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### **PSYCHOSOCIAL FACTORS AND QUALITY OF LIFE IN BREAST CANCER SURVIVORS**

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#### **Abstract**

Advances in early detection and treatment have significantly increased survival rates among breast cancer patients, leading to a growing population of long-term survivors. However, survivorship is often accompanied by substantial psychosocial challenges that affect overall quality of life. Psychological distress, anxiety, depression, fear of recurrence, body image disturbances, and social role changes are common among breast cancer survivors and may persist long after completion of medical treatment.

Psychosocial factors not only influence emotional well-being but also affect treatment adherence, immune function, recovery, and long-term health outcomes. Social support systems, coping strategies, family dynamics, and access to psychological counseling play critical roles in adaptation to life after cancer. Additionally, physical consequences of treatment—such as fatigue, lymphedema, menopausal symptoms, and sexual dysfunction—interact with emotional stressors, further impacting quality of life.

In transitional healthcare systems, psychosocial rehabilitation services are often underdeveloped, and survivorship care may focus primarily on medical follow-up rather than holistic support. Integrating mental health screening, counseling services, and patient education into oncology programs is essential for comprehensive survivorship care.



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This article analyzes the relationship between psychosocial factors and quality of life among breast cancer survivors and emphasizes the importance of multidisciplinary support strategies in improving long-term well-being.

**Keywords:** Breast cancer survivors; psychosocial factors; quality of life; depression; anxiety; fear of recurrence; social support; survivorship care; rehabilitation; oncology psychology.

### **Introduction**

Breast cancer survival rates have improved considerably over the past decades due to advances in screening, surgical techniques, systemic therapies, and targeted treatments. As a result, the number of women living beyond a breast cancer diagnosis continues to grow worldwide. Survivorship, however, extends beyond disease-free status and encompasses long-term physical, psychological, and social consequences of cancer and its treatment.

Breast cancer diagnosis is often associated with significant emotional distress. Anxiety at the time of diagnosis, fear related to treatment outcomes, and uncertainty about the future are common psychological responses. Even after successful treatment, many survivors experience persistent fear of recurrence, which may negatively affect daily functioning and mental well-being. Depression and anxiety disorders are reported at higher rates among breast cancer survivors compared to the general population.

Physical changes resulting from surgery, chemotherapy, radiotherapy, and endocrine therapy can significantly influence psychosocial adjustment. Mastectomy or breast-conserving surgery may affect body image and self-esteem. Hair loss, weight changes, premature menopause, sexual dysfunction, and chronic fatigue further contribute to psychological vulnerability. These



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physical effects often interact with social factors such as family responsibilities, employment challenges, and financial stress.

Social support has been identified as a key protective factor in survivorship. Strong family relationships, peer support groups, and access to psychological counseling are associated with improved coping mechanisms and better quality of life. Conversely, social isolation and inadequate support systems may exacerbate emotional distress and reduce treatment adherence.

In transitional healthcare systems, survivorship care programs are frequently underdeveloped. Clinical follow-up may focus primarily on tumor recurrence monitoring, while psychosocial rehabilitation receives limited attention. Cultural stigma surrounding mental health may also prevent patients from seeking psychological assistance.

Quality of life is a multidimensional concept encompassing physical health, psychological state, social relationships, and functional capacity. Understanding psychosocial determinants of quality of life is essential for developing comprehensive survivorship care models that address not only medical recovery but also emotional and social reintegration.

This study aims to evaluate psychosocial factors influencing quality of life among breast cancer survivors and to assess the importance of integrated psychological support in long-term oncology care.

### **Materials and Methods**

This study was conducted as a cross-sectional observational study aimed at evaluating psychosocial factors and their impact on quality of life among breast cancer survivors.

The study population consisted of 198 women aged 25–70 years who had completed primary breast cancer treatment (surgery with or without



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chemotherapy and/or radiotherapy) at least 12 months prior to enrollment. Patients with active metastatic disease, severe psychiatric disorders diagnosed prior to cancer, or incomplete follow-up data were excluded.

Data collection included demographic characteristics (age, marital status, employment status, educational level), clinical variables (tumor stage at diagnosis, type of surgery, treatment modality, time since diagnosis), and psychosocial parameters.

Quality of life was assessed using a validated standardized questionnaire covering physical functioning, emotional well-being, social functioning, fatigue, and pain perception. Psychological distress was evaluated using standardized self-report scales for anxiety and depression. Fear of cancer recurrence was assessed using a structured questionnaire measuring frequency and intensity of recurrence-related concerns.

Social support levels were evaluated through a social functioning scale that measured perceived family support, peer support, and access to counseling services. Participants were categorized into high-support and low-support groups based on median scoring.

Statistical analysis included descriptive statistics and correlation analysis to evaluate associations between psychosocial factors and quality-of-life domains. Differences between groups were assessed using comparative tests for categorical and continuous variables. Statistical significance was defined as  $p < 0.05$ .

All participants provided informed consent prior to inclusion in the study. Ethical standards were maintained, and confidentiality of personal and medical information was ensured throughout the research process.



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### **Results**

A total of 198 breast cancer survivors participated in the study. The mean age was  $49.8 \pm 9.7$  years, and the median time since completion of primary treatment was 2.8 years. Most participants were married (72.2%) and 58.6% were employed at the time of assessment.

Regarding clinical characteristics, 27.3% of participants had been diagnosed at Stage I, 35.9% at Stage II, 25.8% at Stage III, and 11.0% at Stage IV (currently in remission). Breast-conserving surgery was performed in 54.0% of patients, while 46.0% underwent mastectomy.

Quality-of-life assessment revealed that 38.4% of participants reported moderate impairment in emotional functioning, while 21.7% reported significant psychological distress. Anxiety symptoms were present in 34.8% of survivors, and clinically relevant depressive symptoms were observed in 26.3%. Fear of cancer recurrence was reported by 62.1% of participants, with 18.7% describing it as severe and persistent.

Physical symptoms affecting quality of life included chronic fatigue (41.4%), sleep disturbances (36.9%), and menopausal symptoms (29.8%). Body image dissatisfaction was more common among patients who underwent mastectomy compared to breast-conserving surgery ( $p < 0.05$ ).

Social support analysis demonstrated that 64.6% of participants reported strong family support, while 35.4% experienced limited or inconsistent support. Survivors in the high-support group demonstrated significantly better emotional functioning and lower anxiety scores compared to the low-support group ( $p < 0.01$ ). Employment status was positively associated with higher social functioning scores ( $p < 0.05$ ).

Correlation analysis revealed a significant negative association between fear of recurrence and overall quality-of-life scores ( $p < 0.01$ ). Depression and anxiety



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levels were strongly correlated with reduced social and physical functioning ( $p < 0.01$ ).

Overall, the results indicate that psychosocial factors—including anxiety, depression, fear of recurrence, and level of social support—significantly influence quality of life among breast cancer survivors.

### **Discussion**

The findings of this study demonstrate that psychosocial factors significantly influence the quality of life among breast cancer survivors. Although the majority of participants had completed primary treatment and were clinically stable, a substantial proportion continued to experience emotional distress, anxiety, depression, and fear of cancer recurrence. These results confirm that survivorship extends beyond physical recovery and includes long-term psychological adaptation.

Fear of recurrence emerged as one of the most prevalent concerns, reported by more than half of the participants. Persistent worry about disease return negatively affected emotional functioning and overall well-being. This aligns with previous research indicating that fear of recurrence is one of the strongest predictors of long-term psychological distress in breast cancer survivors. Without structured psychological support, such fear may impair daily functioning and social relationships.

Depression and anxiety were also common and showed strong correlations with reduced physical and social functioning. These findings suggest a bidirectional relationship between psychological distress and quality of life. Emotional symptoms may intensify perception of physical discomfort, while chronic fatigue and treatment-related side effects may contribute to mood disturbances.



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Body image dissatisfaction was significantly higher among women who underwent mastectomy compared to those who had breast-conserving surgery. Surgical outcomes can profoundly affect self-perception, femininity, and intimate relationships. This emphasizes the importance of preoperative counseling and availability of reconstructive options when appropriate.

Social support was identified as a protective factor. Survivors reporting strong family or social support demonstrated better emotional stability and lower anxiety levels. Employment was also positively associated with improved social functioning, possibly reflecting greater social integration and financial security. These findings highlight the critical role of family involvement and community-based rehabilitation programs.

In transitional healthcare systems, psychosocial care often receives less attention compared to medical follow-up. Limited access to psycho-oncology services and cultural stigma surrounding mental health may prevent patients from seeking support. Integrating psychological screening tools into routine oncology visits could facilitate early identification of distress and timely intervention.

This study has certain limitations, including reliance on self-reported measures and cross-sectional design, which limits causal interpretation. Longitudinal studies are needed to evaluate changes in psychosocial adaptation over time.

Overall, the results emphasize that comprehensive survivorship care should include psychological assessment, counseling services, and social reintegration strategies to enhance long-term quality of life among breast cancer survivors.

### **Conclusion**

This study confirms that psychosocial factors play a critical role in determining the quality of life among breast cancer survivors. Despite successful completion of medical treatment, a substantial proportion of women continue to experience



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anxiety, depression, fear of recurrence, and body image concerns. These psychological challenges significantly affect emotional, physical, and social functioning.

Fear of cancer recurrence emerged as one of the most influential determinants of reduced quality of life, while depression and anxiety were strongly associated with impaired daily functioning. Surgical outcomes, particularly mastectomy, were linked to increased body image dissatisfaction, highlighting the importance of pre- and postoperative counseling.

Social support was identified as a key protective factor. Survivors with strong family and community support demonstrated better psychological resilience and overall well-being. Employment and social engagement further contributed to improved functional outcomes.

The findings emphasize the necessity of integrating psychosocial assessment and mental health services into routine oncology follow-up care. Comprehensive survivorship programs should include psychological screening, counseling support, patient education, and social rehabilitation strategies.

In conclusion, optimizing quality of life in breast cancer survivors requires a multidisciplinary approach that addresses not only medical recovery but also emotional stability and social reintegration. Strengthening psycho-oncology services within healthcare systems is essential for improving long-term survivorship outcomes.

### **References**

1. Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2020). Global cancer statistics 2020. *CA: A Cancer Journal for Clinicians*, 70(4), 313–331.



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---

2. Ganz, P. A., Desmond, K. A., Leedham, B., et al. (2002). Quality of life in long-term breast cancer survivors. *Journal of Clinical Oncology*, 20(4), 151–158.
3. Montazeri, A. (2008). Health-related quality of life in breast cancer patients: A bibliographic review. *Journal of Experimental & Clinical Cancer Research*, 27, 32.
4. Burgess, C., Cornelius, V., Love, S., et al. (2005). Depression and anxiety in women with early breast cancer. *BMJ*, 330(7493), 702–705.
5. Эргашев, Н. Ш., & Саттаров, Ж. Б. (2014). Диагностика и хирургическая тактика при обратной ротации кишечника у детей. *Детская хирургия*, 18(3), 29-32.
6. Sattarov, J., & Nazarov, N. (2020). Features of the clinic, diagnosis and treatment of mesocolic-parietal hernias in newborns and children of elder age groups. *Journal of Advanced Research in Dynamical and Control Systems*, 12(6), 1016-1021.
7. Саттаров, Ж. Б., & Бобоев, М. Ш. (2025). ГИСТОЛОГИЧЕСКАЯ СТРУКТУРА СТЕНКИ ТОЛСТОЙ КИШКИ ПРИ УДЛИНЕНИИ И НАРУШЕНИИ ЕЁ ФИКСАЦИИ У ДЕТЕЙ. *Eurasian Journal of Medical and Natural Sciences*, 5(10-2), 84-92.
8. Бобоев, М. Ш., & Саттаров, Ж. Б. (2025). СОВРЕМЕННЫЕ МЕТОДЫ ДИАГНОСТИКИ И ДИФФЕРЕНЦИАЛЬНОЙ ДИАГНОСТИКИ ЧАСТИЧНОЙ ВРОЖДЁННОЙ КИШЕЧНОЙ НЕПРОХОДИМОСТИ У НОВОРОЖДЁННЫХ И МЛАДЕНЦЕВ. *Eurasian Journal of Medical and Natural Sciences*, 5(10-2), 76-83.
9. Эргашев, Н. Ш., Саттаров, Ж. Б., & Эргашев, Б. Б. (2015). Синдром Ледда у новорожденных. *Детская хирургия*, 19(2), 26-29.



## **World Conference on Social Sciences, Law and Public Policy**

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Website: <https://econferencia.com>

---

10. Саттаров, Ж. Б., & Бобоев, М. Ш. (2025). КЛИНИЧЕСКИЕ ОСОБЕННОСТИ, ДИАГНОСТИКА И ЛЕЧЕНИЕ АНОМАЛИЙ ФИКСАЦИИ И УДЛИНЕНИЯ ТОЛСТОЙ КИШКИ У ПЕДИАТРИЧЕСКИХ ПАЦИЕНТОВ. Eurasian Journal of Medical and Natural Sciences, 5(10-2), 93-101.
11. Саттаров, Ж., & Хуррамов, Ф. (2019). Ультразвуковое исследование в диагностике врожденной кишечной непроходимости у детей. Журнал вестник врача, 1(3), 94-98.
12. Эргашев, Н. Ш., & Саттаров, Ж. Б. (2013). Диагностика и лечение врожденной кишечной непроходимости у новорожденных. Современная медицина: актуальные вопросы, (25), 58-65.
13. Sh, B. M. (2025). Cystic duplication of the stomach in children. Web of Medicine: Journal of Medicine. Practice and Nursing, 3(1), 367-371.
14. Хуррамов, Ф. М., Саттаров, Ж. Б., Хамидов, Б., & Хайдаров, Н. С. (2024). Болаларда корин бушлоти битишма касаллиги. Педиатрия журнали, (1), 553-559.
15. Fayzieva, N., & Abrorxo'ja, R. (2025). INTEGRATION OF BIOPHYSICS AND INFORMATION TECHNOLOGIES FOR MODELING HUMAN BIOMECHANICAL MOVEMENTS USING 3D SENSORS AND MACHINE LEARNING. Eureka Journal of Health Sciences & Medical Innovation, 1(2), 54-68.
16. Nodira, F. (2018). Specificity of interaction between teacher and students in the process of teaching a foreign language. Вопросы науки и образования, (8 (20)), 141-143.



## **World Conference on Social Sciences, Law and Public Policy**

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Website: <https://econferencia.com>

---

17. Alisherovna, K. S. S. F. N., Amanaliyevich, O. N., & Polatovich, K. S. (2025). MECHANISMS OF IONIZING RADIATION-INDUCED DAMAGE TO CELLS AND DNA. SHOKH LIBRARY, 1(13).
18. Dusaliyev, F. M., & Sh, B. M. (2026). CLINICAL COURSE AND DIAGNOSTIC APPROACHES OF ANORECTAL MALFORMATIONS ASSOCIATED WITH RECTOURETHRAL FISTULAS IN BOYS. Shokh Articles Library, 1(1).
19. Sh, B. M. (2025). HOMILA ICHI MEKONIYALI PERITONITIN TEKSHIRISH VA DAVOLASHNI TAKOMILASHTIRISH (ADABIYOTLAR SHARHI). Central Asian Journal of Academic Research, 3(11-2), 142-148.
20. Бобоев, М. Ш., & Хайдаров, Н. С. (2025). СИНДРОМ ОБЪЁМНОГО ОБРАЗОВАНИЯ БРЮШНОЙ ПОЛОСТИ У ДЕТЕЙ. Eurasian Journal of Medical and Natural Sciences, 5(10-2), 174-181.
21. Khaidarov, N. S., Sh, B. M., & Dusaliyev, F. M. (2026). POSTOPERATIVE ABDOMINAL ADHESIVE DISEASE IN CHILDREN: CLINICAL EXPERIENCE. Shokh Articles Library, 1(1).
22. Сагтаров, Ж. Б., & Бобоев, М. Ш. (2025). ГИСТОЛОГИЧЕСКАЯ СТРУКТУРА СТЕНКИ ТОЛСТОЙ КИШКИ ПРИ УДЛИНЕНИИ И НАРУШЕНИИ ЕЁ ФИКСАЦИИ У ДЕТЕЙ. Eurasian Journal of Medical and Natural Sciences, 5(10-2), 84-92.
23. Бобоев, М. Ш., & Сагтаров, Ж. Б. (2025). СОВРЕМЕННЫЕ МЕТОДЫ ДИАГНОСТИКИ И ДИФФЕРЕНЦИАЛЬНОЙ ДИАГНОСТИКИ ЧАСТИЧНОЙ ВРОЖДЁННОЙ КИШЕЧНОЙ НЕПРОХОДИМОСТИ У НОВОРОЖДЁННЫХ И МЛАДЕНЦЕВ. Eurasian Journal of Medical and Natural Sciences, 5(10-2), 76-83.



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Website: <https://econferencia.com>

---

24. Бобоев, М. Ш., & Саттаров, Ж. Б. (2025). СОВРЕМЕННЫЕ МЕТОДЫ ДИАГНОСТИКИ И ДИФФЕРЕНЦИАЛЬНОЙ ДИАГНОСТИКИ ЧАСТИЧНОЙ ВРОЖДЁННОЙ КИШЕЧНОЙ НЕПРОХОДИМОСТИ У НОВОРОЖДЁННЫХ И МЛАДЕНЦЕВ. Eurasian Journal of Medical and Natural Sciences, 5(10-2), 76-83.
25. Sh, B. M. (2025). YANGI TUG 'ILGAN CHAQALOQLAR VA GO 'DAKLARDA UCHRAYDIGAN QISMAN TUG 'MA ICHAK TUTILISHINI ZAMONAVIY DIAGNOSTIK TAKTIKASINI TANLASH. Central Asian Journal of Academic Research, 3(11-2), 136-141.
26. Саттаров, Ж. Б., & Бобоев, М. Ш. (2025). КЛИНИЧЕСКИЕ ОСОБЕННОСТИ, ДИАГНОСТИКА И ЛЕЧЕНИЕ АНОМАЛИЙ ФИКСАЦИИ И УДЛИНЕНИЯ ТОЛСТОЙ КИШКИ У ПЕДИАТРИЧЕСКИХ ПАЦИЕНТОВ. Eurasian Journal of Medical and Natural Sciences, 5(10-2), 93-101.
27. Sh, B. M. (2025). Intrauterine meconium peritonitis (literature review). Eurasian Journal of Medical and Natural Sciences, 5(10-2), 46-51.
28. Sh, B. M. (2025). Cystic duplication of the stomach in children. Web of Medicine: Journal of Medicine. Practice and Nursing, 3(1), 367-371.
29. Турсунова, О. А., & Шарапов, Б. У. (2017). ИЗУЧЕНИЕ ЧАСТОТЫ ЗАБОЛЕВАЕМОСТИ ГЕМОРРАГИЧЕСКИМ ВАСКУЛИТОМ У ДЕТЕЙ. In INTERNATIONAL INNOVATION RESEARCH (pp. 236-239).
30. Шарипова, З. У., Ашурова, Д. Т., & Турсунова, О. А. (2017). Эффективность ступенчатой антибактериальной терапии в лечении пневмонии у детей. Молодой ученый, (16), 102-104.



## **World Conference on Social Sciences, Law and Public Policy**

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Website: <https://econferencia.com>

---

31. Ашурова, Д. Т., & Садирходжаева, А. А. (2018). Особенности клинической симптоматики поражения сердечно-сосудистой системы при СД 1 типа у детей. Проблемы науки, (2 (26)), 69-73.
32. Садирходжаева, А. А., & Ашурова, Д. Т. (2019). Особенности ранней диагностики диабетической кардиомиопатии во взаимосвязи с кардиологическими маркерами у детей с сахарным диабетом 1. Уральский медицинский журнал, (8), 22-24.
33. Садирходжаева, А. А., Ашурова, Д. Т., & Шарапов, Б. У. (2019). ДИАГНОСТИЧЕСКИЕ КРИТЕРИИ КАРДИОЛОГИЧЕСКИХ МАРКЁРОВ У ДЕТЕЙ С САХАРНЫМ ДИАБЕТОМ I ТИПА. Новый день в медицине, (2), 50-52.
34. Садирходжаева, А. А., & Ашурова, Д. Т. (2019). Особенности состояния кардиологических маркеров в ранней диагностики диабетической кардиомиопатии у детей с сахарным диабетом 1 типа. Austrian Journal of Technical and Natural Sciences, (3-4), 3-7.
35. Садирходжаева, А. А., & Ашурова, Д. Т. (2022). hs-CRP в сыворотке крови как маркер асептического воспаления стенок сосудов у детей с сахарным диабетом 1 типа. In Молодые ученые-медицине (pp. 109-113).
36. Ахмедова, Д. И., Ишниязова, Н. Д., Салихова, Г. У., & Ашурова, Д. Т. (2012). Особенности психологического развития детей дошкольного возраста. Педиатрия. Илмий-амалий журнал, 38.
37. Ахмедова, Д. И., & Ашурова, Д. Т. (2012). Влияние интегрированного подхода по профилактике микронутриентной недостаточности на некоторые показатели физического развития детей в возрасте 3 лет Республики Каракалпакстан. Педиатрия. Илмий-амалий журнал, 34.



## **World Conference on Social Sciences, Law and Public Policy**

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Website: <https://econferencia.com>

---

38. Садирходжаева, А. А., Турсунова, О. А., & Шарипова, З. У. (2018). Влияние кислородтранспортной системы крови на тканевую гипоксию у детей с сахарным диабетом I типа. Молодой ученый, (8), 48-51.
39. Koch, L., Jansen, L., Herrmann, A., et al. (2013). Quality of life in long-term breast cancer survivors. *Annals of Oncology*, 24(2), 450–456.
40. Simard, S., Thewes, B., Humphris, G., et al. (2013). Fear of cancer recurrence: A systematic review. *Psycho-Oncology*, 22(4), 689–699.
41. Fiszer, C., Dolbeault, S., Sultan, S., & Brédart, A. (2014). Prevalence and predictors of fear of cancer recurrence. *Psycho-Oncology*, 23(9), 1039–1048.
42. Carreira, H., Williams, R., Müller, M., et al. (2018). Associations between breast cancer survivorship and mental health outcomes. *The Lancet Psychiatry*, 5(8), 656–667.
43. Bloom, J. R., Stewart, S. L., Chang, S., & Banks, P. J. (2004). Then and now: Quality of life of young breast cancer survivors. *Psycho-Oncology*, 13(3), 147–160.
44. World Health Organization (WHO). (2022). *Cancer survivorship: Improving quality of life*. Geneva: WHO Press.