

RESEARCH ARTICLE

Editorial Process: Submission:05/20/2024 Acceptance:09/20/2024

Variations in Depression and Anxiety among Jordanian Women Undergoing Mastectomy and Reconstruction Surgery: Impact of Familial Support

Ali A. Bani-Ahmed*, Dalia M. Al-Baghdadi, Rana A. Hussein

Abstract

Introduction: Depression and anxiety are common among breast cancer patients, due to the ongoing mental distress during illness. This study examines the impact of family support on depression and anxiety changes in Jordanian women undergoing mastectomy and reconstruction surgery. **Methods:** We conducted a cross-sectional study to investigate the effect between family support and depression/anxiety levels in women post-mastectomy in Jordan. Participants included breast cancer patients who had undergone mastectomy surgery, meeting specified inclusion criteria. We collected data on socio-demographic variables via a questionnaire between October 2023 and January 2024. Depression and anxiety levels were assessed using the Depression, Anxiety and Stress Scale - 21 Items (DASS-21), while social support was evaluated using the Social Support Survey. **Results:** A significantly negative correlation was observed between the DASS-21 score and social support, indicating that higher levels of social support were associated with lower levels of depression, anxiety, and stress (p-value: 0.001). Additionally, analyzing the correlation between physical therapy, social support (median scores: 76 vs. 90, $p = 0.021$), and DASS-21 (median scores: 25 vs. 11, $p < 0.001$) revealed significant findings. Specifically, individuals who had received physical therapy exhibited significantly lower DASS-21 scores and higher social support scores. **Conclusion:** Our study underscores the significant role of family support in alleviating depression and anxiety levels among women with breast cancer. Strong family support emerges as a key factor in improving the emotional well-being of these individuals.

Keywords: Depression- anxiety- breast cancer- mastectomy- reconstruction

Asian Pac J Cancer Prev, **25 (9)**, 3277-3282

Introduction

Breast cancer is the second leading cause of cancer-related death after lung cancer [1]. It is an abnormal growth of breast tissue that causes the cells to divide indefinitely [2]. Among females, it is the most common type of Cancers, and its incidence is increasing rapidly. In Jordan, the prevalence of breast cancer among women has increased In the periods between 2005 to 2015 by 69%, indicating the rapid spread of this cancer [3].

The presence of a breast lump is the most common symptom experienced by women diagnosed with breast cancer, often acting as an indicator of malignancy [4, 5]. Additionally, other signs include nipple abnormalities, breast pain, nipple discharge, dimpling, changes in breast size, alterations in skin texture, and changes in skin color may also occur [6, 7]. Early screening is crucial for women experiencing any of these signs to detect the cancer before it spreads and becomes invasive.

The treatment of breast cancer has developed significantly over the last years [8], offering a range

of options from medications to surgical interventions tailored to individual needs and the degree of tumor invasiveness [9]. Of the surgical approach options is a total mastectomy, involving the complete removal of the breast tissue [8]. This procedure may be followed by breast reconstruction surgery, which can involve the use of permanent prostheses or autologous tissue to restore the breast's appearance [10,11]. The decision for surgery is made on a case-by-case basis, considering various factors, and may be supplemented by sessions of radiotherapy and/or chemotherapy [12, 13]. Mastectomy is often preferred for young women with aggressive breast cancer, as opposed to breast-conserving therapy, due to the nature of the disease and its aggressiveness [14].

Breast cancer patients face heightened risks of experiencing depression, anxiety, and stress, which can also impact their family members [15, 16]. Depression and anxiety are particularly prevalent among women with breast cancer, exacerbated by the stressful journey from early screening through diagnosis and treatment [17]. Addressing these challenges is vital to enhance

both patients' and families' quality of life. Family support plays a crucial role, though reactions within families vary, ranging from optimism to struggling with the diagnosis [18, 19]. Open communication about the patient's situation with family and partners contributes to the patient's well-being [21].

Furthermore, the response of a family is significantly shaped by societal and cultural factors. In Jordan, there is a tendency to overlook the psychological aspect of the disease. Therefore, in this study, we aim to examine the impact of family support on changes in depression and anxiety among women undergoing mastectomy and reconstruction surgery in Jordan.

Materials and Methods

Study design

We conducted a quantitative cross-sectional study to investigate the differences in depression and anxiety due to family support among women who underwent mastectomy surgery in Jordan. The inclusion criteria were as following: females aged above 18 years old, diagnosed with breast cancer, performed mastectomy with or without reconstruction surgery, and had knowledge of Arabic language. The exclusion criteria were as follows: advanced metastatic cancer, participants who could not sign the informed consent and have an intellectual disability or dementia.

Data collection

Using a questionnaire, patients were asked to answer questions regarding their socio-demographic variables such as age, marital status, number of children if married, educational level and family size. The data was collected between October 2023 and January 2024, and the patients signed an informed consent. The study was approved by the Internal Review Board at Jordan University of Science and Technology. All patients received familial and/or social support and was measured by the Social Support Survey.

Assessment tools

We used the following measures to evaluate the patients' status

1. The Depression, Anxiety and Stress Scale - 21 Items (DASS-21) were employed to evaluate stress, anxiety, and depression levels among participants. Comprising 21 statements reflecting the individual's condition over the preceding week, the Arabic version of the DASS-21 has demonstrated satisfactory reliability [20].

2. The Social Support Survey was utilized to gauge the extent of social support available to participants. This scale encompasses various dimensions of social support, including emotional/informational support, tangible support, affectionate support, and positive social interaction. Each question is scored on a 5-point scale (1=none of the time, 5=all of the time), with higher scores indicating greater support. The validity and internal consistency of the Arabic version of the social support survey have been validated [21].

Statistical analysis

We conducted statistical analysis using R software (version 4.3.3). To compare variables, we utilized Fisher's exact test for categorical data and the Wilcoxon rank sum test for numerical data. Furthermore, a linear regression model was applied to examine the relationship between variables. A p-value of less than 0.05 was considered statistically significant.

Results

Data collection

A total of 43 patients who had mastectomy procedures were enrolled in this study. Among them, 31 patients were aged between 20 and 49, while 12 were older than 49. Patients were categorized into two groups based on the duration since their surgery: one group consisted of those who underwent surgery within six months, and the other group comprised those who had surgery more than six months ago. Additionally, patients indicated whether they had received physical therapy; 79% reported not receiving any therapy sessions, while 20.9% did receive physical therapy.

Evaluation of social support

Using the DASS-21 as a measurement of anxiety and depression, we analyzed the correlation between the DASS-21 score and the social support as reported by the patients. Using a linear regression model, a negative correlation was observed, which indicates that the higher the social support, the lower the DASS-21 score (Figure 1A). Moreover, we analyzed the correlation between physical therapy and both DASS-21, and social support as shown in Table 1.

Patients with physical therapy were more likely to undergo surgery within 6 months compared to others without physical therapy (67% vs. 24%, respectively, $p = 0.04$). A significant difference exists between the physical therapy groups in both the DASS-21 score (median scores: 25 vs. 11, $p < 0.001$) and the social support score (median scores: 76 vs. 90, $p = 0.021$). Those who had received physical therapy had a significantly lower DASS-21 score and higher social support score (Figure 1B-C).

Discussion

Breast cancer is considered as the most common type of cancer among females [22], and in Jordan its incidence is rapidly increasing [3]. Given the existence of various types, including invasive and non-invasive forms, the treatment regimen varies depending on the severity and invasiveness level upon presentation [23]. Treatments range from chemotherapy and immunotherapy to total mastectomy. Furthermore, each treatment type has its own impact on patients' mental health. Hence, it's imperative to understand the disease holistically, considering its psychological and emotional dimensions, as they significantly influence treatment outcomes.

Although mastectomy is no longer the first option for the treatment of breast cancer, a considerable number of women still undergo mastectomy, especially when the

Table 1. Comparison Across the Physical Therapy Groups

Characteristic	Without physical therapy (N=34 ¹)	With physical therapy (N=9 ¹)	p-value ²	Overall (N=43 ¹)
Age			0.4	
≥ 50	11 (32%)	1 (11%)		12 (28%)
20-49	23 (68%)	8 (89%)		31 (72%)
Time since surgery			0.04	
< 6 months	8 (24%)	6 (67%)		14 (33%)
> 6 months	26 (76%)	3 (33%)		29 (67%)
DASS-21 score	25 (21. 36)	11 (6. 12)	<0.001	23 (14. 31)
Social support score	76 (57. 84)	90 (85. 94)	0.021	78 (58. 87)

¹, Median (IQR); Range; n (%); ², Wilcoxon rank sum exact test; Fisher's exact test

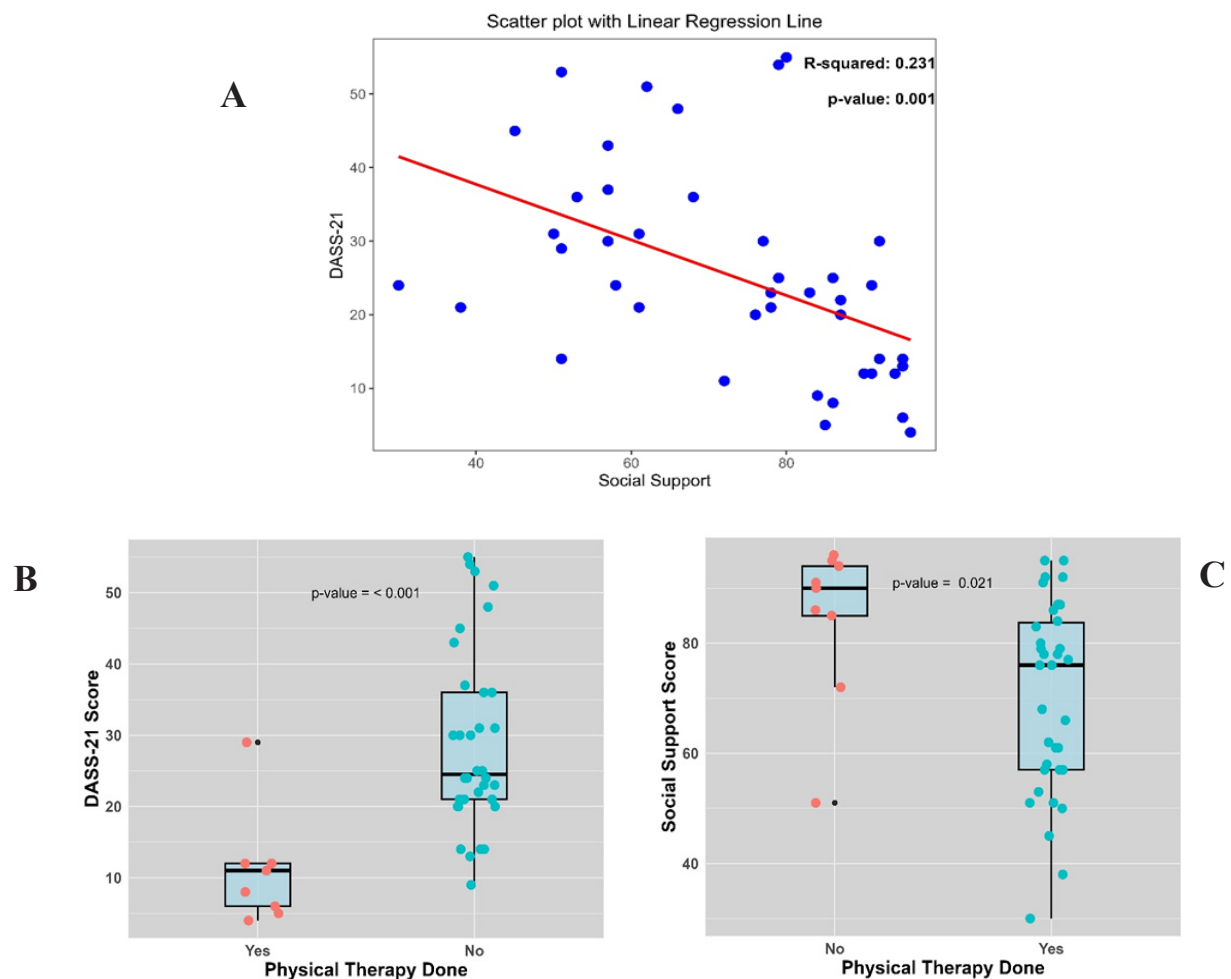


Figure 1. Assessment of Emotional Status. A) Linear regression model represents the correlation between the social support and DASS-21 score. B) Boxplot represents the levels of DASS-21 across the physical therapy groups. C) Boxplot represents the levels of social support across the physical therapy groups.

cancer is aggressive [17, 24]. In addition to the cancer diagnosis itself, undergoing mastectomy carries a high risk of developing depression, anxiety, and post-traumatic stress. It's crucial to address these psychiatric events early on to enhance the patients' quality of life [25].

Psychological and psychiatric aspects are often neglected in Jordan specifically and regionally in general. Hence, this cross-sectional study examines the impact of family and social support on the development of depression, anxiety, and stress among Jordanian women

who have undergone mastectomy. In our study, a total of 43 patients participated, by filling two questionnaires: the DASS-21 scale to evaluate depression, anxiety, and stress levels, and the social support scale to assess the extent of social support they have received. The inclusion of young women in our study is significant for several reasons. Young women diagnosed with breast cancer often face distinct concerns compared to older women [26]. Being premenopausal, they may have worries about raising their children, which adds an additional layer of stress

to their diagnosis for both themselves and their families [27]. Notably, the majority of patients in our study fell within the age group of 20-49 (72%), underscoring the importance of emphasizing the significance of family and social support for this demographic.

Using a linear regression model, we examined the relationship between social support and DASS-21 scores. We found a significant negative correlation, indicating that higher levels of social support are associated with a lower incidence of depression, anxiety, and stress. When faced with a breast cancer diagnosis, young women and their families must adjust to the significant changes in their lives and develop coping strategies for their new roles [28]. Effective communication is crucial in providing support to women with breast cancer [29], particularly between the patient and her partner, as it enhances emotional well-being [21]. However, family members may struggle to provide adequate support if they do not fully understand the needs of the patient [30]. Therefore, it is essential for women with breast cancer to openly discuss their needs and emotional well-being with their family.

A study conducted in Jordan by Abu-Helalah et al. examined the quality of life and well-being of patients diagnosed with breast cancer. Their findings revealed that among the study participants, 53% scored abnormally on the anxiety scale, while 45% scored abnormally on the depression scale. Moreover, severe depression and severe anxiety were detected in 8% and 14% of the participants, respectively (36). Although the overall quality of life of the participants was reported to be good compared to Western countries, their psychological well-being appeared to be impaired [31].

Furthermore, we conducted an analysis on physical therapy and its relationship with both DASS-21 scores and social support. Although only 20.9% of patients received physical therapy, a notable distinction was observed between the groups that underwent physical therapy in terms of DASS-21 scores and social support scores. Specifically, those who underwent physical therapy exhibited significantly lower DASS-21 scores and higher social support scores. There is a strong correlation between physical symptoms, depression, anxiety, and stress [32]. Patients experiencing more physical symptoms are more likely to develop mood disorders, with severe depression being associated with more pronounced painful physical symptoms [33].

Our findings are consistent with what has been established in the literature, a study conducted in China by Su et al., which involved 300 breast cancer patients and revealed a prevalence of major depressive disorder of 8.33%, which was negatively associated with family support [34]. Another study that examined the influence of the social support of the partner of breast cancer patients on depression, indicating that emotional support from the partner is linked to lower levels of depression [35]. Additionally, a study by Maly et al. investigated the impact of family support on depression and anxiety in breast cancer patients, highlighting the significance of support from children and partners in reducing levels of depression and anxiety among these women [36].

Social support extends beyond diagnosis and treatment

to include screening as well. A study conducted in Jordan by Taha et al. highlighted a strong correlation between individual, family, and community influences on women's screening behavior. Additionally, the study revealed that women's ambivalence in prioritizing their own health, fear of losing femininity, and concerns about their husband's reaction could be positively altered through the mobilization of family and social support [37].

Another study conducted in Jordan focused women diagnosed with stage I-III breast cancer. It highlighted the significant roles played by families and friends in providing social support to Jordanian women with breast cancer. Families were deemed responsible for being physically present during times of stress throughout the women's journey with breast cancer. The study identified specific periods when women required social support the most, including following the initial diagnosis, immediately after surgery, and during chemotherapy treatment sessions [38].

This study represents the first study that is conducted in Jordan which examine the relationship between social support and the onset of depression, anxiety and stress following mastectomy surgery. Additionally, the study included a young age population, emphasizing their increased vulnerability to hormonal changes and mood disorders. The primary limitation of this study is the size of the sample collected. Future studies should aim to address this limitation to generalize the findings to the entire Jordanian population more effectively. We recommend future researchers to investigate late-stage patients and other psychological outcomes such as sleep disorders, quality of life, and psychiatric disorders.

In conclusion, in this study our findings indicate that women who receive strong family support tend to have lower levels of depression and anxiety compared to those with less support from their families. Therefore, family support emerges as a crucial factor in enhancing the emotional well-being of these women. Additionally, these women should receive ongoing care from psychiatric healthcare specialists throughout the course of their illness. Moreover, there is a need for greater awareness within Jordanian culture regarding the importance of social support and mental health. Increased awareness and understanding can help improve the overall support network available to women undergoing breast cancer screening, diagnosis, and treatment, thereby enhancing their emotional well-being and overall quality of life.

Author Contribution Statement

All authors contributed equally in this study.

Acknowledgements

Ethical considerations

This study was approved by the ethical committee at the institutional review board (IRB) at Jordan University of Science and Technology.

Availability of data

Data is available upon reasonable request.

Conflict of interests

All authors declare no conflict of interests.

References

- Jemal A, Thomas A, Murray T, Thun M. Cancer statistics, 2002. *CA Cancer J Clin.* 2002;52(1):23-47. <https://doi.org/10.3322/canjclin.52.1.23>.
- Hanahan D, Weinberg RA. The hallmarks of cancer. *Cell.* 2000;100(1):57-70. [https://doi.org/10.1016/S0092-8674\(00\)81683-9](https://doi.org/10.1016/S0092-8674(00)81683-9).
- Abdel-Razeq H, Mansour A, Jaddan D. Breast cancer care in Jordan. *JCO Glob Oncol.* 2020;6:260-8. <https://doi.org/10.1200/jgo.19.00279>.
- Walker S, Hyde C, Hamilton W. Risk of breast cancer in symptomatic women in primary care: A case-control study using electronic records. *Br J Gen Pract.* 2014;64(629):e788-93. <https://doi.org/10.3399/bjgp14X682873>.
- Redaniel MT, Martin RM, Ridd MJ, Wade J, Jeffreys M. Diagnostic intervals and its association with breast, prostate, lung and colorectal cancer survival in England: Historical cohort study using the clinical practice research datalink. *PLoS One.* 2015;10(5):e0126608. <https://doi.org/10.1371/journal.pone.0126608>.
- Koo MM, von Wagner C, Abel GA, McPhail S, Rubin GP, Lyratzopoulos G. Typical and atypical presenting symptoms of breast cancer and their associations with diagnostic intervals: Evidence from a national audit of cancer diagnosis. *Cancer Epidemiol.* 2017;48:140-6. <https://doi.org/10.1016/j.canep.2017.04.010>.
- Janz NK, Becker MH, Anderson LA, Marcoux BC. Interventions to enhance breast self-examination practice: a review. *Public health reviews.* 1989 Jan 1;17(2-3):89-163.
- Riis M. Modern surgical treatment of breast cancer. *Ann Med Surg (Lond).* 2020;56:95-107. <https://doi.org/10.1016/j.amsu.2020.06.016>.
- Jordan RM, Oxenberg J. *Breast Cancer Conservation Therapy.* StatPearls Publishing; 2024.
Available from: <https://pubmed.ncbi.nlm.nih.gov/31613488>
- Galimberti V, Vicini E, Corso G, Morigi C, Fontana S, Sacchini V, et al. Nipple-sparing and skin-sparing mastectomy: Review of aims, oncological safety and contraindications. *Breast.* 2017;34 Suppl 1(Suppl 1):S82-s4. <https://doi.org/10.1016/j.breast.2017.06.034>.
- Lee CN, Ubel PA, Deal AM, Blizard LB, Sepucha KR, Ollila DW, et al. How informed is the decision about breast reconstruction after mastectomy?: A prospective, cross-sectional study. *Ann Surg.* 2016;264(6):1103-9. <https://doi.org/10.1097/sla.0000000000001561>.
- Lee GK, Shekter CC. Breast reconstruction following breast cancer treatment-2018. *Jama.* 2018;320(12):1277-8. <https://doi.org/10.1001/jama.2018.12190>.
- Van de Steene J, Soete G, Storme G. Adjuvant radiotherapy for breast cancer significantly improves overall survival: The missing link. *Radiother Oncol.* 2000;55(3):263-72. [https://doi.org/10.1016/S0167-8140\(00\)00204-8](https://doi.org/10.1016/S0167-8140(00)00204-8).
- Lee HB, Han W. Unique features of young age breast cancer and its management. *J Breast Cancer.* 2014;17(4):301-7. <https://doi.org/10.4048/jbc.2014.17.4.301>.
- Mehnert A, Brähler E, Faller H, Härter M, Keller M, Schulz H, et al. Four-week prevalence of mental disorders in patients with cancer across major tumor entities. *J Clin Oncol.* 2014;32(31):3540-6. <https://doi.org/10.1200/jco.2014.56.0086>.
- Alacacioglu A, Ulger E, Varol U, Yildiz I, Salman T, Bayoglu V, et al. Depression, anxiety and sexual satisfaction in breast cancer patients and their partners-izmir oncology group study. *Asian Pac J Cancer Prev.* 2014;15(24):10631-6. <https://doi.org/10.7314/apjcp.2014.15.24.10631>.
- 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. *J Clin Epidemiol.* 2010;63(5):558-65. <https://doi.org/10.1016/j.jclinepi.2009.08.009>.
- Maeda T, Kurihara H, Morishima I, Munakata T. The effect of psychological intervention on personality change, coping, and psychological distress of Japanese primary breast cancer patients. *Cancer Nurs.* 2008;31(4):E27-35. <https://doi.org/10.1097/01.NCC.0000305746.49205.f8>.
- Manne SL, Ostroff JS, Norton TR, Fox K, Goldstein L, Grana G. Cancer-related relationship communication in couples coping with early stage breast cancer. *Psychooncology.* 2006;15(3):234-47. <https://doi.org/10.1002/pon.941>.
- Zakowski SG, Ramati A, Morton C, Johnson P, Flanagan R. Written emotional disclosure buffers the effects of social constraints on distress among cancer patients. *Health Psychol.* 2004;23(6):555-63. <https://doi.org/10.1037/0278-6133.23.6.555>.
- Dafaalla M, Farah A, Bashir S, Khalil A, Abdulhamid R, Mokhtar M, et al. Validity and reliability of Arabic Mos social support survey. *Springerplus.* 2016;5(1):1306. <https://doi.org/10.1186/s40064-016-2960-4>.
- McGuire S. *World cancer report 2014.* Geneva, Switzerland: World Health Organization, International Agency for Research on Cancer, WHO Press, 2015. *Adv Nutr.* 2016;7(2):418-9. <https://doi.org/10.3945/an.116.012211>.
- Sun YS, Zhao Z, Yang ZN, Xu F, Lu HJ, Zhu ZY, et al. Risk factors and preventions of breast cancer. *Int J Biol Sci.* 2017;13(11):1387-97. <https://doi.org/10.7150/ijbs.21635>.
- Burgess C, Cornelius V, Love S, Graham J, Richards M, Ramirez A. Depression and anxiety in women with early breast cancer: Five year observational cohort study. *BMJ.* 2005;330(7493):702. <https://doi.org/10.1136/bmj.38343.670868.D3>.
- Shapiro SL, Lopez AM, Schwartz GE, Bootzin R, Figueredo AJ, Braden CJ, et al. Quality of life and breast cancer: Relationship to psychosocial variables. *J Clin Psychol.* 2001;57(4):501-19. <https://doi.org/10.1002/jclp.1026>.
- Coyne E, Wollin J, Creedy DK. Exploration of the family's role and strengths after a young woman is diagnosed with breast cancer: Views of women and their families. *Eur J Oncol Nurs.* 2012;16(2):124-30. <https://doi.org/10.1016/j.ejon.2011.04.013>.
- Dunn J, Steginga SK. Young women's experience of breast cancer: Defining young and identifying concerns. *Psychooncology.* 2000;9(2):137-46. [https://doi.org/10.1002/\(sici\)1099-1611\(200003/04\)9:2<137::aid-pon442>3.0.co;2-0](https://doi.org/10.1002/(sici)1099-1611(200003/04)9:2<137::aid-pon442>3.0.co;2-0).
- Lewis FM, Cochrane BB, Fletcher KA, Zahlis EH, Shands ME, Gralow JR, et al. Helping her heal: A pilot study of an educational counseling intervention for spouses of women with breast cancer. *Psychooncology.* 2008;17(2):131-7. <https://doi.org/10.1002/pon.1203>.
- Yates P, Aranda S, Edwards H, Nash R, Skerman H, McCarthy A. Family caregivers' experiences and involvement with cancer pain management. *J Palliat Care.* 2004;20(4):287-96.
- Northouse L, Kershaw T, Mood D, Schafenacker A. Effects of a family intervention on the quality of life of women with recurrent breast cancer and their family caregivers. *Psychooncology.* 2005;14(6):478-91. <https://doi.org/10.1002/pon.871>.
- Abu-Helalah M, Al-Hanaqta M, Alshraideh H, Abdulbaqi N, Hijazeen J. Quality of life and psychological well-being

- of breast cancer survivors in Jordan. *Asian Pac J Cancer Prev.* 2014;15(14):5927-36. <https://doi.org/10.7314/apjcp.2014.15.14.5927>.
32. Trivedi MH. The link between depression and physical symptoms. *Prim Care Companion J Clin Psychiatry.* 2004;6(Suppl 1):12-6.
33. Kroenke K, Spitzer RL, Williams JB, Linzer M, Hahn SR, deGruy FV, 3rd, et al. Physical symptoms in primary care. Predictors of psychiatric disorders and functional impairment. *Arch Fam Med.* 1994;3(9):774-9. <https://doi.org/10.1001/archfami.3.9.774>.
34. Su JA, Yeh DC, Chang CC, Lin TC, Lai CH, Hu PY, et al. Depression and family support in breast cancer patients. *Neuropsychiatr Dis Treat.* 2017;13:2389-96. <https://doi.org/10.2147/ndt.S135624>.
35. Talley A, Molix L, Schlegel RJ, Bettencourt A. The influence of breast cancer survivors' perceived partner social support and need satisfaction on depressive symptoms: A longitudinal analysis. *Psychol Health.* 2010;25(4):433-49. <https://doi.org/10.1080/08870440802582682>.
36. Maly RC, Umezawa Y, Leake B, Silliman RA. Mental health outcomes in older women with breast cancer: Impact of perceived family support and adjustment. *Psychooncology.* 2005;14(7):535-45. <https://doi.org/10.1002/pon.869>.
37. Taha H, Al-Qutob R, Nyström L, Wahlström R, Berggren V. "Voices of fear and safety" women's ambivalence towards breast cancer and breast health: A qualitative study from Jordan. *BMC Womens Health.* 2012;12:21. <https://doi.org/10.1186/1472-6874-12-21>.
38. Alqaissi NM, Dickerson SS. Exploring common meanings of social support as experienced by Jordanian women with breast cancer. *Cancer Nurs.* 2010;33(5):353-61. <https://doi.org/10.1097/NCC.0b013e3181d55d33>.



This work is licensed under a Creative Commons Attribution-Non Commercial 4.0 International License.