form (FCRI-SF), SWB scale and the brief resilience scale (BRS), respectively.

Results: The mean scores of breast cancer survivors concerning FCR, SWB, and psychological resilience were 17.77 ± 5.38 , 36.20 ± 6.21 and 20.01 ± 4.51 , respectively. A significant negative correlation was noted between the scores of FCR and SWB and psychological resilience ($r = -0.329$, $p < 0.001$ and $r = -0.316$, $p = 0.004$, respectively). Additionally, a significantly positive correlation was identified between psychological resilience and SWB ($r = 0.501$, $p = 0.003$). A hierarchical linear regression analysis with FCRI-SF as the dependent variable, and SWB and BRS as explanatory variables, indicated that SWB affects FCRI-SF scores and is a potential predictor of FCR. A mediation analysis revealed that SWB partially mediated the relationship between psychological resilience and FCR.

Conclusion: Breast cancer survivors with high SWB and psychological resilience scores experience less FCR, despite their failure to maintain the medical follow-up due to the COVID-19 outbreak. Efforts should be made to increase the psychological resilience and SWB of patients diagnosed with breast cancer.

KEYWORDS

breast neoplasms, disease outbreaks, fear, psychological, recurrence, resilience, spirituality

1 | BACKGROUND

Breast cancer is the most common malignancy among women.¹ Advances in early diagnosis and treatment have led to continuous increases in survival rates.² Fear of cancer recurrence is defined as "Fear, worry or concern relating to the possibility that cancer will come back or progress".³ Previous observations and evidence have demonstrated that almost all breast cancer survivors, even those with a good prognosis, report some degree of fear of cancer recurrence (FCR).^{4,5} Although FCR is a long-term, delayed and critical problem among cancer survivors,⁴ moderate FCR levels are expected to occur. On the other hand, there may be changes in FCR over time during the course of follow-up. For example, hearing of someone else's diagnosis, exposure to media information, regular check-ups or appointments with physicians can trigger and increase FCR levels,⁵ Whereas periodic follow-ups have been reported to decrease FCR.⁶ Disruption of periodic follow-up in patients who cannot access health services for any reason may increase concerns about the recurrence of the disease. Younger age, female gender, higher education level, presence and severity of physical symptoms, and psychological distress have been associated with higher FCR levels.^{4,5,7} The announcement of the pandemic by the World Health Organization (WHO) on March 11, 2020⁸ created a unique situation for cancer patients, preventing easy access to healthcare and medical follow-ups, and delaying ongoing treatments. There have been no studies to date in literature investigating the association between the inability to access healthcare and FCR, and so how this condition is affecting FCR remains unknown. With the present study, it is aimed to fill the information gap in this field.

The failure to maintain medical follow-ups due to the COVID-19 outbreak can increase FCR in cancer survivors, and may lead to a traumatic, devastating and stressful situations. Individuals develop their own strategies to cope with such situations. The ability to mentally or emotionally deal with an emergency crisis, or to quickly return to the pre-crisis status is known as psychological resilience.⁹ People with high resilience cope with traumatic events more effectively and experience lower levels of psychiatric symptoms than to those with low resilience.¹⁰ Accordingly, resilience may help individuals to experience less FCR in its ability to reduce psychiatric symptoms.

Spirituality refers to the feeling of connectedness to a transcendental phenomenon such as the universe, god or the meaning of life. Whether or not linked to religion, this connectedness is imperative for societal health.¹¹ Often, when individuals are faced with serious and life-threatening adversities, they turn to a higher power or religion as a way to cope.¹² There have been many studies in literature suggesting that religion and spirituality are additional key factors that have a positive effect on those suffering from diseases, and facilitate easier coping.^{12,13} Various mechanisms, such as coping styles, locus of control, social support and physiological mechanisms, have been put forward to explain the effect of spirituality on mental health.¹³ On the other hand, it has been found that religious coping is widely used in cancer patients, but has not been stable over time.^{12,14} It is reported that support programs with a spiritual basis can improve general coping skills.^{15,16} In a randomized controlled trial, it was reported that

mindfulness-based cognitive therapy that enhances spirituality decreased FCR significantly when compared to a control group.¹⁷

Previous studies have reported the moderating and mediating effects^{18,19} of both psychological resilience and spirituality on the relationship between increased stress and negative outcomes such as depression, anxiety and decreased life satisfaction.^{20,21} Although both spirituality and psychological resilience^{22,23} are known to play an important role in individuals' attempts to cope with adverse events, there are no studies investigating the mediating and moderator roles of these variables on their relationship with FCR. Accordingly, this study evaluates whether there is a relationship between sociodemographic data and psychological resilience and spiritual well-being (SWB) with FCR, and the mediating and moderator roles of these variables on FCR in breast cancer survivors during the COVID-19 outbreak. Smoking status was also included in the analysis of sociodemographic data because of the high FCR levels reported in a few number of studies in smokers.^{5,7} We hypothesized that patients who are unable to access healthcare during the pandemic would report a greater FCR, and that spirituality and psychological resilience would be significant determinants of FCR.

2 | METHODS

2.1 | Design and setting

A descriptive cross-sectional online survey was conducted at the Canakkale Onsekiz Mart University Hospital on May 10–20, 2020. The study was granted approval by the Canakkale Onsekiz Mart University Ethics Committee (Number: 2020-07, May 7 2020).

2.2 | Participants

A screening of the medical records from between October 2015 and May 2020 revealed 354 non-metastatic women breast cancer patients, and those who completed all treatments aside from hormonal remedies until January 2020 were determined. Patients who were over the age of 50 were excluded from the study based on the prediction that mobile survey application skills will decrease²⁴ over the age of 50 ($n = 260$), as were those whose planned treatment had not yet been completed ($n = 2$), those with recurrent disease ($n = 1$) and those lacking an inadequacy of literacy to complete the survey ($n = 1$). Of the remaining 90 eligible patients, six could not be contacted and two patients declined to participate.

2.3 | Variables

The primary outcome variable of the study were the Fear of Cancer Recurrence Inventory-Short Form scores. Further data were collected in the form of SWB and BRS scale scores, and the demographic characteristics of the participants (smoking status, educational

background, level of income and marital status). Age variable was not included in sociodemographic characteristics because patients over 50 years of age were not included in the study. Self-reported income was recorded as "low" if less than expenses, "middle" if equal to costs, and "high" if higher than expenses.

The FCRI consists of 42 items, scored on a 5-point (0–4) Likert scale evaluating seven components of FCR: triggers (nine items), severity (nine items), psychological distress (four items), coping strategies (nine items), functional impairment (six items), insight (three items), and reassurance (three items).²⁵ Strong correlations between the severity factor and the total FCRI score suggest the suitability of the severity subscale as a brief FCR assessment, including screening.²⁵ Cut-off values of >12 and ≤ 12 are used to differentiate between high and low FCR scores.²⁶ The Turkish validity and reliability study of the scale, conducted in 2016, identified Cronbach's alpha coefficients of 0.96 and 0.97 for the general inventory and severity subcomponents, respectively.²⁷ Cronbach's alpha coefficient was found to be 0.74 in the present study.

The SWB scale, developed by Peterman et al. in 2002,²⁸ comprises 12 five-point (0–4) Likert-type questions within the three subscales of meaning (4 items), peace (4 items) and faith (four items). Each of the subscales has a total score range of 0–16, meaning an overall score range for the full scale of 0–48. A higher score signifies greater SWB. The scale was adapted into Turkish by Aktürk et al. in 2017,²⁹ demonstrating a Cronbach's alpha coefficient of 0.8. The Cronbach's alpha coefficient was found to be 0.82 in the present study.

The six-item brief resilience scale was developed by Smith et al. in 2008,³⁰ and is scored on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree), with some reverse coded items. The Turkish validity and reliability study of the scale was conducted by Doğan in 2015,³¹ revealing a Cronbach's alpha coefficient of 0.83. The Cronbach's alpha coefficient was found to be 0.74 in the present study.

2.4 | Procedure

Using the contact information in the patient files, all eligible patients were called by the primary researcher by phone and invited to participate after being explained the nature of the study. Verbal approval for the application of the survey was obtained from all participants by phone. All were free to join the research, and were reassured that participation would not affect their treatment/follow-up process. Finally, individualized links for the online data collection forms were sent to the mobile phones of the consenting patients.

2.5 | Statistics

The data were analyzed using IBM SPSS Statistics (Version 25.0. Armonk, NY: IBM Corp.). A two-tailed p -value of <0.05 was considered statistically significant. The results were presented as frequencies, percentages, means and standard deviations (SD). A

Kolmogorov-Smirnov test or Shapiro-Wilk test was conducted to check whether the numerical variables were normally distributed. The total score of each participant for all scales was calculated. To compare the outcome variables concerning demographic features, parametric (t -test or one-way ANOVA) or non-parametric (Mann-Whitney or Kruskal-Wallis) tests were used. Correlations between numerical variables were assessed using Pearson or Spearman coefficients. A hierarchical linear regression analysis was used to investigate the independent effects of the scales on the outcome variable FCR. To assess the mediating role of SWB on the relationship between psychological resilience and FCR, the mediation analysis described by Preacher and Hayes³² was conducted. Bootstrap estimation methods with 5,000 bootstrap samples were employed, and biases were corrected at 95% confidence intervals (CIs) to assess the indirect effect of each variable. The absence of zero in the CI of the indirect effect indicated that the indirect effect was significant at a level of 0.05.

3 | RESULTS

3.1 | Participants

Data of 82 patients were analyzed. High FCR was detected in 84.1% of the participants. The participants were aged between 33 and 50 years with a mean age of 43.2 ± 4.9 years. The majority of participants were married (85.4%), non-smokers (73.2%), aged 43–50 years (63.4%) and with low incomes (42.7%). The mean FCR inventory-short form (FCRI-SF), SWB and BRS scores were 17.77 ± 5.38 , 36.20 ± 6.21 and 20.01 ± 4.51 , respectively. Descriptive features of the patients are presented in (Table 1).

3.2 | Hypothesis tests

When the sociodemographic characteristics of the breast cancer survivors and their FCRI-SF, SWB and BRS scores were compared, no significant association was identified (Table 1). However, significant correlations were observed between the FCRI-SF, SWB and BRS scores (Table 2).

While a positive relationship was identified between SWB and BRS ($r = 0.501$, $p < 0.001$), FCRI-SF demonstrated negative correlations with both BRS and SWB ($r = -0.316$, $p = 0.004$, and $r = -0.329$, $p = 0.003$, respectively). A hierarchical linear regression analysis with FCRI-SF as the dependent and SWB and BRS as explanatory variables, it showed that SWB affects FCRI-SF scores (Table 3).

In a mediation analysis, SWB played a mediating role in the relationship between psychological resilience and FCR. The results revealed psychological resilience and SWB to be negatively associated with FCR ($\beta = -0.32$, $p = 0.001$; $\beta = -0.22$, $p = 0.04$ respectively; Figure 1), whereas psychological resilience was positively associated with SWB ($\beta = 0.7$, $p = 0.00001$). Furthermore, the effect of SWB on FCR, remained significant after controlling for BRS (Table 3). The

TABLE 1 Comparison of total mean scores of the short form of FCRI, SWB scale and BRS according to the sociodemographic characteristics of the patients

| | <i>n</i> | % | FCRI-SF (mean ± SD) | SWB (mean ± SD) | BRS (mean ± SD) |
|---------------------|----------|------|---------------------|--------------------|--------------------|
| Mean | 82 | | 17.77 ± 5.38 | 36.20 ± 6.21 | 20.01 ± 4.5110-30 |
| Min-max | | | 3-31 | 21-48 | 10-30 |
| FCR ≤ 12 | 13 | 15.9 | | | |
| FCR > 12 | 69 | 84.1 | | | |
| Smoker | 19 | 26.8 | 18.37 ± 4.59 | 37.42 ± 6.55 | 21.53 ± 4.93 |
| Non-smoker | 63 | 73.2 | 17.59 ± 5.62 | 35.83 ± 6.12 | 19.56 ± 4.31 |
| <i>P</i> | | | 0.583 ^a | 0.176 ^d | 0.126 ^d |
| Married | 70 | 85.4 | 18.03 ± 5.45 | 36.73 ± 5.89 | 20.06 ± 4.61 |
| Single | 12 | 14.6 | 16.25 ± 4.96 | 33.08 ± 7.37 | 19.75 ± 4.04 |
| <i>P</i> | | | 0.293 ^a | 0.060 ^a | 0.895 ^d |
| Low income | 35 | 42.7 | 17.71 ± 5.62 | 37.09 ± 6.40 | 20.06 ± 5.21 |
| Middle income | 29 | 35.4 | 18.90 ± 5.57 | 36.38 ± 5.11 | 19.38 ± 4.28 |
| High income | 18 | 21.9 | 16.06 ± 4.30 | 34.17 ± 7.29 | 20.94 ± 3.29 |
| <i>P</i> | | | 0.215 ^b | 0.370 ^c | 0.519 ^c |
| Primary education | 30 | 36.6 | 17.70 ± 6.19 | 36.43 ± 5.92 | 19.13 ± 4.55 |
| Secondary education | 26 | 31.7 | 18.81 ± 5.13 | 37.27 ± 5.16 | 19.92 ± 4.29 |
| Higher education | 26 | 31.7 | 16.81 ± 4.59 | 34.85 ± 7.39 | 21.12 ± 4.61 |
| <i>P</i> | | | 0.600 ^c | 0.586 ^c | 0.132 ^c |

Abbreviations: BRS, Brief Resilience Scale; FCRI-SF, Short form of Fear of Cancer Recurrence Inventory; SWB, spiritual well-being.

^aStudent *t*-test.

^bOne-way ANOVA.

^cKruskal-Wallis.

^dMann-Whitney *U* test.

TABLE 2 Correlations between FCRI-SF, SWB, and BRS scores

| | | BRS | SWB |
|---------|---------------------|--------|---------------------------|
| SWB | Spearman's <i>r</i> | 0.501 | |
| | Sig. (2-tailed) | <0.001 | |
| FCRI-SF | Spearman's <i>r</i> | -0.316 | Pearson's <i>r</i> -0.329 |
| | Sig. (2-tailed) | 0.004 | 0.003 |

Abbreviations: BRS, Brief Resilience Scale; FCRI-SF, Short form of Fear of Cancer Recurrence Inventory; SWB, spiritual well-being.

estimated indirect effect of BRS was -0.15 (-0.05 & -0.0004), and zero was not included in the CI of the indirect effect (Figure 1). It was thus concluded that SWB plays a partial mediating role in the relationship between BRS and FCR.

4 | DISCUSSION

In a systematic review of 130 studies,²⁵ most of which included breast cancer survivors, 73% of the cancer survivors reported some

degree of FCR, 49% reported medium-high levels and only 15% reported high level FCR. In the same review, it was reported that the average FCR scores of most survivors were below the midpoint of the scales used.

It is known that psychological discomfort increase the fear of recurrence in follow-up patients recovering from cancer.⁴ This suggests that despite hospital-based periodic follow-up, some patients still experience FCR,⁶ while no signs of disease on follow up examinations are associated with less FCR.³³ For example, it was found that the increased FCR before the mammography appointment in the periodic follow-up decreased compared to the normal control appointment findings, but increased again in the next period.³⁴ We think that the fact that most of the patients in our study reported high FCR was due to concerns about not being able to access healthcare services which were completely suspended in our hospital for a period of 2 months (1 April-31 May 2020) due to the COVID 19 pandemic.

Based on evidence that resilience^{10,22,23,35} and spirituality^{20,22,23,36} are negatively correlated with psychological distress, individuals with higher SWB and psychological resilience are expected to be easier to cope with stressors encountered in life. To

TABLE 3 Computer output of hierarchical linear regression analysis performed with FCR as dependent variable and SWB and BRS as independent variables

| Model | | Unstandardized coefficients | | Standardized coefficients | | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|--|--------|-------|
| | | B | Std. Error | Beta | | | |
| 1 | (Constant) | -1.538E-15 | 0.107 | | | 0.000 | 1.000 |
| | BRS score | -0.274 | 0.108 | -0.274 | | -2.548 | 0.013 |
| 2 | (Constant) | -1.251E-15 | 0.105 | | | 0.000 | 1.000 |
| | BRS score | -0.142 | 0.123 | -0.142 | | -1.158 | 0.250 |
| | SWB score | -0.255 | 0.123 | -0.255 | | -2.078 | 0.041 |

Note: Dependent variable: Short form of Fear of Cancer Recurrence Inventory scores.

Abbreviations: BRS, Brief Resilience Scale; SWB, spiritual well-being.

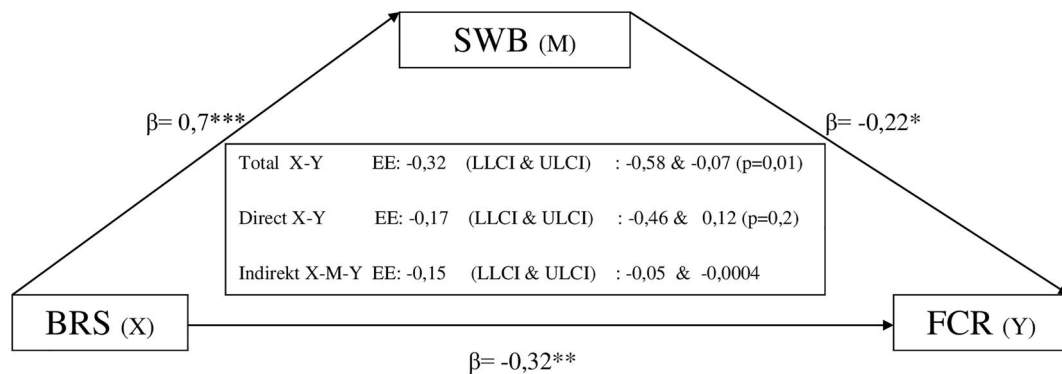


FIGURE 1 Mediation model for BRS, SWB, BSR, with estimated effects and bootstrap confidence interval of mediation analysis. BRS, Brief Resilience Scale; FCRI, Fear of Cancer Recurrence Inventory; SWB, spiritual well-being; LLCI, lower limit of confidence interval; ULCI, upper limit of confidence interval; EE, estimated effects. * $p = 0.04$, ** $p = 0.001$, *** $p = 0.00001$

the best of our knowledge, only four studies of SWB⁴ and only one study of psychological resilience³⁷ have reported a negative correlation with FCR to date. Although there is limited evidence showing the relationship between FCR and SWB and psychological resilience, we can expect that the FCR will be low in individuals with high SWB and BRS. Furthermore, there have been no studies to date evaluating the combined effects of SWB and psychological resilience on FCR, or any studying their interaction with each other in the prediction of FCR. In our study, we partially supported the second part of our hypothesis by showing that SWB are significant predictors of FCR in regression analysis. We performed a hierarchical multiple regression analysis to evaluate the combined effects of SWB and psychological resilience on FCR. Sociodemographic variables that did not show a significant relationship with FCR were not included in the hierarchical regression model. The statistical significance determined between BRS and FCR in the hierarchical model disappeared in favor of BRS when SWB was added to the model. Thus, we showed that when BRS is controlled, SWB significantly predicts FCR (Table 3). This thinks that SWB mediates FCR but does not weaken the relationship between BRS and FCR. In a mediation analysis made based on this result, SWB was shown to play a partial mediating role in the

relationship between psychological resilience and FCR. As a result, it can be said that the positive contribution of psychological resilience to the reduction of FCR is partially mediated by high SWB. The extent to which spirituality's impact on the FCR includes mechanisms independent of psychological resilience is not fully known. In a study investigating the predictors of the emotional (worry) and cognitive (perceived risk) dimensions of FCR, it was reported that only spirituality was an independent predictor of cognitive (perceived risk) dimension of FCR, even when race and worry about general health were controlled for.³⁸ In another study, it was reported that when controlling for race and years since diagnosis, spirituality negatively predicted FCR, and did not moderate the relationship between optimism and pessimism, and FCR.³⁹ To the best of our knowledge, this is the first study to suggest that SWB plays a partial mediating role in the relationship between psychological resilience and FCR, and we believe that this result is important in understanding the association between SWB and psychological resilience, and FCR. A study investigating the moderating and mediating roles of resilience and spirituality on the relationship between FCR and stress, which we would expect to increase due to the pandemic, could provide a better understanding of the topic.

4.1 | Clinical implications

Cancer management is not just about the medical and surgical treatments of tumors. Patients need life-long clinical support, including follow-up for relapses and psychological support to reduce the never-ending fear of recurrence. Modifiable psychological resilience factors, of which there is much evidence based on current knowledge, include positive emotions, self-esteem, meaning or purpose in life, optimism, social support, sense of coherence, active coping, self-efficacy, cognitive flexibility and religiosity or spirituality.⁴⁰ Various psychotherapeutic interventions and procedures, such as cognitive-behavioral therapy, acceptance and commitment therapy and mindfulness-based therapy, have been proposed to increase psychological resilience.^{16,40} It is clear that interventions to support psychological resilience will reduce the severity of FCR, both directly and through SWB, evaluated as modifiable psychological resilience factors, as mentioned above. Professionals dealing with cancer management, therefore, should offer psychotherapeutic approaches to increase the psychological resilience of cancer survivors suffering from FCR. The primary clinical implication of this study is its identification of the need to provide counseling services to increase the SWB and resilience of cancer survivors.

4.2 | Study limitations

While the COVID-19 outbreak was an essential motivator of this study, it made face-to-face data collection impossible, and a larger number of participants could have been accessed in a regular healthcare environment. Furthermore, data collection was carried out online, which comes with some disadvantages concerning data reliability. Another restriction of the study was the requirement of an Internet connection. The age interval of the participants indicates a group with reasonably high Internet literacy, however the results cannot be generalized to the whole population. In addition, since the personal information form of the questionnaire did not include a question about the time since the cancer diagnosis, which is known to affect FCR, we cannot include the time variable as a possible confounding factor in the regression analysis. Although we may assume that patients' behaviors concerning FCR are similar in all cancer types, this assumption must be verified by studies involving different patient groups to ensure the generalizability of our findings. Furthermore, the general limitations of cross-sectional studies must be considered when interpreting our findings, in that they do not allow for the observation of changes in FCR over time.⁷

5 | CONCLUSION

During the ongoing pandemic, breast cancer survivors are reporting higher FCR when compared to previous findings, and those with high SWB and psychological resilience scores are reporting lower FCR,

despite the limits on medical follow-ups due to the COVID-19 outbreak. Accordingly, approaches that increase the psychological resilience and spirituality of patients diagnosed with breast cancer should be developed. Further studies are needed to identify interventions that can improve coping strategies in at-risk individuals.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest related to this manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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