RESEARCH ARTICLE

Relationship between Symptom Burden and HRQOL among Kuwaiti Women Recently Diagnosed with Breast Cancer: A Cross-Sectional Study

Hanan Safar[1]*, Susan R. Mazanec[2]

Abstract

Background: Breast cancer is a life-threatening chronic condition associated with distress and psychological symptoms. Breast cancer also leads to ongoing ambiguity around the symptom burden of the disease and its treatment over the long-term, which impacts health-related quality of life (HRQOL). The factors influenced HRQOL of Kuwaiti women with breast cancer is unclear and not well understood. **Purpose:** The purpose of the study was to explore the relationships between the symptom burden and HRQOL of Kuwaiti women diagnosis with breast cancer within their first year. **Methods:** This cross-sectional correlational study surveyed 100 Kuwaiti women diagnosed with breast cancer within the previous year at the Kuwait Cancer Control Center Hospital (KCCC). The study collected data using a combination of five questionnaires: The Memorial Symptom Assessment-Short Form Scale (MSAS-SF), the Medical Outcomes Study Social Support Survey (MOS-SSS), the Functional Assessment of Cancer Therapy-General (FACT-G), and demographic/clinical questionnaire. **Results:** The 100 Kuwaiti women in the study experienced moderate symptom burden (M = 2.35, SD = 0.28), which is significantly negatively associated with HRQOL. The most prevalent symptoms the women reported were pain, difficulty sleeping, lack of energy, and hair loss. Symptom burden was significantly negatively associated with HRQOL. **Conclusion:** The findings of this study suggest the need for more training for clinicians to diagnose and treat common symptoms. Improved screening tools and psychosocial interventions also need to be developed. Future research should focus on longitudinal data and qualitative methods to gain a more comprehensive understanding of Kuwaiti women's experiences with breast cancer.

Keywords: Female- quality of life- breast neoplasms- Kuwait- symptom assessment

Introduction

Worldwide, breast cancer is the most frequently diagnosed malignancy, accounting for over a million cases every year, and it is the leading cause of death among women worldwide (Arnold et al., 2022).

In Kuwait, breast cancer is the ninth leading cause of death, and in 2014, the Kuwait registry reported an incidence rate of 58.5 cases per 100,000 (World Health Rankings, 2017).

Being diagnosed with breast cancer could be a life-altering experience associated with feelings of uncertainty in illness. Undergoing the process of diagnosis and treatment can be physically and emotionally taxing for women with breast cancer and those close to her. After being diagnosed with breast cancer, a woman may realize her life has a different meaning and she will not be the same (Leão et al., 2022). As the diagnosis of breast cancer and its treatment could be unpleasant and experience (Traboulssi et al., 2022). Women with breast

cancer experience uncertainty in illness (UII) (Hong et al., 2022), due to the inability to define the feels and value of their disease and related incidents and the potential risks associated with a breast cancer diagnosis and consequently try to manage it through coping strategies (Greco, 2022). Breast cancer leads to uncertainty in illness, indicating a challenging familiarity that can include health-related quality of life (HRQOL) and the capability to cope with the illness (Sharif, 2017; Sharif et al., 2017). Contemporary scientific improvement for the diagnosis and treatment of breast cancer has raised patients' survival (Rah et al., 2019); hence, improving HRQOL during the disease has become a more pressing concern(Ho et al., 2018). There are insufficient data and limited studies regarding the uncertainty in illness and HRQOL among women with breast cancer in the Middle East (ME) and Arabia Gulf countries. Hence, this study aims to identify the associations of symptom burden and HRQOL in Kuwaiti women with breast cancer, thereby raising awareness among Kuwaiti women with breast cancer regarding

[1]College of Nursing, the Public Authority for Applied, Education and Training, Kuwait. [2]Frances Payne Bolton School of Nursing, Case Western Reserve University, Cleveland, OH, USA. *For Correspondence: hanansafar2023@gmail.com

factors influencing their HRQOL. The study also aims to enable healthcare providers to set strategies that promote patients' wellbeing.

The purpose of the proposed study is to explore the relationship between symptom burden, uncertainty in illness, perceived social support, and HRQOL among Kuwaiti women with breast cancer within the first 12 months of their diagnosis. This is a descriptive correlational, cross-sectional study,

Materials and Methods

Design and participants

This correlational cross-sectional study was conducted on 100 Kuwaiti women recently diagnosed with breast cancer referral to the medical and surgical oncology outpatient clinic during follow-up appointments at the Kuwait Cancer Control Center Hospital (KCCC). Participants were either under active treatment or receiving checkups. A private room was utilized to ensure participant confidentiality and privacy. This hospital was chosen because it is the largest cancer hospital in Kuwait. Data was collected over a four-month period (10/2019 – 02/2020). Approval for the study was sought from the University Institutional Review Board (IRB) of Case Western Reserve University (CWRU), the Kuwaiti Ministry of Health (MOH), and the KCCC hospital ethics board. Clinical staff at the KCCC hospital were informed about the study purpose, needs, and inclusion and exclusion criteria. Staff at the KCCC clinic served only in the coordination role and were not involved in the data collection. Only the researcher obtained informed consent and collect data.

Data collection

Following approval from the Institutional Review Board (IRB) at Case Western Reserve University (CWRU), the Kuwaiti Ministry of Health (MOH), and the ethics board at the Kuwait Cancer Control Center Hospital (KCCC), recruitment of participants began. A convenience sampling method was accomplished using the electronic records from the outpatient clinic database after gotten permission from the ministry of health and hospital administration. Recruited participants included women within the first 12 months of their diagnosis of breast cancer from all Kuwaiti cities referred to KCCC hospital, with no restriction on breast cancer treatment type. Recruited participants were in stable clinical condition (i.e., not acutely ill, not requiring hospitalization, or actively dying), and able to independently provide informed consent to participate in the study without the assistance of family members.

Eligibly criteria

All research participants met the following inclusion criteria:18 years or older, Female, A citizen of Kuwait, Within one year of their clinical diagnosis of stage (1–III) breast cancer, An outpatient (pre-treatment, chemotherapy/radiation treatment, and post-treatment follow-up), Speak Arabic and able to provide signed consent. Participants were excluded from this study if they were: Acutely ill, hospitalized, or actively dying, diagnosed with stage 4 breast cancer, Diagnosed with any other type of cancer previously except non-melanoma skin cancer and Cognitively impaired (i.e., disoriented to place, person, or time) and Unable to give consent independently. Determination of the sample size was carried out using G*Power 3.1 software. Using a multiple regression model with one independent variables (symptom burden), and one dependent variable (HRQOL) and an alpha of 0.05 and power of 0.80, G*Power calculated a total required sample of 92.

Measurements

Empirically, three instruments were used as measures in the study. The first questionnaire assessing demographic and medical characteristics (age (in years), marital status, educational level (degree), and current employment status. Health history includes: family cancer history (the type of cancer, when the family member's cancer was diagnosed, with a primary interested in breast cancer among family), cancer stage, time since diagnosis and current treatment, and other medical conditions.), and then the Memorial Symptom Assessment- Short Form Scale (MSAS-SF), and the Functional Assessment of Cancer Therapy-General (FACT-G). The Memorial Symptom Assessment Scale Short Form (MSAS-SF), a shortened version of the original MSAS, measures each of 28 symptoms concerning distress or frequency alone (Chang et al., 2000). The instrument scoring is designed to include three subscales: The Global Distress Index (GDI), the Physical Symptom subscale (PHYS), and the Psychological Symptom subscale (PSYCH). The Global Distress Index (GDI) consists of 10 items that evaluate overall symptom distress. The FACT-G has 27 questions, measure the respondents' health state over the last seven days in four subscales: physical well-being (PWB; seven items, score range 0 to 28), social/family well-being (SWB; seven items, score range 0 to 28), emotional well-being (EWB; six items, score range 0 to 24), and functional well-being (FWB; seven items, score range 0 to 28), and some items being reverse-scored (Cella et al., 1993).

Data Analysis

Descriptive statistics conducted include frequencies for all study variables. Means and standard deviations reported for continuous variables, frequencies and percentages for categorical variables, and skewness and kurtosis for the shape of the distribution. Descriptive and inferential statistics including Pearson's correlation coefficient and multiple linear regressions were conducted to answer the research questions. Relationship between symptom burden and HRQOL was assessed using Pearson's correlation coefficient test.

Results

Demographic Characteristics

There was no refusal of participation and no one was excluded. The study consists of a sample of 100 participants. The mean age of the participants was 50.8 year. Further, the result shows that the maximum number

of the participants were from the age group 58 and above and an equal number of participants n (%), 21 (21%) came from the age group 38-48. Moreover, only 34 (34%) of the participants were married. More than 50 (50%) of the participants were employed and the majority of the participants had either a diploma 32 (32%) or an undergraduate degree 39 (39%) (Table 1).

Results of the study indicated that out of the 100 participants n (%) 72 (72%) had a family history of cancer. It can also be noticed that 53 (53%) of the participants had stage III breast cancer. At the time of the survey, 91 (91%) of the participants were receiving some kind of therapy. More than half of the participants were receiving chemotherapy 61 (61%). Almost all the participants had some type of surgery 99 (99%). Moreover, the average time since diagnosis was six months (SD = 3.08). Ninety-eight percent (n= 98) of the participants had co-morbid conditions, most commonly diabetes mellitus, dyslipidemia, lung disease, and heart disease. On average, the total number of co-morbidities was three (SD = 1.79). The average of ECOG score was calculated to be 1.54 (SD = 0.93) Table 2.

Main results

The overall score for (FACT-G) was (M = 62.25, SD = 8.96), which is a range of moderate. The average value of (SWB was (M = 18.67, SD = 3.92) followed by the average value of (FWB) (M = 16.27, SD = 3.32)

Table 1. Demographic Characteristics Participants (N=100)

	Mean (SD)
Age (24-72)	50.8 (11.9)
Age Group:	N=100
from 18 to less than 28	2 (2.0%)
from 28 to less than 37	14 (14.0%)
from 38 to less than 48	21(21.0%)
from 48 to less than 58	21 (21.0%)
from 58 and above	42 (42.0%)
Marital Status:	
Married	34 (34.0%)
Divorced	40 (40.0%)
Widowed	14 (14.0%)
Separated	12 (12.0%)
Current Employment Status:	
Employed	54 (54.0%)
Retired	29 (29.0%)
Not Employed	14 (14.0%)
Other	3 (3.00%)
Education Level:	
Elementary school degree	1 (1.00%)
Intermediate school degree	8 (8.00%)
High school degree	13 (13.0%)
Diploma degree	32 (32.0%)
Undergraduate degree	39 (39.0%)
Graduate degree	7 (7.00%)

Table 2. Medical Characteristics of Participants

	N=100
Family history of cancer	72 (72.0%)
Cancer stage:	
I	2 (2.00%)
II	45 (45.0%)
III	53 (53.0%)
Receiving therapy currently	91 (91.0%)
Type of treatments currently received:	
Chemotherapy	56 (60.9%)
Hormonal	11 (12.0%)
Combination	24 (26.1%)
Surgery	99 (99.0%)
Type of surgery:	
Lymphadenectomy and Mastectomy	27 (27.0%)
Lumpectomy Only	13 (13.0%)
Lumpectomy and Lymphadenectomy	1 (1.00%)
Mastectomy Only	58 (58.0%)
Time since diagnosis (until enrolment)	Mean (SD) 6.00 (3.08) N=100
Less than 4 months	27 (27.0%)
4 to 8 months	38 (38.0%)
More than 8 months	35 (35.0%)
Time since complete treatment (until enrolment):	3.18 (2.50)
Less than 4 months	60 (60.6%)
4 to 8 months	33 (33.3%)
More than 8 months	6 (6.06%)
Told by a doctor has co-morbid conditions	98 (98.0%)
Total number of co-morbid conditions	Mean (SD) 2.55 (1.79)
Types of co-morbidities:	N=100
High blood pressure	2 (2.00%)
Diabetes mellitus	37 (37.0%)
Dyslipidemia	22 (22.0%)
Heart disease	10 (10.0%)
Lung disease	13 (13.0%)
Stroke	8 (8.00%)
Anemia	6 (6.00%)
Kidney disease	1 (1.00%)
Liver disease	1 (1.00%)
ECOG[2] Score	Mean (SD 1.54 (0.93)
ECOG Status:	N=100
Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature	10 (10.0%)
Ambulatory, capable of all self-care, unable to carry out any work activities more than 50% of waking hour	45 (45.0%)
Capable of only limited self-care, confined to bed or chair more than 50% of waking hours	28 (28.0%)
Completely disabled. Cannot carry on any self-care. Totally confined to bed or chair	17 (16.70%)

[2], Eastern Cooperative Oncology Group (ECOG)

Table 3. Assessment of Quality of Life of Participants Using Functional Assessment of Cancer Therapy-Breast Cancer (FACT-G)

Scale/ subscale	Mean	Median	SD	95% CI	Range	Alpha
Functional Assessment of Cancer Treatment-General (FACT-G)	62.25	62.5	8.96	[60.50-64.03]	40-87	0.821
Physical well-being	12.97	13.0	3.08	[12.40-13.60]	6-21	0.745
Social/family well-being	18.67	18.5	3.92	[17.70-19.50]	10-28	0.721
Emotional well-being	14.34	15.0	2.88	[13.80-14.90]	9-20	0.694
Functional well-being	16.27	16.0	3.32	[15.60-17.00]	8-26	0.782
Breast cancer-specific concern	19.5	19.0	3.43	[18.90-20.00]	13-30	0.586

Alpha, Cronbach's alpha

Table 4. Assessment of Symptom Burden among Participates

Scale/ subscale	Mean	Median	SD	95% CI	Range	Alpha
MSAS-SF	2.35	2.32	0.28	[2.30-2.40]	1.75-3.05	0.875
MSAS-PHYS	2.5	2.47	0.28	[2.45-2.56]	1.67-3.13	0.871
MSAS-PSYCH	2.61	2.58	0.38	[2.53-2.68]	1.67-3.57	0.884

Note: Alpha, Cronbach's alpha; The Memorial Symptom Assessment-Short Form Scale (MSAS-SF); The Memorial Symptom Assessment-physical symptom distress (MSAS-PHYS), The Memorial Symptom Assessment-psychologic symptom subscale(MSAS-PSYCH)

and (EWB) (M = 14.34, SD = 2.88). The lowest average was observed for the subscale Physical Well-Being (M = 12.97, SD = 3.08) Table 3.

The average overall symptom burden score was found to be (M = 2.35, SD = 0.28), which is near to the mid-range score considered to be in the moderate range. The score of subscale MSAS-PSYCH (M = 2.61, SD = 0.38) was higher than the score of the subscale MSAS-PHYS (M = 2.51, SD = 0.28). This means that Kuwaiti women with breast cancer complain of psychological symptom burden more than physical symptom burden, although the mean scores were very close (Table 4).

The results showed that the most distressing physical symptom was pain, followed by difficulty sleeping, lack of energy, a change in the way food tastes, hair loss, lack of appetite, difficulty concentrating, weight loss, dizziness, and difficulty swallowing. The most distressing psychological symptom was feeling irritable, worrying and feeling nervous, whereas the least distressing symptom was feeling sad. The most frequent symptoms were pain, difficulty sleeping, lack of energy, hair loss, a change in the way food tastes, lack of appetite, weight loss, difficulty concentrating, numbness/tingling in hands/feet, and dizziness (Table 5).

A Pearson correlation was performed to check the associations between symptom burden overall, physical, and psychological (MSAS-SF, MSAS-PHYS, and MSAS-PSYCH), and HRQOL (FACT-G). The results of the study showed a statistically significant negative correlation between symptom burden and HRQOL with a correlation coefficient (r= - 0.354; p= .000). It shows that as the value of overall symptom burden increases, HRQOL

Table 5. Most Distressing Physical and Psychological Symptoms Reported on the MSAS-SF

Scale items	Mean	Median	SD	95% CI	Range
Physical Symptoms					
Pain	3.10	3.2	0.32	[3.03-3.16]	2.4-4
Difficulty sleeping	3.02	3.2	3.02	[2.91-3.14]	1.6-4
Lack of energy	2.98	3.2	0.42	[2.90-3.07]	1.6-4
Change in the way food tastes	2.94	3.2	0.47	[2.85-3.04]	1.6-4
Hair loss	2.89	3.2	0.67	[2.76-3.03]	1.6-4
Lack of appetite	2.89	3.2	0.48	[2.79-2.98]	1.6-4
Difficulty concentrating	2.87	3.2	0.46	[2.78-2.96]	1.6-4
Weight loss	2.81	3.2	0.62	[2.68-2.93]	1.6-4
Dizziness	2.79	2.4	0.48	[2.69-2.89]	1.6-4
Difficulty swallowing	2.74	2.4	0.56	[2.63-2.86]	0.8-4
Psychological Symptoms					
Felling irritable	2.53	3.2	0.67	[2.40-2.66]	4-Jan
Worry	2.53	3.2	2.53	[2.41-2.65]	4-Jan
Felling nervous	2.52	3.2	0.42	[2.38-2.66]	4-Jan
Felling sad	2.16	3.2	0.66	[2.06-2.26]	4-Jan

Table 6. Associations between Symptom Burden Overall and HRQOL among Breast Cancer Patients

Variable	Pearson's r (FACT-G)	P-value
MSAS-SF	-0.354**	0.001
MSAS-PHYS	-0.209*	0.037
MSAS-PSYCH	-0.528**	0.001

Note. *p<0.1, **p<0.05; The Memorial Symptom Assessment-Short Form Scale (MSAS-SF),The Memorial Symptom Assessment-physical symptom distress (MSAS-PHYS), The Memorial Symptom Assessment-psychologic symptom subscale(MSAS-PSYCH)

decreases. Further, the variables of physical symptom burden and psychological symptom burden also show a significant negative correlation with HRQOL, with the values of correlation coefficient (r= - 0.209; p=0.037) and (r= - 0.528; p= 0.000) respectively. The negative correlation of physical and psychological symptom burden with HRQOL indicates that as the value of physical and psychological symptom burden increases HRQOL decreases (Table 6).

Discussion

The purpose of this quantitative, cross-sectional correlational study was to explore the associations between symptom burden and HRQOL among 100 Kuwaiti women with breast cancer. Total symptom burden in this study showed a moderate mean score. These findings are consistent with other studies reporting findings on the same measure in Middle Eastern patients with breast cancer (Huijer and Abboud, 2012) and other type of cancer (Huijer et al., 2012).

However, descriptive statistics of psychological and physical symptom burden in the present study showed a higher mean score than other studies reporting findings on the same measures in patients with cancer (Huijer and Abboud, 2012; Huijer et al., 2012). This could be due to the affective nature of breast cancer as a disease as well as the side effects of treatment (Hamer et al., 2017). Of these four studies only two were focused on women with breast cancer undergoing active chemotherapy treatment (Huijer and Abboud, 2012), while the other two studies were on Lebanese men and women with different types of cancer, including breast cancer.

The most frequent symptoms reported in this study on patients with breast cancer were pain, difficulty sleeping, lack of energy, hair loss, changes in the way food tastes, lack of appetite, and weight loss. This study finding was consistent with the other two studies about patients with cancer (Huijer and Abboud, 2012; Huijer et al., 2012), in which patients reported that pain, difficulty sleeping, and lack of energy were the most frequent symptoms. Mishel and colleagues stated that fatigue, sleep disturbance, and disrupted mood are the most prevalence reported by 313 breast cancer survivors' even years post treatment (Hall et al., 2014). Also, these results are similar to a study conducted in Kuwait, where women with breast cancer undergoing chemotherapy treatment reported high rates of fatigue, pain, and difficulty sleeping (Alawadi and Ohaeri, 2009). However, this study used a different tool

to assess women's symptoms under active chemotherapy treatment, the European Organization for Research and Treatment of Cancer and Breast Cancer-Specific Quality of Life Questionnaire (EORTC QLQ–C30 and QLQ-BR23), rather than the assessment tools used in the current study. The current study's findings were inconsistent with the study conducted by Abu-Saad Huijer et al., (2015), in which lack of energy was the most frequent symptom, followed by feeling nervous and feeling sad.

The most distressing physical symptoms reported in the current study were pain, difficulty sleeping, and lack of energy, changes in the way food tastes, hair loss, and lack of appetite. Lack of energy and pain are consistent with physical symptoms that Lebanese women with breast cancer reported as highly distressing (Huijer and Abboud, 2012) However, inconsistent with the current study's findings, Abu-Saad Huijer et al., (2012) reported pain, difficulty swallowing, worry, feeling like "I don't look like myself," and feeling nervous as the most distressing symptoms. These results indicate that Lebanese patients with cancer experienced more distress associated with psychological symptoms than with physical symptoms. In the present study, pain was the most frequent and the most distressing physical symptom, which is supported by the findings of Dhingra et al., (2015) on patients with cancer.

The most distressing psychological symptom reported in this study was feeling irritable, followed by worrying, feeling nervous, and feeling sad respectively. These findings are consistent with other studies examining symptom management in patients with various types of cancer in Lebanon (Huijer and Abboud, 2012; Huijer et al., 2012).

The current study illustrated that psychological symptom burden was more strongly correlated with HRQOL than physical symptom burden, a conclusion that is supported by a previous study on women with breast cancer (Huijer and Abboud, 2012), where the most prevalent psychological symptoms women described were feeling nervous and feeling sad (Huijer and Abboud, 2012). Consistent with (Rogers et al., 2017), patients with breast cancer experience depression, and/or anxiety, and fatigue months to years post diagnosis beside these symptoms were correlated with low HRQOL.

This finding indicates that healthcare providers treating women for breast cancer should address the need for psychological education for patients on the nature of breast cancer as a disease, the implications of treatment, side effects, and psychological concerns. Thus, medical practitioners and researchers can work together to explore approaches for coping with breast cancer which can boost the psychosocial welfare of women with a breast cancer diagnosis.

The results indicate a moderate level of HRQOL among the Kuwaiti women in this sample. The mean score (62.25) is lower than other studies of Middle Eastern women with breast cancer measuring QOL with the FACT-G. Reported FACT-G mean scores were 68, 69.63, and 84.74 in studies conducted in Iraq, Iran, and Lebanon, respectively (Zamanian et al., 2015; Al-Naggar et al., 2016; Akel et al., 2017). The findings in the present study

are consistent with the findings of Khater et al., (2019), whose participants reported a FACT-G score of (62), and where more than half (56.8%) of the Egyptian women in the study were in stage III breast cancer and (83.8%) and under active chemotherapy treatment (Khater et al., 2019). According to a study by Al-Alawadi and Ohaeri (2009), Kuwaiti women with breast cancer under active chemotherapy treatment had globally poor HRQOL (45.3), as measured by the EORTC QLQ-C30 tool (Alawadi and Ohaeri, 2009). The results of these studies may be explained by the fact that they only capture a snapshot of a single moment in a women's life, rather than exploring stability or change in the HRQOL throughout the cycle of diagnosis, treatment, and/or remission.

Overall symptom burden, physical symptom burden, and psychological symptom burden each had an inverse, significant relationship with HRQOL. As physical and psychological symptom burden increased, HRQOL decreased. This study supports previous research showing an inverse relationship between symptom burden and HRQOL. These findings are consistent with Abu-Saad Huijer and Abboud's (2012) study that found a significant, inverse correlation between symptom burden and HRQOL among Lebanese women with breast cancer. Similarly, Nho et al., (2018) found symptom clusters had a negative impact on HRQOL among Korean women with breast cancer. Women with breast cancer often have multiple physical and psychological symptoms, such that making a comprehensive symptom assessment a requisite toward good symptom control and an important component of QOL assessment (Alawadi and Ohaeri, 2009; Hamer et al., 2017; Hashemi et al., 2019; Lee and Park, 2020).

This study can help fill the gap in the literature on Kuwaiti women in particular, and the connections between HRQOL, symptom burden in relation to a breast cancer diagnosis. This study will serve as a foundation for additional research on symptom burden, and HRQOL practice among Kuwaiti women with breast cancer which will advance the nursing body of knowledge by researchers using the uncertainty in illness theory and scales. In particular, the sections below make a number of recommendations for nursing clinical practice, nursing education, and nursing research.

Included patients in present study were in stage 1 to 3 that the symptoms can be different from breast cancer patients in stage 4 so the variety and severity of symptoms can be impact on quality of life in breast cancer patients in different stages (Zaker et al., 2021).

About study limitations first, the study used a cross-sectional and correlational design that examined the association between the variables rather than considering cause and effect. Since a cross-sectional design was used, the degree of uncertainty in illness due to life circumstances prior to the diagnosis of breast cancer cannot be determined in this study's design. The absence of a baseline assessment limits the study from being able to determine the complete extent of the effects that the diagnosis, as well as the illness event itself, have had on women's level of uncertainty in illness.

Second, the selection of a convenience sampling method may have caused a sampling bias that might jeopardize the external validity of the study. For example, this study did not represent Kuwaiti women with breast cancer who get their treatment abroad (which is optional for Kuwaiti patients), and, thus, the generalizability of the study findings is limited among Kuwaiti women as a whole. Also, this sample was limited to women who had been diagnosed within a year. This limited sample leaves out women who have been diagnosed over longer periods and who are in different stages of treatment and/or recovery. Additionally, the participants of this study were all recruited from one particular hospital (KCCC) in Kuwait. Thus, these findings cannot be generalized to all Kuwaiti patients.

Third, self-reporting questionnaires were used to collect data, which might have resulted in response bias, social desirability bias, and inaccuracies that could have affected the findings. A qualitative study could integrate data on a greater variety of factors that influence participants' uncertainty in illness.

About strengths of study since there have been no studies since 2009 conducted with Kuwaiti women with breast cancer, this study represents an important update and expansion of the literature on the subject. Data were collected over four months with a positive response rate of 100 participants. The actual sample size was adequate to detect existing associations between and among the major study variables. Additionally, there were no missing data, which could reduce the study's statistical power and the result is well representativeness of the samples. The study outcomes were assessed and analyzed through Arabic versions of validated and reliable Arabic questionnaires. Finally, the flexibility of a cross-sectional study with data collection taking place at one particular point in time allowed for a fairly quick response, which allowed for timely analysis and interpretation of the study's findings.

In conclusions, the results of this study suggested that Kuwaiti women reported a moderate level of symptom burden, which is significantly associated with their HRQOL. This study helps to raise awareness of Kuwaiti women's experiences and highlights the need to develop a more holistic model of care for women with breast cancer and survivors that incorporates their physical and psychological needs.

Author Contribution Statement

All authors contributed equally in this study.

Acknowledgements

Ethics approval
All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee-of Iran and with the 1964 Helsinki Declaration and its later

amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Conflict of Interest

The authors declare no competing interests.

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