

## The Impact of Pain and Other Symptoms on Quality of Life in Women with Breast Cancer in Jordan

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**Abstract:** *Introduction:* Despite the advancement in anticancer treatment, breast cancer patients are experiencing a high number of severe symptoms that can negatively affect patients' quality of life. This study aimed to examine the effect of pain, fatigue, depression and sleep disturbance on the patient's quality of life in women with breast cancer in Jordan. *Methods:* A descriptive cross-sectional study was conducted using a sample of 259 breast cancer patients in a university hospital in Jordan. Participants' symptoms and level of quality of life were measured using the Memorial Symptom Assessment Scale and the McGill Quality of Life Scale. Data were analyzed using descriptive and multiple regression analysis. *Results:* Pain and fatigue found as the two most prevalent and severe symptoms and had a significant adverse impact on the patient's quality of life. Changes in patients' physical quality of life (25.6%), emotional and social quality of life was explained by pain, fatigue, nausea, feeling sad and difficulty concentrating. *Conclusion:* Breast cancer patients in Jordan experience a large number of severe and unpleasant symptoms. These symptoms had a negative effect on patients' physical, emotional and social, quality of life. Symptom experience and quality of life can be improved by using comprehensive management strategies.

**Key words:** Breast Cancer • Quality of Life • Pain • Depression

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### INTRODUCTION

Breast cancer (BC) is a global disease. BC is highly prevalent in Jordan and accounts for a high mortality rate [1]. Breast cancer is associated with a high number of symptoms that are visible for patients, families and health care providers [2-4]. The subjective symptoms of pain, fatigue, sleep disturbances and depression are common and burdensome and negatively affect patients' quality of life [2, 3, 5-8].

Pain is a highly prevalent, frequent and severe symptom in BC patients [9]; nevertheless, pain often remains untreated by health care providers [10, 11]. Fatigue has also been found to have a substantial adverse effect on the quality of life of breast cancer patients by

limiting their ability to perform their activities of daily living [3, 12-14]. Another symptom frequently reported by BC patients at different stages of the disease is depression [15, 16], which continues to be undertreated [10, 11]. Likewise, another symptom frequently occurring in patients with BC is sleep disturbance [3, 13, 14].

The high incidence of pain, fatigue, depression, sleep disturbances and other symptoms are a result of the disease process itself, various cancer treatments, as well as other external factors [17]. As previously indicated, the prevalence of pain in BC patients is high [15], with approximately 71-85.5% of BC patients in Jordan experiencing pain [10, 11]. Although pain with or without other symptoms has been reported in prior studies, these symptoms tend to be more frequent in underdeveloped

countries. For instance, cultural and religious practices in Jordan can affect the prevalence and severity of cancer symptoms [18-21]. In some cases, patients may believe that they should avoid opioid treatment and tolerate severe pain for the sake of God because they consider the use of opioids as a sin. In reality, the Islamic religion allows for the treatment of all diseases and their related symptoms. Highly prevalent symptoms, such as pain, fatigue, sleep disturbances, depression and other common symptoms are often undertreated and are thus deserving of further study to determine their effects on the quality of life of patients. Therefore, this study aims to assess pain, fatigue, depression, sleep disturbance and quality of life (QOL) in women with BC in Jordan.

### MATERIAL AND METHODS

The study has been approved by the appropriate institutional and/or national research ethics committee and has been performed following the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. This study is guided by the Theory of Unpleasant Symptoms, which addresses both individual symptoms and symptoms occurring in the presence of a multitude of other symptoms [19]. Each symptom can be measured on four dimensions: intensity (i.e., severity), timing (i.e., frequency), distress and quality [20]. This study evaluates the prevalence, frequency, severity and distress associated with multiple concurrent cancer symptoms to provide a detailed multidimensional symptom profile.

**Study Participants:** In this cross-sectional study, participants were recruited from a university hospital in the Jordanian capital city (i.e., Amman). Female participants were recruited if they were considered outpatients, diagnosed with BC, were aged 18 years or older and could read and write in the Arabic language. Data collection occurred through December 2017 to February 2018. Patients were excluded if they were diagnosed with more than one cancer type, had multiple chronic diseases, or had a surgical procedure one week before they participated in the study. Informed consent was obtained from all individual participants included in the study.

Study participants were provided with oral and written information about the study, as well as the risks and benefits associated with their participation during their visit to the physician clinics. Patients who were interested in participating were contacted by the research

Table 1: Sociodemographic and clinical characteristics of the study sample (N = 259)

Characteristic	N (%)
Age	
18-24	12 (4.6)
25-34	21 (8.1)
35-44	21 (8.1)
45-54	67 (25.9)
55-64	57 (22)
≥ 65	81 (31.3)
Type of treatment	
Chemotherapy	33 (12.7)
Radiotherapy	6 (2.3)
Surgical treatment in the past month	71 (27.4)
Receives more than one treatment	129 (49.8)
Palliative treatment	19 (7.3)
Current Disease stage	
1 <sup>st</sup> stage	69 (26.6)
2 <sup>nd</sup> stage	63 (24.3)
3 <sup>rd</sup> stage	79 (30.5)
4 <sup>th</sup> stage	48 (18.5)

team by telephone to plan a convenient time and location to obtain informed consent and to collect data. The study survey was completed after a subsequent visit to the physician's office. The research team helped participants to complete the questionnaires as needed.

**Study Instruments:** Participant sociodemographic and clinical characteristics were collected using a demographic data collection form. The demographic variables included age, education and type of health insurance. Participant clinical characteristics included the type of treatment being received and their current stage of the disease. Participant demographic and clinical characteristics are summarized in Table 1. Participants' symptoms were measured using the Memorial Symptom Assessment Scale (MSAS) [22]. The MSAS allows participants to rate their symptoms on four dimensions: symptom prevalence, frequency, severity and distress [22]. The MSAS is composed of 25 physical symptoms and seven psychological symptoms and allows participants to report additional symptoms not listed on the scale [22]. For the first 25 physical symptoms, each is rated according to four dimensions. Prevalence was rated 0 (does not exist) or 1 (symptom exists). The frequency was rated on a 4-point Likert scale from 1 (rarely) to 4 (almost constantly). Severity was rated on a 4-point Likert scale from 1 (slightly) to 4 (very severe). Distress was rated on a 5-point Likert scale from 0 (not at all) to 4 (very much) [22]. The seven psychological symptoms were evaluated on only three dimensions: prevalence, severity and distress.

Participants were asked to rate the severity of each symptom on a 4-point Likert scale and the distress caused by these symptoms on a 5-point Likert scale.

Quality of life was measured using the QOL McGill scale [23]. The McGill scale measures QOL based on three social, physical and emotional subscales. All responses range between 0 and 10, with verbal anchors at the beginning and the end of the scale. Besides, the scale measures the total perceived QOL. The McGill QOL scale has demonstrated good reliability and validity of psychometric properties [23-25]. The internal consistency of the McGill QOL scale is 0.83 [23-25]. The McGill QOL scale is sensitive to changes when used in different cultural populations.

English versions of the MSAS and McGill QOL scales were translated into Arabic and back into English independently in three steps (26). First, all items were translated into Arabic using the bilingual committee technique. The committee consisted of a group of bilingual researchers who are experts in the field. The team then checked the first Arabic version for item discrepancy. The final Arabic version was then checked in the field to ensure that future participants would be able to comprehend the instrument. The team then back-translated all items into English independently. The final version was checked for any discrepancies and cultural dilemmas. While no such dilemmas could be identified, discrepant items were minimally revised to adapt to the Arabic culture before using them in the study [26, 27].

**Statistical Analysis:** All statistical analyses were performed using SPSS, version 24. Descriptive statistics of means, frequencies and percentages were used to describe the sample, as well as the prevalence, frequency, severity and distress level of symptoms. Symptom percentages were calculated to represent the scores given by participants for each symptom (i.e., prevalence, frequency, severity and distress). Regression analysis was conducted to determine the significance of the association between the 10 most frequently reported cancer symptoms and participants' QOL.

## RESULTS

The study included 259 women with breast cancer. Participants ranged in age from 18 to 65 years and above, with 79% of participants being older than 45 years of age. All participants were outpatients at the time of the study.

Fifty-four (54.4%) of the study sample had completed an undergraduate degree, 40.6% had completed less than or equal to the high school level. Table 1 summarizes the sociodemographic characteristics of participants.

At the time of the study, 26.6% of participants had Stage I breast cancer, 24.3% Stage II, 30.5% Stage III and 18.5% stage IV BC. Nearly half the sample (49.8%) reported receiving a combination of two or more cancer treatment modalities, including chemotherapy, radiotherapy and surgical therapy. Thirty-three (12.7%) participants received only chemotherapy, 27.4% had surgical treatment in the past month and only 7.3% of participants received palliative care. Table 1 summarizes the participants' clinical characteristics.

Study participants were found to have between 1 and 30 symptoms at the time of the study, with a mean of 17.7 symptoms. The majority of participants (86%) had between 9 and 30 symptoms. The 10 most frequently reported symptoms were a lack of energy, pain, difficulty sleeping, difficulty concentrating, feeling drowsy, feeling sad, lack of appetite, worrying, feeling nervous and nausea (Table 2).

In this study, the two most prevalent symptoms were pain 92.7% and fatigue 92.3%, followed by depression or sadness 87.6% and a lack of appetite 83%. Among the psychological symptoms, difficulty sleeping (78.3%) and feeling nervous (78.4%) were the most prevalent symptoms. The least commonly experienced symptoms in the study sample were dermatological changes (38.2%), feeling irritable (37.5%), "I don't look like myself" (37.1%), itching (36.3%), constipation (26.3%) and diarrhea (21.3%).

The prevalence of the 10 most frequently reported symptoms, as indicated via the MSAS scale, are reported in Table 2. Just over half the sample (54.4%) reported fatigue as the most distressing and severe symptom. Beyond that, participants reported experiencing pain (38.2%), difficulty sleeping (34.7%) and feeling sad (38.2%).

Cancer symptoms predicted total QOL by 10.9%, the QOL-emotional subscale by 24.9%, the QOL-social subscale by 16.5% and the QOL-physical subscale by 25.6%. Regression analysis showed that there were significant positive effects between overall QOL and fatigue ( $\beta = 0.236$ ,  $p < 0.05$ ) and a negative effect between QOL and difficulty concentrating ( $\beta = -0.189$ ,  $p < 0.05$ ). There was no significant difference between total QOL and pain, feeling nervous, nausea, feeling drowsy, feeling sad, lack of appetite, or difficulty sleeping.

Table 2: Percentages of the Prevalence, Frequency, Severity and Distress of 10 Most Prevalent and Severe Breast Cancer Symptoms Using MSAS (N = 259)

Symptom	Prevalence (%)	Frequency (%)	Severity (%)	Distress (%)
Pain	92.7	37.5	38.2	37.8
Lack of energy	92.3	54.4	54.4	54.4
Feeling sad	87.6	27.8	30.5	30.9
Lack of appetite	83	27	29	29
Feeling nervous	78.4	20.8	18.5	18.1
Difficulty sleeping	78.4	33.2	34.7	34.7
Feeling drowsy	77.6	29.7	29	30.1
Worrying	75.3	26.3	27.8	27.4
Difficulty concentrating	73.4	30.1	29.3	29.3
Nausea	68.3	20.8	20.1	20.8

Table 3: Summary of simple regression for variables predicting total QOL, emotional, social and physical subscales of QOL (N = 259)

Variables	Total QOL			Emotional			Social			Physical		
	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$	B	SE	$\beta$
Pain	.15	.08	.18	.14	.07	.16	-.15	.18	-.08	.47	.13	.30**
Lack of energy	.18	.07	.24*	.07	.07	.09	.10	.16	.05	.37	.12	.26**
Difficulty concentrating	-.13	.06	-.19*	-.13	.06	-.17*	-.11	.14	-.07	-.17	.10	-.13
Feeling nervous	-.08	.07	-.09	-.01	.07	-.01	-.09	.16	-.05	-.13	.12	-.08
Nausea	.06	.06	.07	.14	.06	.17*	.02	.13	.01	.01	.10	.00
Feeling drowsy	-.01	.07	-.01	.04	.07	.06	-.14	.16	-.08	.08	.12	.06
Feeling sad	-.11	.07	-.14	.15	.08	.18*	-.61	.16	-.32**	.12	.12	.08
Lack of appetite	.08	.07	.11	.05	.07	.07	.14	.15	.08	.04	.12	.03
Difficulty sleeping	-.00	.06	-.00	.03	.05	.05	-.02	.13	-.01	-.01	.10	-.01
$R^2$	0.11			0.24			0.16			0.26		
F	3.34**			9.15**			5.46**			9.53**		

Notes: \*p<0.05; \*\*p<0.01

Regression analysis of the McGill QOL subscales, regression coefficients revealed a significant positive association between scores on the QOL-emotional subscale and nausea, feeling sad and difficulty concentrating ( $\beta = 0.174$ ,  $p<0.05$ ;  $\beta = 0.178$ ,  $p<0.05$ , respectively;  $\beta = -0.171$ ,  $p<0.05$ ). On the QOL-Social subscale, Regression coefficients revealed a significant negative association between QOL-social subscale scores and feeling sad (i.e., depression) ( $\beta = -0.317$ ,  $p<0.05$ ). Feeling sad had the greatest effect on the QOL-emotional scale. On the QOL-physical subscale, Regression coefficients showed a significant positive association between QOL-physical subscale scores and pain and fatigue ( $\beta = 0.295$ ,  $p<0.01$ ;  $\beta = 0.261$ ,  $p<0.01$ , respectively). In effect, physical QOL is significantly affected by every one-unit increase in pain and fatigue, indicating that physical well-being is affected by these symptoms. Difficulty concentrating, feeling nervous, feeling drowsy and loss of appetite did not have a significant effect on the QOL total score or any of the three McGill QOL subscales.

## DISCUSSION

The results suggest that BC patients experience a high number of symptoms at different stages of the disease, experience 17.7 symptoms on average, which is higher compared to earlier studies [10, 11]. Although the severity of cancer symptoms may differ, fatigue, pain, difficulty sleeping, difficulty concentrating, feeling sad and nausea were prevalent, much like in other studies [2, 3, 5-7, 10, 11]. Lack of energy, pain, difficulty concentrating, feeling sad and nausea negatively affects QOL among women with BC. Interestingly, although sleep disturbances have been reported frequently in prior literature, sleep disturbances did not significantly affect participants' QOL. It is noteworthy that, in this study, the prevalence of pain and fatigue was higher compared with prior studies in Jordan [10, 11]. The higher prevalence of pain in women with BC may be a product of poor pain management approaches used at different stages of the disease. Chronic exposure to severe pain and fatigue can result in a deteriorating physical, social and emotional QOL.

The prevalence of pain and fatigue rate was above 90%. Previous studies have reported that BC patients in Jordan are particularly distressed by pain and fatigue, finding these among the most severe and undertreated symptoms [25]. A comparable prevalence rate of pain (85.5%) has been reported in prior studies [10-12, 28-31]. Pain has been described as a burdensome and distressing symptom that interferes with different aspects of a patient's life [12, 25, 21, 32]. The prevalence of severe pain among cancer patients in Jordanian hospitals might indicate poor levels of pain management [11, 32].

Although prior studies have reported a high prevalence rate of pain, fatigue, sleep disturbances, lack of appetite, nausea, sadness, drowsiness and worrying [11-12,30], this study found considerable variation in the degree of distress these symptoms produced among participants. Differences in the prevalence and level of distress caused by these symptoms might be a factor of the participants' age, cancer diagnosis, disease stage, treatment phase, or the presence of other co-variables [2, 19, 33]. For instance, the effect of pain and fatigue might be explained by the mediating effects of sleep disturbances [9]. Therefore, the presence of multiple severe symptoms can lead to a deterioration in the patient's psychical and psychological well-being [34, 35].

The impact of cancer symptoms on a patient's QOL is complex. In this study, pain and fatigue were found to exert a major effect on the physical QOL subscale, while fatigue had a significant effect on participants' overall QOL. These findings are consistent with the findings of earlier research studies [11, 12, 30]. Pain and fatigue share the neurological pathway, suggesting that one might increase the intensity of the other [36]. This in turn can potentially overload the sympathetic nervous system, thus resulting in further fatigue cycles [37]. Significant sleep difficulties might be explained by the mediating effects of pain and fatigue on sleep disturbances. Kundermann, Krieg, Schreiber and Lautenbacher (2004) hypothesized that the regulation of the sleep-wake cycle and modulation of pain intensity share similar neurological pathways [38]. High levels of pain can affect levels of cortisol and other hormones, thus leading to disruptions in the sleep-wake cycle [38]. Therefore, high levels of pain and fatigue can affect the patient's sleeping patterns. Moreover, cancer patients with a propensity of sleep disturbances often experience poor performance and lower QOL [9, 13, 14]. Although participants in this study reported a high prevalence of sleep difficulties and subsequent distress, the effect of these sleep difficulties on their QOL was not significant. This finding might be a

product of the higher prevalence of pain, fatigue and depression experienced by BC patients, the burden of which might overshadow their sleeping problems. These symptoms (i.e., pain, fatigue, sleep disturbances and depression) have previously been observed in BC patients and result in what is known as cytokine-induced sickness behavior [35].

In this study, feeling sad (i.e., depression) was reported as the third most prevalent symptom (87.6%) and the fourth most severe and distressful symptom. The severity and prevalence of depression in this study were comparable to other studies of Jordanian cancer patients [10, 11]. Symptoms of depression are associated with poor physical functioning in BC patients [15]. In this study, depression had a significant effect on both the emotional and social QOL subscales. Pain is associated with more frequent depressive symptoms in cancer patients [15]. Severe pain and depression can lead to poor physical performance among cancer patients [9, 13, 14].

Psychological and mood disturbances (e.g., difficulty concentration, appearance) are associated with poor gastrointestinal symptoms (e.g., nausea, diarrhea) [39], physical functioning, social and emotional distress [13]. The effect of difficulty concentration on QOL is a unique study finding and has not been addressed fully before. Moreover, this study found that difficulty concentrating, depression and nausea had a significant effect on emotional QOL subscale scores, while difficulty concentrating had a significant effect on the overall QOL scale. Therefore, experiencing frequent and intense psychological and mood symptoms can have a substantial effect on the patient's QOL.

Interestingly, although feeling nervous (i.e., anxiety) and feeling drowsy were reported among the 10 most distressing and prevalent symptoms in this study, anxiety and feeling drowsy did not have a significant effect on the QOL subscales. The differences in the effect of individual symptoms on different aspects of QOL might be related to the disease stage, treatment phase and the presence of other comorbid conditions [5, 34]. For instance, it was found that cancer patients who had comorbid conditions had more deficits in physical functioning [39, 40].

The adverse impact of depression, fatigue and pain on QOL is significant. BC patients who experience high levels of these symptoms experience a corresponding negative impact on their physical, psychological, emotional and social well-being, which in turn adversely affects their QOL. Moreover, women with poor QOL can experience other serious repercussions, such as the loss of employment and social isolation. Patients populations

who are underserved, poor, or who lack health insurance are at a greater risk for poor health outcomes; consequently, this population is more likely to experience serious adverse health outcomes as a result of their symptom load [18].

**Study Limitations:** This study has some limitations, due to the convenience sampling method; the generalizability of our results might be limited. It is noteworthy that participants' awareness of being observed may have influenced the rating of their symptoms. Future studies looking to mitigate the effect might consider mailing the questionnaire to participants in a stamped envelope, thus allowing participants to complete the questionnaire confidentially without being observed and to return the sealed envelope via mail or by hand on their next visit to the clinic.

The use of a cross-sectional design limited the measurement of cancer symptoms and their effect on QOL to a single point in time. This limited our ability to monitor changes in symptoms over time. Cancer symptoms tend to change over time due to the changes in the patient's disease and stage of treatment. Therefore, future studies might consider the longitudinal measurement of symptoms and QOL. It is also possible some patients felt burdened by their severe symptoms and due to the length of the MSAS scale, some patients might have volunteered their rating of some symptoms. This has yielded underrepresentation of some other severe symptoms. This study can be replicated in different cancer care clinical settings in Jordan, thus permitting greater generalization of the results.

### CONCLUSION

Breast Cancer patients in Jordan experience a large number of symptoms. The 10 most prevalent and distressing symptoms identified in this study were congruent with the symptoms reported in the literature and showed a negative effect on the patients' QOL. The findings of this study indicate that women with BC in Jordan experience high levels of pain, fatigue, sleep disturbances, depression, nausea and difficulty concentrating. To this end, addressing fatigue, depression, nausea and difficulty concentrating requires effective pain management. Providing an integrated and comprehensive approach to the management of these symptoms can improve patients' physical, social, emotional and overall QOL. Future research should focus

on integrative symptom management approaches that can reduce the burden of cancer symptoms and improve health outcomes.

### ACKNOWLEDGEMENT

The authors have no acknowledgment to declare.

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