护理杂志
Journal of Nursing
Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

Assessment of Psychological Well-Being and Associated Factors Among Breast Cancer Patients: A Cross-Sectional Study

Khalid Khan[1], Sweeta Yousaf [2], Dr. Muhammad Nauman[3], Quratulain Ahmad[4], Dr. Nasreen Ramzan[5], Javed Iqbal[6] and Amir Sultan[7*]

[1]Principal, SPS Nursing College Pir Abie, Buner, Pakistan.
[2]Charge Nurse, Bahawal Victoria Hospital Bahawalpur, Punjab, Pakistan.
[3]Deputy Medical Superintendent in Tertiary Care Hospital Nishter 2, Multan.
[4]Department of Pharmaceutics Sciences, Bahauddin Zakariya University, Multan.
[5]Assistant Professor, Department of Pharmaceutical Sciences, Times Institute Multan.
[6]Department of Communicable Diseases, Hamda Medical Corporation, Doha, Qatar.
[7]Associate Professor and Head, Nursing Department, Times Institute Multan.
**Corresponding Author Email: amirsultan204@gmail.com, nursingwithamir@gmail.com*

Abstract

Background: *Pakistan's high breast cancer incidence is due to financial constraints, leading to delayed diagnoses and treatment. This study assesses psychological well-being and associated factors in Pakistan.* ***Methodology:*** *A cross-sectional study design was used from April to July 2023 in the two tertiary care hospitals in Khyber Pukhtankhwa, Pakistan, with a sample size of 132 and purposive sampling technique. Three valid and reliable questionnaires were used for data collection, i.e. the major depressive inventory for depression, and the perceived stress inventory for stress. The data was analyzed using descriptive statistics, and the chi-square test.* ***Results:*** *The overall level of Depression among the participants were (94.6%) high Depression, followed by moderate depression level (5.4%). There were significant difference the groups of age (p-0.002), and marital status (p-0.000), and education (p-0.005) while there were no significant difference between the groups of employment status (p-0.441) and co-morbid (p-0.471). The overall stress level were having moderate stress n-79 (60.8%), and the remain patients were having severe stress n-51 (39.2%). There were significant difference between the groups of age groups (p-0.004), education (p-0.000), and co-morbid (p-0.042), while no difference between the group of marital status (p-0.289), and employment status (p-509).* ***Conclusion:*** *Breast cancer patients experience moderate to severe anxiety, with high prevalence in the 20-30 age group, married, primary educated, housewife, and without comorbidity, and high to moderate stress levels with high prevalence among 31-40 years, married status, primary education, housewife and having no co-morbid were having high to moderate level of stress.*

Keywords: *Breast Cancer, Quality of Life, Depression, Perceived Stress, Psychological Well-Being.*

INTRODUCTION

The common type of cancer I.e breast cancer has led to a concerning trend, with the highest incidence rates now observed in transitioning countries, where resources for early detection and comprehensive treatment may be limited [1]. While substantial progress has been made in improving survival rates in high-income nations, the risk of breast cancer continues to rise, resulting in disproportionately high mortality rates in middle- and low-income countries [2, 3].

The global landscape of breast cancer is further exacerbated by the disparity in access to healthcare and the availability of screening programs, which is particularly acute in transitioning countries. In these settings, breast cancers are often diagnosed at later stages, and women may not receive adequate treatment, pain management, or palliative care [4].

护理杂志
Journal of Nursing
Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

Breast cancer (BC) is the most frequently diagnosed cancer in both developed and developing nations. In 2020, it was estimated that there would be 2.3 million new diagnoses. This disease poses a considerable threat to women's health worldwide. Annually, approximately 410,000 women succumb to breast cancer, which arises from 1.1 million new cases. In that same year, breast cancer was responsible for 685,000 fatalities globally, ranking as the sixth leading cause of death [5].

The burden of breast cancer is not limited to global trends; the disease also poses a significant challenge in Pakistan. Pakistan, a transitioning country, has experienced a rising incidence of breast cancer, which has become the most common cancer among women in the country. Pakistan exhibits the highest incidence of breast cancer in Asia.

Furthermore, it is common for younger women to be diagnosed with advanced stages of breast cancer, which correlates with a less favorable prognosis. Additionally, cervical, ovarian, and uterine cancers pose significant health challenges for women across both rural and urban settings in Pakistan.

The country lacks adequate screening facilities for the early detection of various cancer types, resulting in a substantial number of women succumbing to Hepatitis C and breast cancer each year [6]. Each year, one in nine women faces the risk of being diagnosed with breast cancer in their lifetime, positioning Pakistan as having the highest incidence rate of this disease among Asian countries [7].

Contributing factors include low socioeconomic status, insufficient access to advanced medical facilities, and a lack of awareness, which collectively result in the diagnosis of breast cancer occurring approximately a decade later in Pakistani women compared to their counterparts in Western countries [8]. A simple method for assessing breast health is the self-breast examination, which should be conducted monthly.

However, this practice necessitates the guidance of trained healthcare professionals who can instruct patients on the proper technique. Many women in Pakistan face financial hardships, making it difficult for them to access this costly screening, as a significant portion of the population cannot afford such programs [9].

Cancer patients and their families may experience significant psychological challenges, particularly among women diagnosed with breast cancer. The most common psychological comorbidity observed in these patients are depression and Depression [10]. Recent attention has been directed towards the increasing prevalence of psychological issues in breast cancer patients.

The diagnosis and treatment of breast cancer can create considerable stress both during and after the therapeutic process, a fact that is well established in the literature [11]. Timely intervention is essential for addressing these psychological concerns in breast cancer patients and their partners, as it can lead to an improved quality of life [12].

In countries such as Pakistan, there is a lack of research regarding the relationship between treatment, cancer stages, quality of life, and psychological disorders due to limited available literature. Consequently, the objective of this study was to assess the level of psychological well-being and associated factors.

METHODOLOGY

A descriptive cross-sectional study design was used for the current study that was conducted in Khyber Pukhtankhwa province in Pakistan. The study population consisted of patients diagnosed with breast cancer who were undergoing regular treatment follow-ups at two tertiary care hospitals in Peshawar from April to July 2024. Data was gathered during patient admissions and follow-up visits.

护理杂志
Journal of Nursing
Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

Inclusion criteria encompassed patients diagnosed with breast cancer who had received radiation therapy post-surgery, were proficient in Urdu, and expressed a willingness to participate in the study. Conversely, patients with psychiatric conditions (unstable mental status or severe mental illness) or those unwilling to participate were excluded from the study.

The sample size was determined to be 132, calculated based on a 95% confidence level, a 5% margin of error, and an 80% prevalence rate. It is noteworthy that two checklists were excluded from the analysis due to missing information, and the sampling technique utilized was purposive sampling.

Data collection was organized into four sections: Part (i) included demographic information of the participants, such as age, cancer stage, comorbidity, employment status, and education level. Part (ii) comprised the Major Depressive Inventory, which consists of 12 items, while Part (iii) included the Perceived Stress Inventory, containing 10 items. The level of depression among the respondents was collected through *the Major Depression Inventory (MDI)*, which contains 12 items with a scale from 0 (not at all) to 5 (all the time).

The validity and reliability of the questionnaire are already checked, and the Cronbach alpha of the checklist was 0.90 [13]. The total score of the checklist was 60; therefore, cutoff values were set for the checklist: (41 to 60 high depression), (21 to 40 average depression), and (20 and below low depression). To assess the level of stress among the patients, *a perceived stress inventory (PSI)* checklist was used. The checklist contains 10 items having a Likert scale from 0-never to 4-always, and the internal consistency reliability ($\alpha = .78$) [14].

Cutoff values of the perceived stress inventory were (26 and 40 high stress), (14 and 25 average depression), and (13 and below low depression). All data were analysed using SPSS version 20.0. Descriptive statistics were computed for continuous variables, including mean and standard deviation, as well as for categorical variables, which included frequencies and percentages. To examine the associations between the MDI and PSI with demographic variables, a chi-square test was employed.

The research received approval from the ethics review board, and permission for data collection was obtained from the study setting. Each patient was informed about the study's aims and objectives, and it was made clear that their participation was voluntary, with no direct benefits or risks involved.

Following the signing of written informed consent forms by all subjects, the research team gathered the necessary socio-demographic information from the patients. Patients were assured that their data would be utilized solely for analysis purposes, with access restricted to the primary investigator. After the analysis, the data would be discarded, and patients retained the right to refuse participation or withdraw from the study at any time.

RESULTS

In the present study, a total of 130 participants were involved, with a mean age of 38.6 ± 10.4. The largest proportion of respondents fell within the 20-30 age group, accounting for 33.1%, followed by those aged 31-40 years at 26.9%.

A significant majority of the participants were married, comprising 72.3% of the sample. Additionally, individuals with primary education represented the highest number at 44.6%, while housewives made up the majority of respondents at 89.2%.

Among the study population, a substantial 83.1% of patients reported no history of comorbidity, and 55.4% of respondents were classified as being in stages 1 and 2 of their condition (see Table 1).

护理杂志
Journal of Nursing
Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

Table 1: Demographic data of the participants

	Frequency (n-130)	Percentage
Age	Mean (38.6 ± 10.4)	
20-30 years	43	33.1%
31-40 years	35	26.9%
41-50 years	30	23.1%
51-above	22	16.9%
Marital status		
Single	36	27.7%
Married	94	72.3%
Education		
No education	8	6.2%
Primary	58	44.6%
High school	14	10.8%
Intermediate	36	27.7%
Graduation	14	10.8%
Master and above	0	0%
Employment		
House wife	116	89.2%
Working women	14	10.8%
Co-morbid		
No comorbid	108	83.1%
Hypertension	7	5.4%
Diabetic mellitus	15	11.5%
Other	0	0%
Stages of cancer		
1st and 2nd stage	72	55.4%
3rd and 4th stage	58	44.6%

Level of depression and associated factors

Table 2 illustrated that the maximum number of participants n-123 (94.6%) were having high depression, followed by moderate depression level n-7 (5.4%), while no patient was found in no depression and mild depression level.

The higher number of patients (n=36) having a high depression level belongs to those aged 20-30 years, while moderate depression patients (n=7) also belong to the same 20-30 years old. The number of married n-94 were suffering from high depression, and only n-7 single status patients were found with moderate depression.

Patients having education of primary were higher n-57 in high, and n-7 were reported as moderate depression. Patients having the status of housewife were higher in number in high depression, while 7 housewives also reported moderate depression. Patients with no comorbidity were in the majority (n=101), which is high, and n=7 have moderate depression.

There were significant differences in the groups of age (p-0.002), marital status (p-0.000), and education (p-0.005), while there were no significant differences between the groups of employment status (p-0.441) and co-morbid (p-0.471).

护理杂志
Journal of Nursing
Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

Table 2: Overall depression level and difference within the groups

	No Depresssion (0-20 score)	*Mild (21-25)*	*Moderate (26-30)*	*High (31-50)*	**P-value**
Overall	0	0	7 (5.4%)	123 (94.6%)	
Age					
20-30 Years	0	0	7	36	0.002
31-40 years	0	0	0	35	
41-50 years	0	0	0	30	
51 and above	0	0	0	22	
Marital status					
Single	0	0	7	29	0.000
Married	0	0	0	94	
Education					
No education	0	0	0	8	0.0057
Primary	0	0	7	51	
secondary	0	0	0	14	
FA/FSc	0	0	0	36	
Bachleor	0	0	0	14	
Employment status					
Housewife	0	0	7	109	0.441
Working women	0	0	0	14	
Co-morbid					
No-comorbid	0	0	7	101	0.471
HTN	0	0	0	7	
DM	0	0	0	15	

Level of stress and associated factors

Table 3 shows that the maximum number of participants were having moderate stress n=79 (60.8%), while the remaining patients were having severe stress n=51 (39.2%).

The maximum number of participant n-27 having moderate stress were from 20-30 years group, while in severe belong to age group 31-40 years group n-22, and there were significant difference between the age groups (p-0.004) regarding stress.

The higher number of patients in moderate n-59 and severe stress n-35 were from the married group, and there was no significant difference between the group of marital status (p-0.289). The majority of the participants with moderate (n=34) and severe (n=24) stress had a qualification in education, and there was a significant difference (p=0.000) between the group of education regarding stress.

Patients with an employment status of housewife were higher in number in moderate n=70 and in severe stress n=46, and there was no significant difference between the group with an employment status (p=0.509). Patients with no comorbidity were the majority of the patients with moderate n=61 and severe stress n=47, and there was a significant difference between the group of comorbidity (p=0.042).

护理杂志
Journal of Nursing
Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

Table 3: Overall stress and differences within the groups

	Mild stress	***Moderate***	***Severe***	***P-value***
Overall	0	79 (60.8%)	51 (39.2%)	
Age				
20-30 Years	0	27	16	0.004
31-40 years	0	13	22	
41-50 years	0	21	9	
51 and above	0	18	4	
Marital status				
single	0	20	16	0.289
married	0	59	35	
Education				
No education	0	1	7	0.000
Primary	0	34	24	
Secondary	0	12	2	
FA/FSc	0	29	7	
Bachleor	0	3	11	
Employment status				
Housewife	0	70	46	0.509
Working women	0	9	5	
Co-morbid				
No-comorbid	0	61	47	0.042
HTN	0	7	0	
DM	0	11	4	

Factors affecting stress and Depression

As a result of the chi-square test, Table 4 demonstrated that age and marital status are associated, while education, employment status, and co-morbidity are not associated with anxiety. Moreover, stress is associated with age, education, and co-morbidity while not associated with marital status and employment status.

Table: 4 Association of Depression and stress with selected variables

	Age	**Marital status**	**Education**	**Employment status**	**Co-morbid**
Anxiety	0.002	0.000	0.057	0.441	0.471
Stress	0.004	0.289	0.000	0.509	0.042

DISCUSSION

The current study was conducted with the aim of determining the psychological well-being and its associated factors among the breast cancer patients. Breast cancer is the most prevalent type of cancer in women globally, with 1 in 8 women receiving a diagnosis at some point in their lives.

In the present study, the mean age of the patients was 38.6 ± 10.4, while the age group 20-30 years was higher in number. The married patients were n-94 (72.3%), education of primary n-58 (44.6%), employment status of housewife n-116 (89.2%), no-morbid n-108 (83.1%), and having stage 1 and 2 cancer n-72 (55.4%). A According to a study done in Egypt, the patients' average age was 52.29 ± 11.64 years. Their family consisted of 5 ± 2 subjects on average. Thirteen patients (20.3%) were widowed, 47 (73.4%) were married, and just four patients (6.3%) were single. Thirty-two patients, or half of the patients, were illiterate. Just three (4.7%) of the participants were employed, while the majority, 61 instances (95.3%), were housewives. Of the women surveyed, 47 (73.4%) said they do not have enough money, while 17 (26.6%) said they do.

Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

While 46 women (71.9%) had no medical comorbidity, 18 women (28.1%) had medical comorbidity. 9.4% of the women had a family history of mental illness, and 56.3% of the women were still in their pre-menopausal state [15]. A study completed in Greece reported that 152 patients were the participant diagnosis with breast cancer in total. The patients' average age was 53.2 ± 512.10, and 55.9% of them were between the ages of 40 and 59. In all, respondents lived in cities in 57.2% of cases and semi-urban areas in 23.7% of cases. The majority of respondents had one or two children (55.9%) and were married (55.3%). 75.6% of patients had completed more than 9 years of education. Orthodox Christians made up the majority of study participants (88.8%). Regarding the sample's clinical features, 30.3% of the patients had a lumpectomy, and 69.7% of the patients had a mastectomy [16].

Breast cancer is still the medical diagnosis that causes women the most distress, regardless of the prognosis, despite advancements in early detection and treatment. This distress may manifest as post-traumatic stress disorder symptoms or psychiatric illness, such as anxiety or depression [17]. From the time of the initial diagnosis to the final stages of the disease, patients with breast cancer may experience anxiety and/or depression. It was anticipated that there would be more psychological anguish at the moment of diagnosis [18]. In the current study, the majority of the participants depression level was severe (94.6%), followed by moderate depression at 5.4%. It may be due to the majority of the participants age group ranging from 20 to 30 years, while a higher number of patients were married and housewives. Therefore, females may be expected to manage the household, take care of children, or support a spouse. A cancer diagnosis can create a fear of being unable to fulfil these roles, leading to increased anxiety.

They might worry about how their family will manage without their presence or help. Moreover, a cancer diagnosis can make them feel like they are no longer able to fulfil these roles, which can lead to feelings of inadequacy and anxiety. A study conducted in Greece revealed that the overall anxiety among the patients was 73.3%, and the prevalence of mixed anxiety depression in the study group was 31.25%. Our findings are in line with research by Mehnert and Koch, which showed that patients with breast cancer had a high prevalence of psychological distress and were more likely to have severe anxiety and depression [19]. The current study's findings are higher than those of Allam et al. [20], who discovered that anxiety was common in 15–25% of the female cancer patients they looked at. Their major depressive disorder rates were 42.5%; this discrepancy could be addressed by taking into account the smaller sample size of 40 cases [20].

According to a systematic review of observational studies on the prevalence of depression in breast cancer survivors conducted by Zainal et al., the prevalence of depression in Asian studies ranged between 12.5% and 31%, while in Western countries, it ranges from 1 to 56% [21]. Anxiety was found in 35% of breast cancer patients in a Turkish study by Dastan and Buzlu, although a lower frequency of 16% was found in an Asian investigation. [22] An analysis of the severity of anxiety and depressive disorders showed that the majority of cases were of moderate to severe anxiety (65.6%) and depression (50%), respectively [23].

In the current study, the higher number of respondents stress levels was moderate (60.8%), while 39.2% of patients stress levels were high. It may be due to Women in the 30-40 age group who are married, have primary education, and are housewives may experience higher levels of stress after a breast cancer diagnosis due to a combination of psychological, social, and economic factors. Women in their 30s to 40s may still be in their reproductive years, and breast cancer can raise concerns about fertility, potential loss of breast tissue, and the impact of treatments (e.g., chemotherapy, surgery) on their ability to have children or their overall health. This can cause significant emotional distress.

Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

Furthermore, housewife patients may feel like they are burdening their spouse or extended family, particularly if they are the primary carers for the family. A study conducted in Faisalabad, Pakistan, revealed that 40 (29.0%) women were extremely stressed, 47 (34.1%) were severely stressed, 16 (11.6%) were under moderate stress, 17 (12.3%) were mildly stressed, and 18 (13.0%) were normal [24]. An Indian study showed that stress was present in the study population at a rate of 24.8%. The majority of patients (21.87%) had mild stress, followed by moderate stress (2.4%) and severe stress (0.60%) [25]. According to Moyer and Salovey's study, advanced illness is frequently seen as a risk factor for heightened susceptibility to anxiety and depression.

Patients with early-stage breast cancer (those with positive prognoses) are less likely to experience severe psychological symptoms, whereas patients with more advanced stages are more likely to experience them [26]. Australian patients were assessed by Turner et al. and Li et al. using the DSM-IV, a structured psychiatric interview [27]. Psychiatric morbidity rates were remarkably comparable among their patients, which included 227 Australian women with advanced breast cancer and 303 with early-stage breast cancer. This implies that the diagnosis's stress was more significant than the illness's stage [28]. prevalence of stress and anxiety among cancer patients in Jordan, Naser et al. conducted a cross-sectional study in 2021. They gathered information from 1011 patients, both male and female. Numerous cancer forms, including bladder and lung cancer, were the subject of the investigation. Compared to outpatients, patients who were admitted to the hospital throughout their treatment had higher rates of stress and depression [29]. Another study on breast cancer patients that was also published in Jordan looked at the patients' anxiety and depression symptoms. Approximately 30% of them had depression symptoms [30].

The current study revealed that age and marital status are associated, while education, employment status, and co-morbidity are not associated with anxiety. Moreover, stress is associated with age, education, and co-morbidity, while not associated with marital status and employment status. A study conducted in Greece found that age, area of residence, marital status, education level, religious affiliation, stage of cancer, and symptom burden were found to be associated with the presence of depression. While despite the fact that age, place of residence, marital status, educational level, religion, stage of cancer, and current activity—burden of symptoms were correlated at a 10% level of significance with anxiety disorder [16]. According to a recent observational study conducted in primary care settings in Germany, older patients had a 1.2 higher likelihood of experiencing anxiety and depression symptoms ($p<0.001$) than younger patients [31]. Greek society has an extended family network, which gives married people a greater sense of social support. This finding is in agreement with a recent study in Western Cape, South Africa, which concluded that patients [32].

The study has several limitations, such as the exclusion of other factors that were linked to distress, including pain, financial assistance, familial history, physical suffering, and social support. One of the limitations on the results' ability to be broadly applied was the limited sample size, which resulted from the study being carried out in a two-city facility with outpatients. To confirm our findings, longer-term research on a broader population is required. In the future, patients from various contexts and parts of the nation could be recruited to increase the samples' generalizability.

CONCLUSION

On the basis of findings, the study concluded that patients with breast cancer have moderate to severe levels of anxiety. Age group 20-30, married, primary education, housewife status, and having no co-morbidity were associated with a high prevalence of anxiety. The study also revealed that stress among breast cancer patients is also reported as high to moderate. Being in the age group of 31-40 years, having a married status, having a primary education, being a housewife, and having no co-

Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

morbidity were associated with having a high to moderate level of stress. Depression, which could be related to the feeling of uncertainty, stress, and anxiety, is associated with age and marital status, while stress is associated with age, education level, and comorbidity. Moreover, early detection and diagnosis of breast cancer can contribute to minimizing the level of stress and anxiety while promoting quality of life. The findings of the current study could be helpful guidance for the carer to formulate structural guidelines or interventions to improve the psychological well-being of patients in the future.

Funding: No funding is received for this project.

Conflict of Interest: The authors declared no conflict of interest.

Confidentiality: The authors have adopt and follow the declaration of Helsinki during data collection to promote confidentiality and privacy of patient after taking consent, and used data only for analysis.

References

1) Alwan NAS. Breast Cancer Among Iraqi Women: Preliminary Findings from a Regional Comparative Breast Cancer Research Project. Journal of Global Oncology 2016; 2:255. https://doi.org/10.1200/jgo.2015.003087.

2) Boyle P, Howell A. The globalisation of breast cancer. Breast Cancer Research 2010;12. https://doi.org/10.1186/bcr2736.

3) Arnold M, Morgan E, Rumgay H, Costa AM da, Singh D, Laversanne M, Vignat J, Gralow JR, Cardoso F, Siesling S, Soerjomataram I. Current and future burden of breast cancer: Global statistics for 2020 and 2040. The Breast 2022; 66:15. https://doi.org/10.1016/j.breast.2022.08.010.

4) Barrios CH. Global challenges in breast cancer detection and treatment. The Breast. 2022 Mar 1;62: S3-6.

5) WHO. World fact sheets cancers. In: Globocan 2020, (WHO) vol. 419. (2020). p. 1–2. Available at: https://gco.iarc.fr/today/data/factsheets/populations/900-world-factsheets.pdf.

6) Badar F1, Moid I, Waheed F, Zaidi A, Naqvi B. (2005). Variables associated with recurrence in breast cancer patients-the Shoukat Khanum Memorial experience. Asian Pac. J Cancer, Prev. 6: 54 – 57. [PubMed] [Google Scholar]

7) Begum N. Breast cancer in Pakistan: a looming epidemic. J Coll Physicians Surg Pak. 2018;28(2):87–88. doi: 10.29271/jcpsp.2018.02.87

8) Soomro R, Faridi S, Khurshaidi N, Zahid N, Mamshad I. Age and stage of breast cancer in Pakistan: an experience at a tertiary care center. J Pak Med Assoc. 2018;68(11):1682–1685.

9) Menhas R, Shumaila UM. Breast cancer among Pakistani women. Iranian journal of public health. 2015 Apr;44(4):586.

10) Alacacioglu A, Ulger E, Varol U, Yildiz I, Salman T, Bayoglu V, Dirican A, Demir L, Akyol M, Yildiz Y, Kucukzeybek Y. Depression, anxiety and sexual satisfaction in breast cancer patients and their partners-izmir oncology group study. Asian Pac J Cancer Prev. 2014 Jan 1;15(24):10631-6.

11) Baumeister H, Kriston L, Bengel J, Härter M. High agreement of self-report and physician-diagnosed somatic conditions yields limited bias in examining mental–physical comorbidity. Journal of clinical epidemiology. 2010 May 1;63(5):558-65.

Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

12) Lovelace DL, McDaniel LR, Golden D. Long-term effects of breast cancer surgery, treatment, and survivor care. Journal of midwifery & women's health. 2019 Nov;64(6):713-24.

13) Chen Y, Fang X, Shuai X, Fritzsche K, Leonhart R, Hoschar S, Li L, Ladwig KH, Ma W, Wu H. Psychometric Evaluation of the Major Depression Inventory (MDI) as a Depression Severity Scale in Chinese Patients with Coronary Artery Disease. Findings from the MEDEA FAR-EAST Study. Frontiers in Psychiatry. 2019 Jul 18; 10:493.

14) Cohen S and Williamson G (1988) Perceived stress in a probability sample of the United States in: Spacapam S and Oskamp S (eds) *The Social Psychology of Health*. Newbury Park, CA: Sage, 31–67.

15) Alagizy, H.A., Soltan, M.R., Soliman, S.S. et al. Anxiety, depression and perceived stress among breast cancer patients: single institute experience. Middle East Curr Psychiatry 27, 29 (2020). https://doi.org/10.1186/s43045-020-00036-x.

16) Tsaras K, Papathanasiou IV, Mitsi D, Veneti A, Kelesi M, Zyga S, Fradelos EC. Assessment of depression and anxiety in breast cancer patients: prevalence and associated factors. Asian Pacific journal of cancer prevention: APJCP. 2018;19(6):1661.

17) Mehnert A, Koch U. Prevalence of acute and post-traumatic stress disorder and comorbid mental disorders in breast cancer patients during primary cancer care: a prospective study. Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer. 2007 Mar;16(3):181-8.

18) Mehnert A, Brähler E, Faller H, Härter M, Keller M, Schulz H, Wegscheider K, Weis J, Boehncke A, Hund B, Reuter K. Four-week prevalence of mental disorders in patients with cancer across major tumor entities. Journal of Clinical Oncology. 2014 Nov 1;32(31):3540-6.

19) Mehnert A, Koch U. Psychological comorbidity and health-related quality of life and its association with awareness, utilization, and need for psychosocial support in a cancer register-based sample of long-term breast cancer survivors. Journal of psychosomatic research. 2008 Apr 1;64(4):383-91.

20) Allam M, Bishry Z, Saad A, Khalifa A, Asaad T. Psychological profile and quality of life (QoL). Assessment in cancer breast patients. MD thesis: Supervised by Bishry Z., Saad A. and Khalifa A. 2003.

21) Zainal NZ, Nik-Jaafar NR, Baharudin A, Sabki ZA, Ng CG. Prevalence of depression in breast cancer survivors: a systematic review of observational studies. Asian Pacific Journal of Cancer Prevention. 2013;14(4):2649-56.

22) Dastan NB, Buzlu S. Depression and anxiety levels in early stage Turkish breast cancer patients and related factors. Asian Pac J Cancer Prev. 2011 Jan 1;12(1):137-41.

23) Lueboonthavatchai P. Prevalence and psychosocial factors of anxiety and depression in breast cancer patients. Journal-Medical Association of Thailand. 2007 Oct 1;90(10):2164.

24) Perveen T, Jawad R, Afzal I, Iftikhar N, Aslam B, Najeeb R, Nasreen A. Prevalence of Depression, Anxiety, and Stress among Breast Cancer Patients at a Tertiary Care Hospital in Faisalabad, Pakistan. Currents in Pharmaceutical Research. 2023 Dec 5;1(2):88-107.

25) Thakur M, Sharma R, Mishra AK, Singh K, Kar SK. Psychological distress and body image disturbances after modified radical mastectomy among breast cancer survivors: A cross-sectional study from a tertiary care centre in North India. The Lancet Regional Health-Southeast Asia. 2022 Dec 1;7.

Volume 72 Number 03
ISSN: 0047-262X
DOI: 10.5281/zenodo.15082143

26) Moyer A, Salovey P (1996) Psychosocial sequelae of breast cancer and its treatment. Annals of Behavioral Medicine 18:110–125.

27) Li M, Fitzgerald P, Rodin G. Evidence-based treatment of depression in patients with cancer. Journal of Clinical Oncology. 2012 Apr 10;30(11):1187-96.

28) Kissane DW, Grabsch B, Love A, Clarke DM, Bloch S, Smith GC. Psychiatric disorder in women with early stage and advanced breast cancer: a comparative analysis. Australian & New Zealand Journal of Psychiatry. 2004 May;38(5):320-6.

29) Naser AY, Hameed AN, Mustafa N, et al. Depression and anxiety in patients with cancer: a cross-sectional study. Front Psychol. 2021;12: e1067. https://doi.org/10.3389/fpsyg.2021.585534

30) Alquraan L, Alzoubi KH, Rababa'h S, Karasneh R, Al-Azzam S, AlAzayzih A. Prevalence of depression and the quality-of-life of breast cancer patients in Jordan. J Multidiscip Health. 2020:1455–1462. https://doi.org/10.2147/JMDH.S277243

31) Engelhard J, Bleicher L, Kostev K. Prevalence of depression and anxiety and their risk factors in women with breast cancer in German primary care. Value in health. 2015 Nov 1;18(7): A431.

32) Kagee A, Saal W, Bantjes J. The relationship between symptoms of common mental disorders and drug and alcohol misuse among persons seeking an HIV test. AIDS care. 2018 Feb 1;30(2):219-23.