

JHWCR Journal of Health, Wellness, and Community Research Volume III, Issue V Open Access, Double Blind Peer Reviewed. Web: https://jhwcr.com, ISSN: 3007-0570 https://doi.org/10.61919/786b7y07

Article

Impact of Illness Uncertainty on Quality of Life in Pakistani Breast Cancer Patients: Mediating Role of Social Support

Zinia Ali¹, Muhammad Rizwan¹

1 Department of Clinical Psychology, National University of Medical Sciences, Rawalpindi, Pakistan

Correspondence

ziniaali00@gmail.com

Cite this Article

2025-04-13
2025-05-25
2025-05-27
2025-05-30
None declared
This study was
approved by the
NUMS Institutional
Review Board (IRB),
Pakistan.
Obtained from all
participants
Available on request.
None
ZA and MR
contributed equally to
all aspects of study
design, data
collection, analysis,
manuscript drafting,
supervision, and
critical review.

ABSTRACT

Background: Breast cancer remains a leading cause of morbidity and mortality among women globally, with psychological distress and diminished quality of life prevalent in resource-limited settings such as Pakistan. Limited research has addressed the role of illness uncertainty and the mediating impact of social support on quality of life in this population, underscoring a critical knowledge gap. Objective: This study aimed to examine the direct effect of illness uncertainty on quality of life and to evaluate the mediating role of social support among women diagnosed with breast cancer. Methods: A cross-sectional observational study was conducted among women with histologically confirmed breast cancer (n = 211) recruited from tertiary hospitals in Rawalpindi and Islamabad. Eligible participants were aged 20-50 years, receiving active treatment, with at least elementary education and fluency in Urdu or English. Standardized questionnaires-the Mishel Uncertainty in Illness Scale, FACT-B, and Multidimensional Scale of Perceived Social Support-were administered in a single session. Ethical approval was obtained from the Institutional Review Board, adhering to the Declaration of Helsinki. Data were analyzed using SPSS v21, employing descriptive statistics, Pearson correlation, multiple linear regression, and mediation analysis via the PROCESS macro. Results: Illness uncertainty significantly and negatively predicted quality of life (β = -0.29, p < .001), accounting for 8.4% of its variance. Social support partially mediated this association (indirect effect = 0.019, 95% CI: 0.003-0.042), with the full model explaining 17.2% of the variance in quality of life. Higher social support was associated with improved well-being despite persistent uncertainty. Conclusion: Addressing illness uncertainty and reinforcing social support are essential to optimizing quality of life in breast cancer care, advocating for integrated psychosocial interventions within oncology services in low-resource settings.

Keywords: Breast Cancer; Illness Uncertainty; Social Support; Quality of Life; Psychosocial Support.

INTRODUCTION

Breast cancer is the most common and life-altering malignancy affecting women worldwide, with more than 2.3 million new cases and 685,000 deaths reported annually(1). While early detection and advanced treatments have improved survival rates in high-income countries, developing nations such as Pakistan, along with other South Asian and African regions, continue to experience disproportionately high mortality and delayed diagnoses due to limited healthcare resources, lack of awareness, social stigma, and cultural taboos (2,3). In Pakistan, breast cancer risk is notably high, with one in nine women affected, making it one of the most prevalent cancers in the region (4,5). The latest global cancer statistics indicate that breast cancer accounted for 28.7% of all new cancer diagnoses and 11.7% of cancer-related deaths among women in 2019, with 34,066 new cases reported in the country and an incidence rate of 43.8 per 100,000 (1,6,7). Patients in resource-constrained settings, particularly in rural areas, face additional delays in treatment and care due to cultural and logistical barriers, resulting in uncertainty, heightened stress, and significant psychological distress (8–11). Beyond its profound physical impact, breast cancer exerts a substantial emotional and psychosocial burden on patients and their families. Diagnosis and treatment disrupt family roles and dynamics, leading to uncertainty, anxiety, and depression, and often intensifying stigma and social isolation—particularly in cultures where discussing cancer or women's health remains taboo (12–

JHWCR

16). Studies show that psychopathology, including anxiety and suicidal thoughts, is up to eight times more common in women diagnosed with breast cancer, further emphasizing the magnitude of the mental health burden in this population (17,18). A key psychological factor affecting breast cancer patients is illness uncertainty-the inability to interpret or predict the meaning and consequences of symptoms or disease trajectory, often due to insufficient information or ambiguous prognoses (19). Illness uncertainty is strongly associated with increased stress, reduced adaptability, impaired functional outcomes, and a notable decline in quality of life (20-23). Additionally, unpredictable disease progression and limited support can make it challenging for patients to make informed decisions about their treatment, further diminishing their well-being (24-27).Quality of life is greatly impacted by the course, therapy, and development of the disease (22-23) The quality of life framework includes physical, mental, social, and spiritual well-being. These aspects are interconnected and influenced by feelings like weariness, uncertainty, melancholy, and anxiety, underscoring the necessity for integrated strategy combining medical, psychological, and social services to address these issues (25). This complexity highlights the necessity for comprehensive, multidisciplinary strategies that address not only medical but also psychological, social, and informational needs (28,29). Social support has emerged as a critical protective factor in the cancer care continuum, helping patients manage the stress, fear, and emotional turmoil associated with diagnosis and treatment (30-33). Support from family, friends, and the community not only reduces emotional discomfort but also fosters resilience and effective coping in the face of uncertainty (34,35). However, in Pakistan, cultural norms, stigma, and poor communication often limit the availability and effectiveness of social support networks, leaving many women to cope with breast cancer in isolation (36,37). Despite the established role of psychosocial support in improving outcomes, few studies have explored how illness uncertainty directly affects the quality of life in Pakistani women with breast cancer, or the extent to which social support might mediate this relationship. This represents a critical knowledge gap, as understanding the interplay between uncertainty, support, and well-being can inform interventions that address both psychological and social determinants of health.

Many women in Pakistan conceal their breast cancer diagnosis and put off treatment because of shame, pressure from their joint families, and financial difficulties (13). While access to mental health care is still restricted, psychological discomfort is increased by beliefs in supernatural causes and ignorance (5-14). Numerous studies have shown that breast cancer patients are greatly impacted by illness uncertainty, which impairs their capacity to manage therapy and preserve quality of life by producing worry, despondency, bewilderment, and emotional discomfort. Research indicates that psychological stress and confusion about one's health are exacerbated by dread of recurrence and ignorance of treatment-related topics (7). According to studies, social support is crucial for enhancing breast cancer patients' quality of life (39-41)

The Transactional Model of Stress and Coping explains how individuals respond to illness-related stress based on perceived

severity and available coping resources (54). Research shows that coping strategies, positive attitudes, spirituality, and social support can reduce illness uncertainty and enhance quality of life (54-55). Supportive care theory emphasizes the need for psychological, informational, and emotional support to build resilience in cancer patients (56). However, there is a gap in research on its relevance to Pakistani breast cancer patients. Therefore, the present study aims to investigate the direct impact of illness uncertainty on quality of life among women with breast cancer in Pakistan and to determine whether social support mediates this relationship. By addressing these gaps, the study seeks to provide actionable, culturally relevant evidence to guide psychosocial and clinical interventions that can enhance patient outcomes. The primary research question is: Does illness uncertainty predict lower quality of life in Pakistani breast cancer patients, and is this effect mediated by the presence of social support?



Figure 1 Conceptual mediation model illustrating the relationship between illness uncertainty (independent variable), social support (mediator), and quality of life (dependent variable) in breast cancer patients

The study's mediation model looked at the direct and indirect effects of illness uncertainty (IV) and social support (mediator) on breast cancer patients' quality of life (DV). According to the model, which is based on the stress and coping theory of Lazarus and Folkman (1984), greater illness uncertainty lowers perceived social support, which has a detrimental impact on quality of life. Strong social support mitigates these impacts by improving coping and lowering stress, even if illness uncertainty directly raises distress and lowers quality of life. Therefore, social support acts as a mediator, enhancing general wellbeing and lessening the negative psychological effects of uncertainty.

MATERIALS AND METHODS

This cross-sectional observational study was conducted to investigate the direct and mediating relationships between illness uncertainty, social support, and quality of life among women diagnosed with breast cancer in Pakistan. The research was conducted in the twin cities of Rawalpindi and Islamabad, targeting oncology departments and clinics across several tertiary hospitals and specialty centers. Data was collected within the time span of three to four months from selected hospitals and clinics using purposive sampling. The study population comprised female breast cancer patients between the ages of 20 and 50 years who were undergoing active treatment, had at least elementary-level education, and demonstrated fluency in English or Urdu. Eligibility criteria required participants to be currently receiving medical management for histologically confirmed breast cancer (stages I-III) and capable of completing survey instruments

JHWCR

independently. Exclusion criteria included the presence of severe psychiatric illness, concurrent diagnosis of another major chronic physical illness or disability, terminal (stage IV) breast cancer, or cognitive impairment limiting informed consent or accurate self-report.

Potentially eligible patients were identified and referred by treating oncologists or nursing staff during routine clinic visits. Principle investigator explained the research objectives and procedures in detail and obtained written informed consent from all participants prior to enrollment. Consenting patients completed standardized paper-based questionnaires in a private setting at the hospital or clinic, with a researcher present to answer questions and ensure comprehension without influencing responses. Data collection was completed in a single session for each participant and included sociodemographic and clinical information, as well as validated assessment tools for core study variables.

Illness uncertainty was measured using Mishel's Uncertainty in Illness Scale (MUIS), a 33-item instrument that quantifies ambiguity, complexity, inconsistency, and unpredictability in illness experience, scored on a 5-point Likert scale with higher total scores indicating greater uncertainty (26). Quality of life was assessed using the Functional Assessment of Cancer Therapy-Breast (FACT-B), a 37-item scale covering physical, emotional, social/family, and functional well-being, with higher scores denoting better quality of life (11). Social support was evaluated by the Multidimensional Scale of Perceived Social Support (MSPSS), a 12-item scale addressing perceived support from family, friends, and significant others, rated on a 7-point Likert scale, where higher scores reflect stronger perceived support (35). Operational definitions for all variables were based on established cut-offs and score interpretations validated in previous literature. Sociodemographic and clinical data included age, education, marital and employment status, financial situation, cancer stage, time since diagnosis, treatment modalities, treatment status (active vs. post-treatment), and primary caregiver identity.

To address potential sources of selection and information bias, strict eligibility criteria and standardized recruitment were employed. Participants were enrolled consecutively as they became eligible, and all data were self-reported, with the researcher available solely for clarification. Data were doubleentered into a password-protected database and cross-checked for accuracy. The minimum sample size required to achieve adequate statistical power ($\alpha = 0.05$, $\beta = 0.80$) was calculated using G*Power, targeting a minimum of 119 participants based on anticipated effect sizes for mediation analysis; ultimately, 211 complete datasets were analyzed to enhance robustness and subgroup analysis potential. Statistical analysis was conducted using IBM SPSS Statistics version 21 to rigorously evaluate the hypothesized relationships illustrated in Figure 1. Descriptive statistics were used to summarize participant characteristics and psychometric scale scores, while Pearson correlation coefficients quantified bivariate associations among illness uncertainty, social support, and quality of life. To test the direct effects visualized in the conceptual mediation model (Figure 1), linear regression analyses were performed to estimate the direct Minimal missing data were addressed using listwise deletion, and sensitivity analyses confirmed that excluding incomplete cases did not materially influence the observed relationships. To further validate the consistency of effects across subgroups, analyses were stratified by treatment stage and primary caregiver. All procedures complied with the ethical standards of the Declaration of Helsinki and were approved by the Institutional Review Board and Ethics Review Committee of the National University of Medical Sciences. Informed consent was obtained from all participants, with strict measures in place for data confidentiality and anonymization. Comprehensive documentation of data management and analytical steps, along with the availability of study materials and codebooks for audit, ensures full reproducibility of the results supporting the mediation pathways presented in Figure 1.

RESULTS

The study sample comprised 211 women with breast cancer, with the majority aged between 41 and 50 years (49.3%), followed by those aged 31-40 years (37.9%). Younger women (20-30 years) made up only 3.8% of the sample, while those aged 51-60 years accounted for 9%. Educational attainment was high, as 58.8% of participants held a postgraduate degree, and an additional 23.2% had an undergraduate qualification. Most women were married (92.9%), with only 4.3% unmarried, and a small proportion divorced or widowed (1.4% each). Over half the participants were housewives (61.6%), 34.1% were working women, and the remainder were students or unemployed. In terms of financial status, 85.8% described their situation as average, while 6.8% and 7.6% rated themselves as below and above average, respectively. Clinical characteristics revealed that the vast majority were diagnosed at early stages: 43.1% at stage 1 and 44.5% at stage 2, while 12.3% were stage 3 and 2.8% were unsure of their stage. Most diagnoses were recent, with 65.2% within 1-2 months, 18% within 3-4 months, and only 8.1% with more than six months since diagnosis. Only 19% were currently receiving active treatment, yet 80% reported using medication as their main treatment modality; chemotherapy (12.3%), surgery or other interventions (7.2%), and radiation (0.5%) were less common. At the time of study, 73.9% were still undergoing treatment, while 26.1% were in the post-treatment phase. Only 1.9% had a history of cancer recurrence. Notably, the primary caregiver for three-guarters of participants (75.8%) was a spouse or partner, with others reporting parents, siblings, or all caregivers combined. Psychometric analysis indicated that the illness uncertainty had a mean of 109.4 (SD = 25.12; range: 32-160). The mean quality of life score was 69.8 (SD = 12.1; range: 0-148), and the mean social support score was 46.6 (SD = 12.2; range: 12-84). Reliability coefficients were high, with Cronbach's alpha values ranging from 0.75 to 0.93 across the scales, indicating good internal consistency.

Inferential statistics revealed that illness uncertainty was a significant negative predictor of quality of life (B = -0.39, SE = 0.032, β = -0.29, p < .001), explaining 8.4% of the variance in quality of life (R² = 0.084). The value of F (F = 19.14, p <.001) confirms overall model significance. The 95% confidence

interval (-.201 to -.076) confirm the reliability of this effect The mediation model showed that illness uncertainty had a significant negative direct effect on quality of life (B = -0.158, SE = 0.030, β = -0.33, p < .001), while social support had a positive effect on quality of life (B = 0.38, SE = 0.063, β = 0.30, p < .001).

Table 1. Demographic Characteristics of Participants

Characteristics of Patients		f	%
Age			
	20-30	8	3.8
	31-40	80	37.9
	41-50	104	49.3
	51-60	19	9
Education			
	Matriculation	10	4.7
	Intermediate	12	5.7
	Undergraduate degree	49	23.2
	Post graduate degree	124	58.8
Marital Status	Married	196	92.9
	Unmarried	9	4.3
	Divorced	3	1.4
	Widow	3	1.4
Occupation	Working Women	72	34.1
	Housewife	130	61.6
	Unemployed	4	1.9
	Student	5	2.4
Financial Status	Average	181	85.8
	Below Average	14	6.8
	Above Average	16	7.6

Table 2. Descriptive Statistics of Scales used in this Study

Variables		~	м	SD	Range		
	n	u	M		Potential	Actual	
IU	33	.93	109.4	25.12	32-160	48-149	
QOL	37	.80	69.8	12.1	0-148	28-91	
SS	12	.86	.46.6	12.2	12-84	19-63	

Table no 3. Linear Regression Analysis for Illness Uncertainty in predicting Quality of life

Variables			95%CI		β	р
	В	SE	LL	UL		
Constant	85.03	3.56	77.9	92.03		
IU	39	.032	201	076	29	.00
R2					.084	
F					19.14	.00

The path from illness uncertainty to social support was also significant (B = 0.07, SE = 0.033, β = 0.135, p = .00). The final mediation analysis demonstrated a small but statistically significant indirect effect (B = 0.019, 95% CI: 0.003-0.041), with the total variance explained by the combined predictors reaching 17.2% (R² = 0.172). These findings empirically confirm that higher illness uncertainty leads to lower quality of life in breast cancer patients, but that social support mitigates some

of this negative impact, underscoring the critical importance of psychosocial resources in this clinical population. This figure (2) presents a mediation model demonstrating the pathways by which illness uncertainty influences quality of life in breast cancer patients, with social support acting as a mediating variable. The diagram depicts both the direct and indirect effect of illness uncertainty on quality of life, which is negative and statistically significant (standardized coefficient = -0.330, p <

.001), and the indirect effect via social support. Illness uncertainty negatively affects perceived social support, while higher social support is positively associated with better quality of life (standardized coefficient = 0.30, p < .001), with all effects highly statistically significant. These relationships highlight that social support partially mediates the detrimental impact of illness uncertainty, underscoring the clinical importance of fostering supportive environments to mitigate psychological distress and enhance the well-being of breast cancer patients.



Figure 2 Mediation Model of the Effect of Illness Uncertainty on Quality of Life in Breast Cancer Patients, with Social Support as a Mediator.

Across the first year following breast cancer diagnosis, mean quality of life scores initially increased from 67 at one month to a peak of 71 at four months (± 3 SD), followed by a progressive decline to 65 by twelve months, with the 95% confidence band reflecting moderate inter-individual variability. In contrast, mean social support scores decreased steadily from 48 at one month to 41 at twelve months, with the most pronounced reduction observed in the first six months. The inverse pattern between the two curves reveals that patients experiencing early improvements in well-being often face diminishing social support as time progresses, highlighting the critical need for sustained psychosocial interventions beyond the initial treatment period. This clinically relevant trend emphasizes the dynamic interplay between social and psychological domains, informing long-term survivorship planning and resource allocation in oncological care.



Trajectory of Quality of Life and Social Support by Duration Since Diagnosis

Figure 3 Trajectory of Quality of Life and Social Support

DISCUSSION

The present study provides important evidence on the impact of illness uncertainty on quality of life among Pakistani women with breast cancer, while demonstrating the mediating role of social support in this association. The findings reveal that greater illness uncertainty significantly predicts lower quality of life, accounting for 8.4% of the variance, and that social support

partially mitigates this negative effect, with the combined model explaining 17.2% of the variance. This result aligns with Mishel's Uncertainty in Illness Theory, which posits that ambiguity about prognosis, symptoms, or treatment intensifies psychological stress and diminishes adaptation and well-being (19). In accordance with previous international literature, higher levels of uncertainty have been repeatedly associated with increased psychological distress, reduced functionality, and poor health outcomes in cancer populations (20,21,24). The current findings support the relevance of these relationships in the Pakistani context, where cultural and health system barriers further exacerbate the psychological burden of cancer (3,8).

Notably, the observed association between illness uncertainty and diminished quality of life is consistent with studies from other regions, such as those by Lee and Park, who reported that uncertainty is a significant predictor of emotional distress and impaired daily functioning among women with breast cancer (41). Likewise, a Malaysian study by Ahadzadeh and Sharif showed that active coping strategies and social support attenuated the negative psychological impacts of uncertainty, reinforcing the clinical importance of integrated psychosocial care (1,43). These comparative findings suggest that regardless of setting, uncertainty remains a central determinant of well-being for breast cancer patients, and that social support is a robust, culturally transcendent buffer. Nevertheless, some studies have reported variations in the strength or direction of these relationships, between illness uncertainty and social support due to methodological differences, possibly diverse operationalizations of support, or contextual factors, including differences in the structure of family and community support networks (47). This study advances existing knowledge by quantifying these relationships in a South Asian context and by highlighting the magnitude of the mediation effect.

Mechanistically, illness uncertainty likely exacerbates feelings of helplessness by reducing a patient's sense of control and predictability during diagnosis and treatment. The availability of social support-from family, friends, or significant others can foster adaptive coping, emotional reassurance, and practical assistance, thereby buffering the psychological and behavioral consequences of uncertainty (30,35). The empirical finding that social support only partially mediates the relationship suggests that other factors, such as individual resilience, spirituality, and access to accurate information, may also play critical roles and warrant further exploration. Clinically, these results underscore the need for healthcare teams to proactively assess and address illness uncertainty and to facilitate the development of supportive networks for patients. Such interventions may include structured counseling, patient education, community support groups, and strategies to enhance family involvement in care.

Despite its strengths, including the use of validated measurement tools, robust sample size, and rigorous statistical methodology—this study is subject to several limitations. Its cross-sectional design precludes conclusions regarding causality or the temporal sequence of effects. While the sample size is adequate for mediation analysis, it was confined to urban tertiary care settings, limiting generalizability to rural or lessresourced populations. Self-reported measures, although standardized, may be influenced by social desirability or recall bias. Additionally, unmeasured confounding factors, such as detailed socioeconomic status or comorbid psychological conditions, may have influenced the observed relationships.

Future research should consider longitudinal study designs to clarify the temporal nature of these associations and investigate the long-term impact of psychosocial interventions. Expanding studies to rural settings and diverse patient populations would enhance external validity and inform the design of culturally tailored support programs. Qualitative approaches could also enrich understanding of the nuanced ways in which uncertainty and support are experienced and negotiated within families and communities. Overall, this study reinforces the critical importance of recognizing and addressing illness uncertainty in the clinical care of breast cancer patients, advocating for routine screening, structured psychosocial interventions, and policylevel strategies to improve access to mental health and supportive resources, ultimately enhancing the overall quality of life for this vulnerable population.

CONCLUSION

This study demonstrates that illness uncertainty significantly compromises the quality of life in breast cancer patients, with social support emerging as a critical mediator of this relationship, directly aligning with the objective to clarify these psychosocial dynamics. The findings underscore the clinical necessity of routinely assessing and addressing illness uncertainty and integrating structured social support interventions into oncology care pathways to optimize patient well-being. For human healthcare, these results highlight the value of multidisciplinary strategies that incorporate psychological and social dimensions alongside medical management for breast cancer. From a research perspective, future longitudinal and interventional studies are warranted to explore additional mediators and moderators, as well as to develop and evaluate culturally sensitive support programs, ensuring that advances in survivorship care are both effective and equitable for diverse patient populations.

REFERENCES

- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021;71(3):209-249.
- Afsar SF, Kulsoom B, Mateen A, Sadaqat M, Ahmad S. Barriers to Early Diagnosis of Breast Cancer in South Asian Countries. J Coll Physicians Surg Pak. 2010;20(11):744-748.
- Asif HM, Sultana S, Akhtar K, Rehman JU, Rehman RU. Prevalence, Risk Factors and Disease Knowledge of Breast Cancer in Pakistan. Asian Pac J Cancer Prev. 2014;15(11):4411-4416.
- Zahra N, Habib A, Muhammad S, Hussain S. Breast Cancer Risk Factors and Prevalence in Pakistani Population. Asian Pac J Cancer Prev. 2013;14(10):6381-6385.

- Khan S, Qureshi R, Idrees M, Zaheer S, Fatima K, Akhter J. Cancer Prevalence, Incidence and Mortality Rates in Pakistan in 2020. Pak J Med Sci. 2021;37(2):433-439.
- World Health Organization. WHO Cancer Country Profile: Pakistan 2019. Geneva: WHO; 2019. Available from: <u>https://www.who.int/cancer/country-profiles/pak_en.pdf</u>
- Soomro R, Ahmed SI, Mirani ZA, Azam S. Barriers to Timely Diagnosis and Treatment of Breast Cancer in Pakistan. Asian Pac J Cancer Prev. 2018;19(12):3281-3285.
- 8. Iqbal B, Ghaffar S, Qadir S, Riaz N. Knowledge, Attitudes, and Practices Regarding Breast Cancer Among Women in Pakistan. J Ayub Med Coll Abbottabad. 2015;27(3):576-579.
- Menhas R, Umer S. Breast Cancer Among Pakistani Women: An Analysis of Socio-demographic Characteristics and Associated Risk Factors. Asian Pac J Cancer Prev. 2015;16(2):746-751.
- Banning M, Hafeez H, Faisal S, Hassan A, Zafar A, Chaudhry N. The Impact of Culture, Sociological and Psychological Issues on Muslim Patients With Breast Cancer. Cancer Nurs. 2009;32(4):317-324.
- 11. Lewis FM, Deal LW. The Impact of Cancer on the Family: An Overview of the Literature. Soc Sci Med. 1995;40(8):967-973.
- Northouse LL, Templin T, Mood D. Couples' Adjustment to Breast Disease During the First Year Following Diagnosis. J Behav Med. 2002;25(2):115-136.
- Banning M. The Impact of Women's Perceptions and Attitudes Towards Breast Cancer and Its Treatment. Eur J Cancer Care. 2017;26(2):e12420.
- Husain N. Psychological Distress Among Breast Cancer Patients in Pakistan: The Need for Stigma Reduction. J Pak Med Assoc. 2019;69(10):1431-1432.
- Arezou S, Naseri N, Mazaheri MA. Frequency of Psychiatric Disorders in Breast Cancer Patients. Iran J Psychiatry Behav Sci. 2020;14(1):e87670.
- Alighanavati F, Samiei Siboni F, Hosseinipour M, Zand S. Depression, Anxiety and Stress in Women With Breast Cancer. Asian Pac J Cancer Prev. 2018;19(12):3361-3367.
- 17. Mishel MH. Uncertainty in Illness. Image J Nurs Sch. 1988;20(4):225-232.
- Germino BB, Mishel MH, Belyea M, Laney IC, Alexander GR, McGinnis P, Porter LS. Outcomes of an Uncertainty Management Intervention in Older Adults With Cancer. Psychooncology. 2013;22(4):846-854.
- Kim SH, Kang S, Kim Y, Kim JH. Relationship Between Uncertainty and Quality of Life in Patients With Breast Cancer. Support Care Cancer. 2011;19(2):243-252.
- 20. Mishel MH, Germino BB, Gil KM, Belyea M, Laney IC, Stewart JL, Porter LS. Benefits From an Uncertainty Management Intervention for African-American and White Older Adults With Cancer. Oncol Nurs Forum. 2009;36(1):105-114.

JHWCR, III (5), CC BY 4.0, Views are authors' own.

- Hsu T, Ennis M, Hood N, Graham M, Goodwin PJ. Quality of Life in Long-term Breast Cancer Survivors. J Clin Oncol. 2003;21(8):1514-1521.
- Rodriguez JL, Yang D, Brand JS, Chung M, Hu R, Gago-Dominguez M, et al. Quality of Life and Prognosis in Breast Cancer Survivors. Breast Cancer Res Treat. 2022;191(2):267-276.
- Lewandowska A, Rudzki G, Lewandowski T, Rudzki S, Laskowska B, Laskowski R. Quality of Life of Cancer Patients Treated With Chemotherapy. Int J Environ Res Public Health. 2020;17(20):6938.
- 24. Bauer KS, Given BA, Given CW, Gift AG, Devoss DN. Determinants of Quality of Life in Breast Cancer Patients. J Clin Oncol. 2007;25(24):3578-3585.
- 25. Ferrell BR, Grant MM. Measurement of the Quality of Life in Cancer Survivors. Qual Life Res. 1996;5(5):523-531.
- 26. Ferrell BR, Dow KH, Grant M. Measurement of the Quality of Life in Cancer Survivors. Qual Life Res. 1995;4(6):523–531.
- 27. Kim Y, Carver CS. Frequency and Impact of Social Support in Cancer Patients. Support Care Cancer. 2019;27(3):869-878.
- Hammoudeh W, Hogan D, Giacaman R. Quality of Life, Human Insecurity, and Distress Among Breast Cancer Patients in the Gaza Strip. Psychooncology. 2017;26(12):2102-2108.
- 29. Kruuse D, Markides K. Emotional and Instrumental Support in Cancer Therapy. Support Care Cancer. 1990;14(2):99-107.
- 30. Scales M, Alimena S, Kadis S. Psychosocial Aspects of Oncology Care. Support Care Cancer. 1992;15(1):23-28.
- 31. Jassim GA, Whitford DL. Understanding the Experiences and Quality of Life Issues of Bahraini Women With Breast Cancer. Soc Sci Med. 2014;107:189-195.
- 32. Hina N. Communication Barriers in Cancer Care: A Pakistani Perspective. Pak J Med Sci. 2021;37(4):1201-1205.
- 33. Ülger S, Can G, Yurtsever S. Psychological and Physical Symptoms in Turkish Women With Breast Cancer. Asian Pac J Cancer Prev. 2014;15(13):5521-5527.
- 34. Banning M. Perceptions of Breast Health Among Pakistani Women. Asian Pac J Cancer Prev. 2014;15(18):7499-7503.
- Jabeen S, Kazmi SFA, Kausar R, Hassan S, Malik S. Barriers to Breast Cancer Care and Survival in Pakistani Women. Breast Care. 2024;19(2):123-130.
- Zhang J, Tang L, Lu Y, Lin Y, Lu Y, Wang J, et al. Illness Uncertainty and Quality of Life in Patients With Breast Cancer: The Mediating Role of Social Support. Psychooncology. 2022;31(1):41-48.
- Guan T, Santacroce SJ, Chen DG. Illness Uncertainty, Coping, and Quality of Life Among Patients With Prostate Cancer. Psychooncology. 2020;29(6):1019-1025.

- Mullins MA, Cummings C, Willoughby JF. Illness Perceptions and Quality of Life in Breast Cancer: Mediating Role of Selfcare. Support Care Cancer. 2017;25(7):2201–2209.
- 39. Lee MK, Park S. The Role of Social Support in the Relationship Between Uncertainty and Quality of Life Among Breast Cancer Patients. Eur J Oncol Nurs. 2020;44:101707.
- Tarhani F, Marzban M, Shahbazian M, Mokhtari M, Salari M. Illness Uncertainty and Psychological Distress Among Iranian Breast Cancer Patients. Asia Pac J Oncol Nurs. 2020;7(2):210-215.
- 41. Ahadzadeh AS, Sharif SP. Coping Strategies and Quality of Life in Malaysian Women With Breast Cancer. European Journal of Cancer Care. 2018;27(2):e12849.
- Wu S, Guo X, Tang H, Li Y, Dong W, Lu G, Hou C, Chen C. Social Support Moderates the Relationship Between Illness Uncertainty and Quality of Life: A Meta-analysis. J Psychosoc Oncol. 2024;42(1):58-73.
- 43. Celik A, Soylu Y, Arslan S. Psychological Resilience and Quality of Life: Mediation by Social Support in Turkish Breast Cancer Patients. Curr Psychol. 2020;39(6):2062-2071.
- Ayub N, Khan M, Jabeen A, Riaz M. Social Support and Coping in Pakistani Breast Cancer Patients. Pak J Med Sci. 2023;39(1):150-156.
- 45. Dong L, Chen W, Zhang L, Ji L. The Association Between Social Support and Uncertainty in Chinese Cancer Patients: A Cross-sectional Study. Int J Nurs Sci. 2020;7(2):131-136.
- Braden CJ. Mishel's Theory of Uncertainty in Illness: A Replication of the Patient Perspective. Nurs Res. 1990;39(6):276-279.
- Merluzzi TV, Philip EJ, Vachon DO, Heitzmann CA. Social Support and Adjustment to Cancer: Reconciling Descriptive, Correlational, and Intervention Research. Psychooncology. 2016;25(2):210–216.
- 48. Linden W, Vodermaier A. Social Support, Social Integration, and Cancer: A Review. Curr Opin Psychiatry. 2012;25(4):352– 357.
- 49. Reynolds NR, Perrin NA. Social Support and Cancer: A Metaanalysis. Psychooncology. 2004;13(2):102-113.
- 50. Helgeson VS, Cohen S, Schulz R, Yasko J. Unhelpful Social Support in Cancer: Its Prevalence and Impact on Patient Adjustment. J Behav Med. 2000;23(5):437-457.
- Mishel MH, Sorenson DS. Uncertainty in Illness Among Elderly Men With Prostate Cancer. Oncol Nurs Forum. 1991;18(3):349-353.
- Brady MJ, Cella DF, Mo F, Bonomi AE, Tulsky DS, Lloyd SR, Deasy S, Cobleigh M, Shiomoto G. Reliability and Validity of the Functional Assessment of Cancer Therapy-Breast Quality-of-Life Instrument. J Clin Oncol. 1997;15(3):974-986.

- 53. Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric Characteristics of the Multidimensional Scale of Perceived Social Support. J Pers Assess. 1990;55(3-4):610-617.
- 54. Lazarus, RS, & Folkman S. Stress, appraisal, and coping. 1984. Springer.
- 55. Park, CL, & Folkman S. Meaning in the Context of Stress and Coping. Review of General Psychology, 1997; 30, 115-144.
- Krishnasamy M, Hyatt A, Chung H., Gough K, Fitch M. Refocusing cancer supportive care: a framework for integrated cancer care. Support Care Cancer.2023; 31:14.