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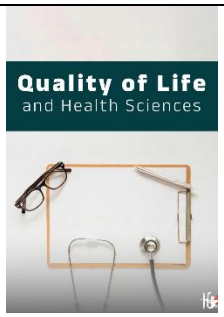

Psychological Capital and Quality of Life Among Cancer Survivors: The Mediating Role of Post-Traumatic Growth and the Moderating Role of Fear of Recurrence

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A B S T R A C T

Objective: This study aimed to examine the relationship between psychological capital and quality of life among cancer survivors in Brazil, with post-traumatic growth as a mediating variable and fear of cancer recurrence as a moderating variable.

Methods and Materials: This descriptive-correlational cross-sectional study was conducted among 384 adult cancer survivors in Brazil who had completed the main phase of cancer treatment and were receiving follow-up or survivorship care. Participants completed standardized self-report measures assessing psychological capital, post-traumatic growth, fear of cancer recurrence, and quality of life. Data were analyzed using SPSS and AMOS. Pearson correlation coefficients were used to examine relationships among the main variables. Mediation was tested through bootstrapping with 5,000 resamples, and moderation and moderated mediation effects were examined using interaction terms and conditional effect analysis. Model fit was evaluated using χ^2, CFI, TLI, RMSEA, and SRMR indices.

Findings: Psychological capital was significantly and positively associated with post-traumatic growth ($\beta = 0.45$, $p < 0.001$) and quality of life ($\beta = 0.36$, $p < 0.001$). Post-traumatic growth also had a significant positive effect on quality of life ($\beta = 0.20$, $p < 0.001$). The indirect effect of psychological capital on quality of life through post-traumatic growth was significant (B = 0.10, 95% CI [0.05, 0.16]), indicating partial mediation. Fear of cancer recurrence had a significant negative effect on quality of life ($\beta = -0.42$, $p < 0.001$) and significantly moderated the direct path between psychological capital and quality of life ($\beta = -0.16$, $p = 0.001$) and the path between post-traumatic growth and quality of life ($\beta = -0.12$, $p = 0.009$). The index of moderated mediation was significant (B = -0.002, 95% CI [-0.004, -0.001]).

Conclusion: Psychological capital was associated with better quality of life among cancer survivors both directly and indirectly through post-traumatic growth, while fear of recurrence weakened these positive pathways. These findings highlight the importance of integrating positive psychological resource enhancement with fear-of-recurrence management in survivorship care.

Keywords: *Psychological capital; quality of life; cancer survivors; post-traumatic growth; fear of cancer recurrence; moderated mediation.*

1. Introduction

Cancer survivorship has become an increasingly important field of inquiry because the experience of cancer does not end with the completion of active treatment. Survivors often continue to live with physical symptoms, psychological distress, social disruption, altered identity, fear of future illness, and uncertainty about long-term health. Contemporary survivorship research therefore emphasizes not only disease control and survival but also the multidimensional quality of life of individuals who continue to reconstruct their daily lives after diagnosis and treatment. Quality of life among cancer survivors is shaped by physical functioning, emotional adjustment, social participation, cognitive functioning, financial burden, health-related worries, and the ability to reintegrate into family, occupational, and community roles. Reviews of survivorship practices and care models indicate that cancer survivors require structured, long-term, and comprehensive care that addresses psychosocial needs alongside medical surveillance, particularly during the transition from treatment-centered care to survivorship-centered care (Gallego et al., 2024; Janssen et al., 2021; Jin et al., 2023). This shift is especially relevant because survivorship experiences differ across cancer type, age group, treatment exposure, cultural context, and available health resources, making quality of life a complex and context-sensitive outcome rather than a simple indicator of recovery.

Quality of life has been widely studied across different groups of cancer survivors, including breast, colorectal, gastric, head and neck, hematological, childhood, adolescent, young adult, and long-term cancer survivor populations. Evidence from breast cancer survivorship studies suggests that quality of life is influenced by psychosocial resources, treatment consequences, social support, psychological symptoms, and long-term adaptation processes (Cho et al., 2024; Ellis et al., 2024; Martens et al., 2021). Among colorectal cancer survivors, survivorship issues may vary in prevalence and perceived impact, indicating that the most common problems are not always the most disruptive for survivors' quality of life (Drury et al., 2021; Lim et al., 2021). Research on adolescent and young adult survivors and survivors of childhood cancer further demonstrates that quality of life may be affected by developmental disruption, identity reconstruction, social reintegration, and persistent psychosocial vulnerability (Bolliger et al., 2024; Neris et al., 2024; Pawłowski, 2025). These findings collectively show that quality of life in cancer survivorship is not merely the absence of disease but a dynamic outcome produced by the interaction of psychological adaptation, supportive environments, symptom burden, and perceived meaning after cancer.

Psychological distress remains one of the central threats to quality of life among cancer survivors. Depression, demoralization, anxiety, and cancer-related emotional burden can persist after treatment and may interfere with functional recovery, interpersonal relationships, and future-oriented planning. Bibliometric and systematic evidence on depression in breast cancer shows that psychological symptoms are a major concern in oncology research and clinical care (Chen et al., 2022). Similarly, demoralization among cancer survivors has been identified as an important psychological construct associated with hopelessness, loss of meaning, and reduced coping capacity (Lin & Her, 2023). Psycho-oncology literature also highlights the need to support patients and survivors throughout distress, treatment, and recovery, particularly because emotional problems may be intensified by uncertainty, treatment side effects, body image changes, and concerns about recurrence (Meoded et al., 2025; Sajid et al., 2022). These findings justify the need for models that examine not only risk factors for impaired quality of life but also protective psychological resources that may help survivors adapt positively after cancer.

Within positive psychology and psycho-oncology, psychological capital is a valuable framework for understanding adaptive functioning after stressful and life-threatening experiences. Psychological capital refers to a positive psychological state characterized by hope, self-efficacy, resilience, and optimism. Hope enables survivors to identify meaningful goals and pathways for pursuing them despite uncertainty. Self-efficacy supports confidence in managing symptoms, medical follow-up, emotional demands, and daily responsibilities. Resilience reflects the capacity to recover from adversity and maintain functioning in the face of ongoing challenges. Optimism supports positive expectations about the future and may buffer the emotional weight of cancer-related uncertainty. Although psychological capital has been studied extensively in organizational and health psychology, its application in cancer survivorship is especially promising because cancer survivors often need psychological resources that help them regain agency, rebuild meaning, and maintain quality of life in the context of vulnerability. Recent evidence on positive psychology interventions for cancer survivors supports the relevance of strengths-based psychological approaches for

improving adjustment and well-being (Yeoh et al., 2026). Health promotion and innovative psychosocial interventions for cancer patients similarly suggest that adaptive psychological capacities can be strengthened through structured interventions and survivorship-oriented care (López & Klainin-Yobas, 2021).

One mechanism through which psychological capital may contribute to quality of life is post-traumatic growth. Post-traumatic growth refers to positive psychological changes that may occur after struggling with highly challenging life events. In the context of cancer, post-traumatic growth can involve greater appreciation of life, improved relationships, recognition of personal strength, spiritual or existential development, and discovery of new priorities or possibilities. Conceptual and systematic work on post-traumatic growth among cancer patients and survivors indicates that growth is not a denial of suffering; rather, it is a meaning-making process that can coexist with distress, uncertainty, and physical burden (Wang et al., 2023; Wenji et al., 2026). Studies across cancer populations suggest that post-traumatic growth may be shaped by cognitive processing, social support, coping strategies, resilience, personal beliefs, and the way survivors interpret their cancer experience (Evans et al., 2022; McErlean et al., 2023; Paunescu et al., 2025). Therefore, post-traumatic growth may represent a psychologically meaningful pathway through which internal resources are translated into better quality of life.

The relationship between resilience-related constructs and post-traumatic growth is particularly relevant to the present study. Resilience has been examined as a protective factor in breast cancer and as a concept closely related to recovery, adaptation, and positive change after adversity (Janitra et al., 2023). Empirical findings suggest that resilience can influence both quality of life and post-traumatic growth among breast cancer patients during treatment, indicating that survivors who possess stronger adaptive capacity may be better able to transform the cancer experience into psychological development (Duran et al., 2024). In addition, research on postoperative gastric cancer patients has shown that rumination and perceived social support may influence post-traumatic growth, emphasizing the role of cognitive-emotional processing and relational resources in the development of growth after cancer (Li et al., 2025). In head and neck cancer survivorship, qualitative research has further demonstrated that post-traumatic growth may emerge through survivors' reflections on suffering, identity, relationships, and renewed priorities (Menger et al., 2025). These findings support the assumption that psychological capital may enhance post-traumatic growth by strengthening survivors' ability to process adversity constructively and maintain meaningful engagement with life.

At the same time, post-traumatic growth should not be understood as a uniformly positive or automatic outcome. Cancer survivorship can involve persistent rumination, intrusive concerns, and unresolved emotional tension. Research on head and neck cancer survivors indicates that rumination may be complex in nature and content, reflecting both distressing repetitive thought and potentially meaningful cognitive processing (Menger et al., 2022). This distinction is important because psychological capital may promote constructive forms of reflection, while fear and distress may intensify maladaptive rumination. Moreover, psychosocial interventions such as life coaching, peer support, telemedicine-based support, and technology-based survivorship care have increasingly aimed to enhance well-being, reduce distress, and support post-traumatic growth among survivors (Lim et al., 2023; Ruiz-Romeo et al., 2026; Su et al., 2026; Tock et al., 2025). The growing attention to these interventions shows that post-traumatic growth is clinically relevant and potentially modifiable, but it also suggests that growth depends on the broader psychological and care context in which survivors live.

Fear of cancer recurrence is one of the most persistent and clinically significant psychological concerns in survivorship. Even after successful treatment, many survivors remain concerned that cancer may return, progress, or require renewed treatment. Fear of recurrence may include intrusive thoughts, hypervigilance to bodily sensations, distress before medical appointments, avoidance of future planning, and difficulty feeling secure in recovery. Recent work has emphasized the importance of resource-based approaches to understanding and addressing fear of cancer recurrence, particularly among young adult survivors who may face distinctive developmental and life-course disruptions (Nam & Kim, 2025). Meta-analytic evidence also indicates that psychosocial interventions can target fear of recurrence together with mindfulness and post-traumatic growth, suggesting that recurrence-related fear is closely connected with both distress reduction and positive adaptation processes (Su et al., 2026). In the present theoretical model, fear of recurrence is not only a negative predictor of quality of life but also a potential moderator that may weaken the protective effects of psychological capital and post-traumatic growth.

The moderating role of fear of recurrence is conceptually important because positive psychological resources may not operate equally under all levels of threat perception. A survivor with high psychological capital may generally be more hopeful, resilient, optimistic, and efficacious, yet intense fear of recurrence can reduce the emotional availability needed to benefit from these resources. Similarly, a survivor may report post-traumatic growth, but persistent fear that cancer will return may limit the extent to which that growth translates into daily quality of life. Thus, fear of recurrence may act as a psychological constraint that attenuates the positive pathway from psychological capital to quality of life through post-traumatic growth. This perspective is consistent with survivorship research showing that care needs are multidimensional and that survivors require assessment models capable of integrating strengths, symptoms, fears, social resources, and long-term adaptation (Gallego et al., 2024; Ogunsanya et al., 2025). It also aligns with evidence showing that survivorship outcomes are shaped by interdependent personal and relational factors rather than by isolated psychological variables (Cho et al., 2024; Ellis et al., 2024).

Despite the growing literature on quality of life, resilience, post-traumatic growth, psychosocial care, and fear of recurrence, several gaps remain. First, many studies have examined either distress-related predictors or positive psychological factors separately, whereas fewer studies have integrated both protective and risk processes in a single explanatory model. Second, post-traumatic growth is often studied as an outcome rather than as a mediating mechanism that may explain how positive psychological resources influence quality of life. Third, although fear of recurrence is widely acknowledged as a major survivorship concern, its role as a moderator of positive psychological pathways remains insufficiently clarified. Fourth, survivorship research has been conducted across diverse international contexts, but additional evidence from different cultural and health-system settings is needed to understand how psychological resources and fears operate among cancer survivors in real-world survivorship contexts. These gaps justify a moderated mediation approach in which psychological capital is examined as a positive predictor of quality of life, post-traumatic growth as a mediating mechanism, and fear of recurrence as a boundary condition that may alter the strength of these relationships.

Accordingly, the aim of this study was to examine the relationship between psychological capital and quality of life among cancer survivors in Brazil, with post-traumatic growth tested as a mediating variable and fear of cancer recurrence tested as a moderating variable.

2. Methods and Materials

2.1. Study Design and Participants

This study was designed as a descriptive-correlational cross-sectional study using a moderated mediation model to examine the relationship between psychological capital and quality of life among cancer survivors, with post-traumatic growth considered as the mediating variable and fear of cancer recurrence considered as the moderating variable. The study population consisted of adult cancer survivors receiving follow-up care in oncology clinics, cancer survivorship programs, and outpatient oncology departments in Brazil. Participants were recruited from oncology centers located in São Paulo, Rio de Janeiro, and Minas Gerais in order to obtain a heterogeneous sample of cancer survivors with different sociodemographic and clinical characteristics. The final sample included 384 cancer survivors. This sample size was considered adequate for testing mediation and moderation effects using structural equation modeling and bootstrapping procedures.

Eligible participants were individuals aged 18 years or older who had received a confirmed diagnosis of cancer, had completed the main phase of cancer treatment including surgery, chemotherapy, radiotherapy, immunotherapy, or combined treatment at least six months before participation, and were currently in the survivorship or follow-up phase of care. Participants were required to have sufficient ability to read and understand Brazilian Portuguese and to provide informed consent. Cancer survivors with severe cognitive impairment, acute psychiatric crisis, advanced disease requiring intensive palliative care, or incomplete questionnaire responses exceeding the acceptable threshold were excluded from the study. Participation was voluntary, and all participants were informed about the purpose of the study, confidentiality of their responses, the anonymous nature of data analysis, and their right to withdraw from the study at any stage without any effect on their medical care.

2.2. Measures

Data were collected using a demographic and clinical information form and four standardized self-report questionnaires. The demographic and clinical information form was developed by the researchers to obtain information about age, gender, marital status, educational level,

employment status, monthly income, type of cancer, time since diagnosis, time since completion of treatment, treatment modalities received, cancer stage at diagnosis, recurrence history, and presence of comorbid medical conditions. These variables were collected to describe the sample and to control for potentially confounding factors in the statistical analysis.

Psychological capital was measured using the Psychological Capital Questionnaire. This instrument assesses the positive psychological resources of hope, efficacy, resilience, and optimism. The questionnaire contains items that evaluate the extent to which individuals perceive themselves as capable of pursuing goals, maintaining motivation, recovering from adversity, and expecting positive outcomes despite difficulties. Responses are scored on a Likert-type scale, with higher scores indicating greater psychological capital. In the present study, the total psychological capital score was used as the main independent variable, while the four dimensions were also examined descriptively to provide a more detailed understanding of participants' positive psychological resources.

Quality of life was assessed using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30. This instrument is widely used among patients and survivors with cancer and evaluates global health status, functional dimensions, and symptom burden. The questionnaire includes domains related to physical functioning, role functioning, emotional functioning, cognitive functioning, social functioning, fatigue, pain, nausea and vomiting, dyspnea, insomnia, appetite loss, constipation, diarrhea, and financial difficulties. Scores were transformed according to the standard scoring procedure. Higher scores on the global health status and functional scales indicate better quality of life and functioning, whereas higher scores on symptom scales indicate greater symptom burden. For the main analysis, the global quality of life score was considered the dependent variable.

Post-traumatic growth was measured using the Post-Traumatic Growth Inventory. This instrument assesses positive psychological changes that may occur following highly stressful or traumatic life events, including cancer diagnosis and treatment. The scale evaluates changes in appreciation of life, relationships with others, personal strength, recognition of new possibilities, and spiritual or existential change. Items are scored on a Likert-type scale, with higher total scores indicating higher levels of perceived post-traumatic growth. In this study, post-traumatic growth was treated as the mediating variable explaining the pathway through which psychological capital may contribute to better quality of life among cancer survivors.

Fear of cancer recurrence was assessed using the Fear of Cancer Recurrence Inventory. This instrument measures concerns, intrusive thoughts, emotional distress, functional impairment, and coping difficulties related to the possibility that cancer may return or progress. The scale captures both cognitive and emotional aspects of recurrence-related fear. Higher scores indicate greater fear of recurrence. In the present study, fear of recurrence was considered the moderating variable. Specifically, it was examined as a factor that could change the strength of the relationship between psychological capital, post-traumatic growth, and quality of life. All instruments were administered in Brazilian Portuguese, and standardized administration procedures were followed to ensure consistency in data collection.

2.3. Data Analysis

Data analysis was performed using SPSS and AMOS. Before conducting the main analyses, the dataset was screened for missing values, outliers, normality, and response accuracy. Cases with substantial missing data were excluded, while minor missing values were handled using appropriate statistical procedures. Descriptive statistics including mean, standard deviation, frequency, and percentage were used to describe the demographic and clinical characteristics of the participants and the main study variables. The internal consistency of the instruments was evaluated using Cronbach's alpha coefficient, and values above the acceptable threshold were considered evidence of adequate reliability.

Preliminary analyses were conducted to examine the assumptions required for multivariate analysis. The normality of the variables was assessed through skewness and kurtosis indices. Pearson correlation coefficients were calculated to examine the bivariate relationships among psychological capital, post-traumatic growth, fear of recurrence, and quality of life. Demographic and clinical variables were also examined in relation to quality of life, and variables showing significant associations were considered as covariates in subsequent analyses. Multicollinearity was assessed using tolerance and variance inflation factor values to ensure that the predictor variables could be entered into the model without redundancy.

The hypothesized mediation model was tested to determine whether post-traumatic growth mediated the relationship between psychological capital and quality of life. In this model, psychological capital was entered as the independent variable, post-traumatic growth as the mediator, and quality of life as the dependent variable. The indirect effect was tested using the bootstrapping method with 5,000 resamples and 95% confidence intervals. The mediation effect was considered significant when the confidence interval for the indirect effect did not include zero. This approach was selected because bootstrapping provides a robust estimation of indirect effects and does not require the assumption of normal distribution of the indirect pathway.

The moderating role of fear of recurrence was examined by testing interaction effects within the structural model. Fear of recurrence was specified as a moderator of the relationship between psychological capital and quality of life and also as a moderator of the relationship between post-traumatic growth and quality of life. Before creating interaction terms, the continuous variables were mean-centered to reduce multicollinearity and improve interpretability. Significant interaction effects were further interpreted using simple slope analysis at low, moderate, and high levels of fear of recurrence. This procedure made it possible to determine whether the protective effect of psychological capital and post-traumatic growth on quality of life differed according to the level of fear of cancer recurrence.

Finally, a moderated mediation model was tested to examine whether the indirect effect of psychological capital on quality of life through post-traumatic growth varied across different levels of fear of recurrence. Model fit was evaluated using commonly accepted indices, including the chi-square statistic, comparative fit index, Tucker–Lewis index, root mean square error of approximation, and standardized root mean square residual. Values indicating acceptable model fit were used to determine whether the proposed model was consistent with the observed data. Statistical significance was evaluated at the 0.05 level.

3. Findings and Results

A total of 384 cancer survivors from Brazil were included in the final analysis. The mean age of the participants was 52.46 years with a standard deviation of 11.28 years, and the age range was 24 to 78 years. Of the participants, 249 were women and 135 were men, representing 64.8% and 35.2% of the sample, respectively. Most participants were married or living with a partner, and a smaller proportion were single, divorced, separated, or widowed. With regard to education, the sample included participants with secondary education, undergraduate education, and postgraduate education, indicating acceptable variation in educational background. Breast cancer was the most frequently reported diagnosis, followed by colorectal, prostate, gynecological, hematological, and other cancer types. The mean time since cancer diagnosis was 4.18 years, with a standard deviation of 2.36 years, and the mean time since completion of primary treatment was 2.74 years, with a standard deviation of 1.89 years. Most participants had received more than one treatment modality, including surgery, chemotherapy, radiotherapy, hormone therapy, immunotherapy, or combined treatment. A history of cancer recurrence was reported by 58 participants, representing 15.1% of the total sample. The remaining participants were in the follow-up or survivorship phase without documented recurrence at the time of data collection.

Table 1

Descriptive Statistics, Reliability Coefficients, and Normality Indices of the Main Study Variables

Variable	Possible Range	Mean	Standard Deviation	Minimum	Maximum	Cronbach's Alpha	Skewness	Kurtosis
Psychological capital	24–144	93.68	17.24	48.00	136.00	0.91	-0.34	-0.21
Post-traumatic growth	0–105	66.42	18.76	18.00	104.00	0.94	-0.28	-0.39
Fear of cancer recurrence	0–168	82.17	24.89	24.00	151.00	0.93	0.31	-0.47
Quality of life	0–100	61.35	18.42	16.67	100.00	0.88	-0.22	-

As shown in Table 1, the participants reported a moderate-to-high level of psychological capital, indicating that, on average, cancer survivors in the sample perceived themselves as possessing relatively strong positive psychological resources, including hope, self-efficacy, resilience, and optimism. The mean score for post-traumatic growth also indicated a moderate level of perceived positive psychological change after cancer, suggesting that many participants experienced some degree of personal growth, improved appreciation of life, strengthened relationships, or

increased perceived personal strength following their illness experience. The mean fear of cancer recurrence score reflected a moderate level of recurrence-related concern, which is clinically meaningful among cancer survivors because fear of recurrence often persists after completion of treatment. The mean quality of life score suggested that participants experienced a moderate level of global quality of life, with considerable individual variability. The reliability coefficients for all scales were above 0.88, indicating strong internal consistency. In addition, skewness and kurtosis values were within the acceptable range, suggesting that the distributions of the main variables did not substantially violate the assumption of normality.

Table 2

Pearson Correlation Matrix Among Psychological Capital, Post-Traumatic Growth, Fear of Cancer Recurrence, and Quality of Life

Variable	1	2	3	4
1. Psychological capital	1			
2. Post-traumatic growth	0.48***	1		
3. Fear of cancer recurrence	-0.39***	-0.27***	1	
4. Quality of life	0.55***	0.46***	-0.58***	1

Table 2 presents the bivariate correlations among the main study variables. Psychological capital was positively and significantly correlated with post-traumatic growth, indicating that cancer survivors with higher levels of hope, efficacy, resilience, and optimism tended to report greater positive psychological changes after cancer. Psychological capital was also positively associated with quality of life, suggesting that stronger positive psychological resources were related to better perceived global health and life functioning. Post-traumatic growth had a significant positive relationship with quality of life, showing that survivors who perceived more growth following cancer also tended to experience better quality of life. In contrast, fear of cancer recurrence was negatively and significantly correlated with psychological capital, post-traumatic growth, and quality of life. The strongest correlation was observed between fear of cancer recurrence and quality of life, indicating that higher recurrence-related fear was strongly associated with poorer perceived quality of life. These findings provided preliminary support for the proposed mediation and moderation model.

Table 3

Direct, Indirect, and Total Effects in the Mediation Model

Path	B	SE	β	t	p	95% Confidence Interval
Psychological capital → Post-traumatic growth	0.49	0.05	0.45	10.34	<0.001	0.40, 0.58
Post-traumatic growth → Quality of life	0.20	0.04	0.20	5.31	<0.001	0.13, 0.28
Psychological capital → Quality of life, direct effect	0.39	0.04	0.36	9.05	<0.001	0.31, 0.48
Psychological capital → Quality of life, total effect	0.49	0.04	0.46	11.72	<0.001	0.41, 0.57
Psychological capital → Post-traumatic growth → Quality of life, indirect effect	0.10	0.03	—	—	<0.001	0.05, 0.16

Table 3 shows the results of the mediation analysis. Psychological capital had a significant positive effect on post-traumatic growth, indicating that cancer survivors with higher psychological capital were more likely to experience positive psychological change after cancer. Post-traumatic growth, in turn, had a significant positive effect on quality of life. This finding suggests that the experience of growth after cancer may contribute to better perceived quality of life among survivors. Psychological capital also had a significant direct effect on quality of life after the mediator was entered into the model, indicating that psychological capital contributed to quality of life both directly and indirectly. The bootstrapped indirect effect of psychological capital on quality of life through post-traumatic growth was significant, as the 95% confidence interval did not include zero. Therefore, post-traumatic growth partially mediated the relationship between psychological capital and quality of life. This means that one part of the beneficial effect of psychological capital on quality of life operated through increased post-traumatic growth, while another part remained independent of the mediating pathway.

Table 4

Moderation Effects of Fear of Cancer Recurrence in the Prediction of Quality of Life

Predictor	B	SE	β	t	p	95% Confidence Interval
Psychological capital	0.39	0.04	0.36	9.17	<0.001	0.31, 0.48
Post-traumatic growth	0.20	0.04	0.20	5.28	<0.001	0.13, 0.28
Fear of cancer recurrence	-0.31	0.03	-0.42	-10.76	<0.001	-0.37, -0.25
Psychological capital × Fear of cancer recurrence	-0.006	0.002	-0.16	-3.42	0.001	-0.009, -0.003
Post-traumatic growth × Fear of cancer recurrence	-0.005	0.002	-0.12	-2.63	0.009	-0.008, -0.001
Model R^2	0.52	—	—	—	<0.001	—

Table 4 presents the results of the moderation analysis. Fear of cancer recurrence had a significant negative direct effect on quality of life, indicating that survivors with greater fear of recurrence reported poorer quality of life. The interaction between psychological capital and fear of cancer recurrence was also significant and negative. This finding means that fear of recurrence weakened the positive association between psychological capital and quality of life. In other words, although psychological capital was beneficial for quality of life at all levels of recurrence-related fear, its protective effect was stronger among survivors with low fear of recurrence and weaker among those with high fear of recurrence. Similarly, the interaction between post-traumatic growth and fear of cancer recurrence was significant and negative. This result indicates that fear of recurrence also reduced the positive effect of post-traumatic growth on quality of life. The overall model explained 52% of the variance in quality of life, which indicates that psychological capital, post-traumatic growth, fear of recurrence, and their interaction effects jointly accounted for a substantial proportion of individual differences in quality of life among cancer survivors.

Table 5

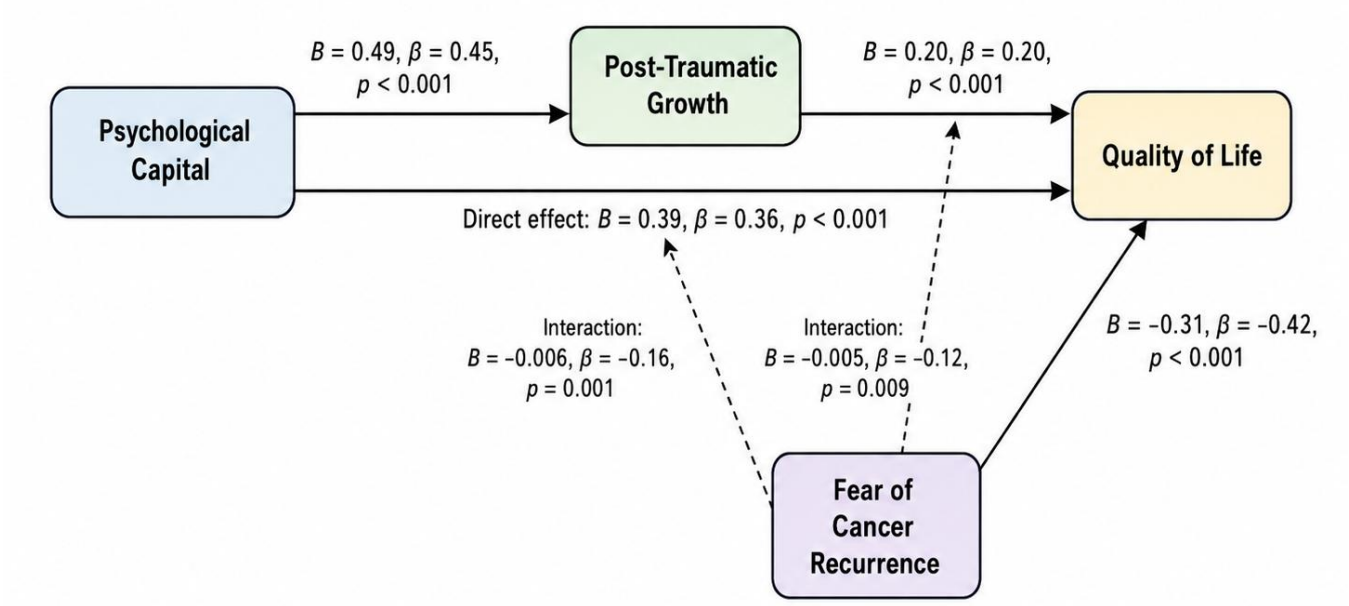
Conditional Direct and Indirect Effects of Psychological Capital on Quality of Life at Different Levels of Fear of Cancer Recurrence

Level of Fear of Cancer Recurrence	Direct Effect of Psychological Capital on Quality of Life	SE	95% Confidence Interval	Indirect Effect Through Post-Traumatic Growth	SE	95% Confidence Interval
Low fear of recurrence, -1 SD	0.54	0.06	0.42, 0.66	0.16	0.04	0.08, 0.23
Moderate fear of recurrence, mean	0.39	0.04	0.31, 0.48	0.10	0.03	0.05, 0.16
High fear of recurrence, +1 SD	0.24	0.07	0.10, 0.38	0.04	0.02	0.01, 0.09
Index of moderated mediation	—	—	—	-0.002	0.001	-0.004, -0.001

Table 5 shows the conditional direct and indirect effects of psychological capital on quality of life at low, moderate, and high levels of fear of cancer recurrence. The direct effect of psychological capital on quality of life was strongest when fear of recurrence was low, remained significant at the average level of fear, and became weaker when fear of recurrence was high. This pattern demonstrates that fear of recurrence reduced the strength of the positive relationship between psychological capital and quality of life. The indirect effect of psychological capital on quality of life through post-traumatic growth followed the same pattern. The mediating role of post-traumatic growth was strongest among survivors with low fear of recurrence and weakest among those with high fear of recurrence. The index of moderated mediation was significant because its confidence interval did not include zero. This finding confirms that the mediating effect of post-traumatic growth was conditional on the level of fear of recurrence. Therefore, the results supported the moderated mediation model and indicated that fear of cancer recurrence not only had a direct negative association with quality of life but also weakened the beneficial psychological pathway from psychological capital to quality of life through post-traumatic growth.

Figure 1

Moderated Mediation Model of the Relationship Between Psychological Capital and Quality of Life Through Post-Traumatic Growth at Different Levels of Fear of Cancer Recurrence



The proposed moderated mediation model demonstrated acceptable fit to the observed data. The model fit indices were within acceptable ranges, $\chi^2 = 84.62$, df = 48, $p < 0.001$, CFI = 0.974, TLI = 0.961, RMSEA = 0.045, and SRMR = 0.036. The figure summarizes the overall pattern of findings by showing that psychological capital was positively related to post-traumatic growth and quality of life, while post-traumatic growth was positively related to quality of life. Fear of cancer recurrence had a negative association with quality of life and moderated the positive pathways leading to quality of life. The model indicates that psychological capital may improve quality of life among cancer survivors partly by promoting post-traumatic growth, but this beneficial process is less powerful when survivors experience high fear of recurrence. Overall, the findings suggest that quality of life in cancer survivorship is shaped by both positive psychological resources and ongoing cancer-related concerns.

4. Discussion

The present study examined the relationship between psychological capital and quality of life among cancer survivors in Brazil, considering post-traumatic growth as a mediating mechanism and fear of cancer recurrence as a moderating condition. The findings showed that participants reported moderate-to-high psychological capital, moderate post-traumatic growth, moderate fear of cancer recurrence, and moderate quality of life. This pattern suggests that survivorship after cancer is characterized by the coexistence of adaptive psychological resources and persistent vulnerability. Although many survivors appeared to possess hope, self-efficacy, resilience, and optimism, their quality of life was not uniformly high, indicating that psychological strengths operate within the broader context of physical, emotional, social, and cancer-related challenges. This is consistent with survivorship literature showing that the post-treatment phase involves diverse and long-term needs that extend beyond disease remission, including psychosocial adjustment, functional recovery, symptom management, and re-entry into social and occupational life (Gallego et al., 2024; Janssen et al., 2021; Jin et al., 2023). The moderate quality of life observed in this study also aligns with previous work showing that cancer survivors may continue to experience limitations in well-being even years after diagnosis, particularly when psychosocial distress, treatment sequelae, or unmet supportive care needs persist (Bolliger et al., 2024; Drury et al., 2021; Lim et al., 2021; Neris et al., 2024).

The correlation findings indicated that psychological capital was positively associated with both post-traumatic growth and quality of life. This result supports the central assumption that positive psychological resources are

relevant to survivorship adaptation. Survivors with greater hope, efficacy, resilience, and optimism may be more capable of managing the uncertainty of survivorship, engaging in health-promoting behaviors, maintaining future-oriented goals, and interpreting the cancer experience in ways that preserve meaning and agency. This finding is in line with the positive psychology perspective in oncology, which emphasizes that strengths-based resources can contribute to adjustment and well-being among cancer survivors (Yeoh et al., 2026). It is also consistent with evidence showing that resilience-related capacities are associated with quality of life and post-traumatic growth in breast cancer patients (Duran et al., 2024), and with conceptual work that identifies resilience as a core adaptive construct in cancer-related coping (Janitra et al., 2023). Similarly, studies of young breast cancer survivors have shown that psychological and social predictors play an important role in quality of life and life satisfaction, confirming that survivorship outcomes are strongly influenced by internal and interpersonal resources (Ellis et al., 2024; Martens et al., 2021).

The positive relationship between psychological capital and post-traumatic growth is theoretically meaningful. Cancer diagnosis and treatment can challenge assumptions about control, mortality, identity, and the future. However, survivors with stronger psychological capital may have greater capacity to cognitively process adversity, identify new priorities, reinterpret suffering, and construct meaning from the cancer experience. This interpretation is consistent with conceptual analyses and systematic reviews of post-traumatic growth among cancer patients and survivors, which emphasize that growth often emerges through active psychological engagement with trauma rather than through the absence of distress (Wang et al., 2023; Wenji et al., 2026). The present findings also align with evidence that post-traumatic development five years after cancer is associated with actionable psychosocial factors (Evans et al., 2022), and with research showing that coping strategies, locus of control, and time perspective can influence post-traumatic growth among breast cancer survivors (Paunescu et al., 2025). Therefore, psychological capital may function as a psychological foundation that helps survivors transform the cancer experience into perceived personal growth.

Post-traumatic growth was positively associated with quality of life and significantly mediated the relationship between psychological capital and quality of life. This means that psychological capital was linked to better quality of life partly because it promoted post-traumatic growth. In other words, survivors with higher psychological capital may not only cope better with cancer-related adversity but may also experience greater positive psychological transformation, which in turn contributes to improved quality of life. This finding supports the idea that post-traumatic growth is not merely an independent outcome of cancer survivorship but also a mechanism through which adaptive psychological resources influence broader well-being. Prior studies support this pathway by showing that post-traumatic growth among cancer survivors is related to psychological, social, and cognitive factors, including perceived support, rumination patterns, coping processes, and personal meaning (Li et al., 2025; McErlean et al., 2023; Menger et al., 2025). The finding also corresponds with research on head and neck cancer survivors, in which post-traumatic growth was described as a process of reconstructing identity, priorities, and life meaning after the cancer experience (Menger et al., 2025). Thus, in the present study, post-traumatic growth appears to represent a constructive adaptation pathway linking psychological capital to quality of life.

At the same time, the mediation was partial rather than complete. Psychological capital retained a significant direct effect on quality of life even after post-traumatic growth was included in the model. This suggests that psychological capital may improve quality of life through multiple pathways. Some of its effect may operate through post-traumatic growth, while other effects may occur through more direct mechanisms such as emotional regulation, active coping, treatment adherence, social engagement, reduced demoralization, and greater perceived control. This interpretation is consistent with psycho-oncology evidence showing that cancer-related distress, depression, and demoralization can compromise well-being, while psychological resources may buffer these outcomes (Chen et al., 2022; Lin & Her, 2023; Meoded et al., 2025). Health promotion approaches in oncology similarly suggest that interventions targeting coping, emotional adaptation, and self-management may improve quality of life without necessarily requiring survivors to report high post-traumatic growth (López & Klainin-Yobas, 2021). Therefore, post-traumatic growth should be understood as one important pathway, but not the only pathway, through which psychological capital contributes to survivorship outcomes.

The findings also showed that fear of cancer recurrence was negatively associated with psychological capital, post-traumatic growth, and quality of life, with its strongest negative association observed with quality of life. This result

confirms that fear of recurrence is a central psychological burden in survivorship. Even when survivors are no longer receiving intensive treatment, the possibility of cancer returning may continue to shape emotional security, future planning, bodily monitoring, and daily functioning. The negative association between fear of recurrence and quality of life is consistent with survivorship research emphasizing that unresolved cancer-related fears can persist after treatment and interfere with well-being (Nam & Kim, 2025; Su et al., 2026). It is also consistent with studies showing that distress-related processes, such as rumination and demoralization, may remain significant concerns for cancer survivors and may reduce psychological adjustment (Lin & Her, 2023; Menger et al., 2022). In this study, fear of recurrence appeared to operate as a clinically meaningful risk factor that may undermine both positive psychological functioning and quality of life.

The moderation analysis further demonstrated that fear of recurrence weakened the positive effect of psychological capital on quality of life. Although psychological capital remained beneficial, its protective effect was stronger among survivors with low fear of recurrence and weaker among those with high fear of recurrence. This finding suggests that intense recurrence-related fear may reduce survivors' ability to benefit fully from their positive psychological resources. A survivor may possess hope, optimism, resilience, and efficacy, but if fear of recurrence is highly intrusive or emotionally overwhelming, these strengths may be less effective in supporting quality of life. This result is consistent with the resource-based approach to fear of cancer recurrence, which emphasizes that recurrence-related fear should be understood in relation to survivors' personal and healthcare resources (Nam & Kim, 2025). It also aligns with intervention studies and reviews showing that psychosocial support, telemedicine-based interventions, peer support, and life coaching may be necessary to reduce fear, strengthen growth, and enhance well-being (Lim et al., 2023; Ruiz-Romeo et al., 2026; Su et al., 2026; Tock et al., 2025). Therefore, psychological capital may be most beneficial when recurrence-related fear is recognized and addressed.

Fear of recurrence also moderated the relationship between post-traumatic growth and quality of life. The positive association between post-traumatic growth and quality of life was stronger at lower levels of fear and weaker at higher levels of fear. This indicates that even when survivors perceive positive changes after cancer, persistent fear of recurrence may limit the extent to which such growth improves daily well-being. This is an important finding because it suggests that post-traumatic growth does not automatically protect quality of life under conditions of high threat perception. Growth and distress may coexist, and the presence of growth does not necessarily eliminate ongoing fear, uncertainty, or psychological vulnerability. Previous research has similarly emphasized that post-traumatic growth among cancer survivors is complex and may be accompanied by unresolved rumination, distress, and ongoing survivorship concerns (Menger et al., 2022; Wang et al., 2023; Wenji et al., 2026). The present findings extend this literature by showing that fear of recurrence may serve as a boundary condition that determines how strongly post-traumatic growth translates into improved quality of life.

5. Conclusion

The conditional indirect effects confirmed the moderated mediation model. The indirect effect of psychological capital on quality of life through post-traumatic growth was strongest among survivors with low fear of recurrence, weaker at average fear, and weakest among survivors with high fear of recurrence. This pattern shows that fear of recurrence does not simply have a separate negative effect on quality of life; it also interferes with the positive psychological pathway through which psychological capital promotes quality of life. In practical terms, survivors with high psychological capital may be more likely to experience post-traumatic growth, but the quality-of-life benefits of this growth are reduced when fear of recurrence is high. This finding supports integrative survivorship models that combine positive psychology, trauma adaptation, and fear-related processes. It is also consistent with long-term evidence showing that social support during the re-entry period can influence later quality of life in breast cancer survivors (Cho et al., 2024), and with evidence from adolescent, young adult, and other survivorship populations showing that quality of life is shaped by multiple interacting psychosocial determinants (Neris et al., 2024; Ogunsanya et al., 2025; Pawłowski, 2025). Overall, the results indicate that improving quality of life among cancer survivors requires attention to both the enhancement of positive psychological resources and the reduction of persistent cancer-related fear.

6. Limitations & Suggestions

This study had several limitations that should be considered when interpreting the findings. First, the cross-sectional design does not allow causal conclusions about the relationships among psychological capital, post-traumatic

growth, fear of recurrence, and quality of life. Although the tested model was theoretically grounded, longitudinal data would be required to determine the temporal order of these variables. Second, all variables were measured using self-report questionnaires, which may increase the possibility of common method bias, social desirability bias, or response distortion. Third, although the sample included cancer survivors from Brazil, participants were recruited from selected oncology settings and may not fully represent all Brazilian cancer survivors, particularly those living in rural areas, those with limited access to survivorship care, or those from underrepresented socioeconomic groups. Fourth, the sample included survivors with different cancer types and treatment histories, which increases heterogeneity but may also obscure cancer-specific patterns. Finally, medical variables such as treatment toxicity, current symptom burden, disease stage, and comorbid conditions were not examined in sufficient depth to determine how clinical factors may interact with psychological processes.

Future studies should use longitudinal and prospective designs to examine how psychological capital, post-traumatic growth, fear of recurrence, and quality of life change across the survivorship trajectory. Such studies could clarify whether psychological capital predicts later post-traumatic growth and whether reductions in fear of recurrence strengthen the pathway from growth to quality of life over time. Future research should also compare different cancer types, age groups, treatment modalities, and survivorship phases to determine whether the proposed model functions similarly across clinical subgroups. In addition, mixed-methods research could provide deeper insight into how survivors describe psychological capital, growth, fear, and quality of life in their own words. Intervention studies are also recommended to test whether programs designed to enhance psychological capital and post-traumatic growth can improve quality of life, especially when combined with structured strategies for reducing fear of recurrence. Future studies should also include objective or clinician-rated indicators of health status, symptom burden, recurrence risk, and functional recovery to complement self-report data.

The findings suggest that oncology professionals should assess both positive psychological resources and persistent cancer-related fears during survivorship care. Screening for psychological capital, post-traumatic growth, fear of recurrence, and quality of life may help clinicians identify survivors who are psychologically resilient but still vulnerable to recurrence-related distress. Psychosocial interventions should not focus only on reducing distress; they should also strengthen hope, self-efficacy, resilience, optimism, meaning-making, and adaptive coping. At the same time, fear of recurrence should be directly addressed through psychoeducation, cognitive-behavioral strategies, supportive counseling, symptom interpretation guidance, and clear communication about follow-up care. Survivorship programs should provide opportunities for survivors to discuss fears, reconstruct life goals, strengthen social support, and develop confidence in managing uncertainty. Integrating positive psychology approaches with fear-of-recurrence management may be especially useful for improving quality of life among cancer survivors.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

References

Bolliger, C. T., Way, K., Michel, G., Sodergren, S. C., & Darlington, A. S. (2024). Mapping and Comparing the Quality of Life Outcomes in Childhood and Adolescent and Young Adult Cancer Survivors: An Umbrella Review and Future Directions. *Quality of Life Research*, *34*(3), 633-656. https://doi.org/10.1007/s11136-024-03825-7

Chen, L., Ren, T., Tan, Y., & Li, H. (2022). Global Trends of Research on Depression in Breast Cancer: A Bibliometric Study Based on VOSviewer. *Frontiers in psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.969679

Cho, H., Kang, D., Shin, D. W., Kim, N., Lee, S. K., Lee, J. E., Nam, S. J., & Cho, J. (2024). Social Support During Re-Entry Period and Long-Term Quality of Life in Breast Cancer Survivors: A 10-Year Longitudinal Cohort Study. *Quality of Life Research*, *33*(5), 1287-1295. https://doi.org/10.1007/s11136-024-03599-y

Drury, A., Payne, S., & Brady, A. M. (2021). Prevalence vs Impact: A Mixed Methods Study of Survivorship Issues in Colorectal Cancer. *Quality of Life Research*, *31*(4), 1117-1134. https://doi.org/10.1007/s11136-021-02975-2

Duran, S., Varol, U., Tekir, Ö., & Soytürk, A. H. (2024). Resilience's Impact on Quality of Life and Post-Traumatic Growth in Breast Cancer Patients During Treatment. *Breast Cancer*, *31*(5), 807-814. https://doi.org/10.1007/s12282-024-01594-2

Ellis, K. R., Koechlin, H., Gerido, L. H., Hecht, H. K., Jones, C., Raji, D., Northouse, L., & Katapodi, M. C. (2024). Predictors and Interdependence of Quality of Life in a Random Sample of Long-Term Young Breast Cancer Survivors and Their Biological Relatives. *Cancer Medicine*, *13*(20). https://doi.org/10.1002/cam4.70328

Evans, C., Saliba-Serre, B., Préau, M., Bendiane, M. K., Gonçalvès, A., Signoli, M., & Bouhnik, A. D. (2022). Post Traumatic Development Five Years After Cancer: Identification of Associated Actionable Factors. https://doi.org/10.21203/rs.3.rs-1303886/v1

Gallego, A., Beato, C., Brozos, E., Cruz, S. d. l., & García, R. V. (2024). Spanish Society of Medical Oncology Recommendations for Comprehensive Assessment and Care of Cancer Survivors' Needs. *Clinical & Translational Oncology*, *27*(1), 95-107. https://doi.org/10.1007/s12094-024-03571-9

Janitra, F. E., Aini, N., & Wicaksana, A. L. (2023). Resilience-Related Breast Cancer: A Concept Analysis. *Nurse Media Journal of Nursing*, *13*(1), 31-55. https://doi.org/10.14710/nmjn.v13i1.45996

Janssen, S. H. M., Winette, T. A. v. d. G., Daniël, J. v. d. M., Manten-Horst, E., & Husson, O. (2021). Adolescent and Young Adult (AYA) Cancer Survivorship Practices: An Overview. *Cancers*, *13*(19), 4847. https://doi.org/10.3390/cancers13194847

Jin, D.-L., Choi, W. J., Hur, R., Seo, H. J., & Yoon, S. J. (2023). Cancer Survivorship Programs and Care Delivery Models for Cancer Survivors' Transition in South Korea: A Scoping Review. https://doi.org/10.21203/rs.3.rs-3209058/v1

Li, L., Song, Y., Jin, S., Wang, H., Wang, L., Zhu, X., Song, C., Zhang, X., & Zhuang, S. (2025). Exploring the Influence of Rumination and Perceived Social Support on Post-Traumatic Growth in Postoperative Gastric Cancer Patients: A Network Analysis. https://doi.org/10.21203/rs.3.rs-7356250/v1

Lim, C. Y. S., Laidsaar-Powell, R., Young, J., Kao, S. C., Zhang, Y., & Butow, P. (2021). Colorectal Cancer Survivorship: A Systematic Review and Thematic Synthesis of Qualitative Research. *European Journal of Cancer Care*, *30*(4). https://doi.org/10.1111/ecc.13421

Lim, J. w., Zhang, A., & Zebrack, B. (2023). Technology-Based Cancer Survivorship Care Interventions: A Systematic Review and Meta-Analysis. *Research on Social Work Practice*, *34*(7), 757-780. https://doi.org/10.1177/10497315231199940

Lin, C. C., & Her, Y. N. (2023). Demoralization in Cancer Survivors: An Updated Systematic Review and Meta-analysis for Quantitative Studies. *Psychogeriatrics*, *24*(1), 35-45. https://doi.org/10.1111/psyg.13037

López, V., & Klainin-Yobas, P. (2021). Health Promotion Among Cancer Patients: Innovative Interventions. 227-244. https://doi.org/10.1007/978-3-030-63135-2_17

Martens, K., Ulrich, G. R., Ranby, K. W., & Kilbourn, K. (2021). What Matters Most? Predictors of Quality of Life and Life Satisfaction Among Young Breast Cancer Survivors. *Cancer Nursing*, *44*(6), E727-E734. https://doi.org/10.1097/ncc.0000000000000967

McErlean, G., Tapp, C., Brice, L., Gilroy, N., Kabir, M., Greenwood, M., Larsen, S., Moore, J. J., Gottlieb, D., Hertzberg, M., Brown, L., Hogg, M., Huang, G., Wård, C., & Kerridge, I. (2023). Predictors of Post Traumatic Growth in Allogeneic Hematopoietic Stem Cell Transplantation Survivors: A Cross-Sectional Survey. *BMC psychology*, *11*(1). https://doi.org/10.1186/s40359-023-01204-4

Menger, F., Deane, J., Patterson, J., Fisher, P., O'Hara, J., & Sharp, L. (2022). The Nature and Content of Rumination for Head and Neck Cancer Survivors. *Frontiers in psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.995187

Menger, F., Deane, J., Patterson, J., Fisher, P., O'Hara, J., & Sharp, L. (2025). "After the Horrible Cancer…" Post-Traumatic Growth Through the Lens of Head and Neck Cancer Survivors. *Journal of Psychosocial Oncology Research and Practice*, *7*(1). https://doi.org/10.1097/or9.0000000000000158

Meoded, M. D., Mehedințu, C., & Cirimbei, C. (2025). Psycho-Oncology in Breast Cancer: Supporting Women Through Distress, Treatment, and Recovery—Three Arguments—Rapid Narrative Review. *Medicina*, *61*(6), 1008. https://doi.org/10.3390/medicina61061008

Nam, S. H., & Kim, J. (2025). Overcoming Fear of Cancer Recurrence in Young Adult Survivors: A Resource-Based Approach Centred on Healthcare Professionals – A Protocol for Systematic Reviews and Thematic Synthesis. *BMJ open*, *15*(8), e105263. https://doi.org/10.1136/bmjopen-2025-105263

Neris, R. R., Papathanassoglou, E., Ana Carolina Andrade Biaggi, L., García-Vivar, C., & Nascimento, L. C. (2024). Quality of Life of Adolescents and Young Adult Survivors of Childhood Cancer: A Qualitative Study. *Journal of Advanced Nursing*, *81*(7), 4110-4121. https://doi.org/10.1111/jan.16608

Ogunsanya, M. E., Saintibert, J., Bolajoko, O., Hooks, D., Clifton, S., & Odedina, F. T. (2025). Mapping Behavioral Research in Post-Treatment Cancer Care in Sub-Saharan Africa: A Scoping Review. *Psycho-Oncology*, *34*(3). https://doi.org/10.1002/pon.70106

Paunescu, A.-C., Kvaskoff, M., Delpierre, C., Delrieu, L., Jacob, G., Pannard, M., & Préau, M. (2025). The Influence of Locus of Control, Coping Strategies and Time Perspective on Post-Traumatic Growth in Survivors With Primary Breast Cancer. *BMC psychology*, *13*(1). https://doi.org/10.1186/s40359-025-02353-4

Pawłowski, P. (2025). The Cost of Victory Over Cancer: Psychosocial Dysfunction and Depressive Symptoms Among Polish Adolescent Cancer Survivors in the Context of Quality of Life and Psychosocial Health. *Cancers*, *17*(24), 3916. https://doi.org/10.3390/cancers17243916

Ruiz-Romeo, M., Ciria-Suarez, L., Arizu-Onassis, A., Medina, J. C., Serra-Blasco, M., Souto-Sampera, A., Flix-Valle, A., Lucía del Carmen González, A., Villanueva-Bueno, C., Escudero-Vilaplana, V., Linares, E. J., & Ochoa, C. (2026). Integrating Online Peer Support Into Psychosocial Care for Breast Cancer Survivorship: Effects on Anxiety and Post-

Traumatic Growth. https://doi.org/10.21203/rs.3.rs-9616428/v1

Sajid, U., Batool, S. F., Ahmed, S., Karatela, N., Qaisar, H., & Noushad, S. (2022). Psychophysiological Well-Being &Amp; Quality of Life (QoL) Among Breast Cancer Patients After Mastectomy. *International Journal of Endorsing Health Science Research (Ijehsr)*, *10*(4), 446-454. https://doi.org/10.29052/ijehsr.v10.i4.2022.446-454

Su, Y., Zhang, S., Duan, L., & Hu, X. (2026). The Effectiveness of Telemedicine-Based Psychosocial Intervention for Fear of Cancer Recurrence, Mindfulness, and Posttraumatic Growth in Cancer Survivors: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Psycho-Oncology*, *35*(1). https://doi.org/10.1002/pon.70377

Tock, W. L., Maheu, C., Blondin, S., Lee, V., Neuman, S., & Meterissian, S. (2025). The Effect of Life Coaching on Post-Traumatic Growth and Well-Being in Breast Cancer Survivors: A Randomized Controlled Trial. *Psycho-Oncology*, *34*(10). https://doi.org/10.1002/pon.70295

Wang, Z., Chen, X., Zhou, J., Loke, A. Y., & Li, Q. (2023). Posttraumatic Growth in Colorectal Cancer Survivors: A Systematic Review. *Clinical Psychology & Psychotherapy*, *30*(4), 740-753. https://doi.org/10.1002/cpp.2838

Wenji, X. U., Sun, J., Y, L., Chen, Y. C., 智晓旭, Zhang, L., & Du, S. (2026). Posttraumatic Growth Among Cancer Patients: A Conceptual Analysis. *Nursing and Health Sciences*, *28*(2). https://doi.org/10.1111/nhs.70371

Yeoh, S. A., Bowie, A., Tim, W., Russell, H., & Beatty, L. (2026). Effectiveness of Positive Psychology Interventions for Cancer Survivors: A Systematic Review and Meta-Analysis. *Cancer Medicine*, *15*(1). https://doi.org/10.1002/cam4.71368