

RESEARCH ARTICLE

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Sexual Quality of Life of Breast Cancer Survivors: A Cross-Sectional Study

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Abstract

Aim: Sexual quality of life (SQL), one of the essential issues of sexual and reproductive health, negatively affects the overall quality of life. This study aimed to investigate the SQL of breast cancer survivors. **Methods:** In this cross-sectional study, 410 breast cancer survivors were recruited in a two-stage sampling process. The quota sampling method was employed in the first stage, and convenience sampling was used in the second stage between December 2020 and September 2021. The data were collected using the sexual Quality of Life–Female, Female Sexual Function Index, Revised Religious Attitude. **Results:** The mean age of the participants and the time since the disease diagnosis were 42.64 ± 6.02 years and 13.9 ± 4.80 months, respectively. The mean score of SQL was 66.65 ± 10.23 (95% Confidence Interval: 66.63-67.62). Multiple linear regression analysis showed that the SQL of breast cancer survivors was significantly correlated with their occupation ($\beta=0.12$, $P<0.008$), education ($\beta=-0.23$, $P<0.001$), their spouse's education ($\beta=0.16$, $P<0.001$), belief in the sex initiation by the spouse ($\beta=0.23$, $P<0.001$), fear of being hurt by sexual intercourse ($\beta=0.21$, $P<0.001$), receiving training about sexual relations ($\beta = 0.1$, $P < 0.049$), lumpectomy ($\beta = 0.11$, $P < 0.001$), sexual function ($\beta = 0.13$, $\beta = 0.001$), and religious attitude ($\beta = 0.27$, $P < 0.001$). These factors explain 60% of the variance of the SQL score. **Conclusion:** Considering the various factors contributing to the SQL of breast cancer survivors can inform interventions targeted at improving the health status of these women.

Keywords: Sexual quality of life- Women's health- Cancer- Breast cancer

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Introduction

Breast cancer is one of the most common chronic diseases and the second cause of death in women (Badeleh shamoshaki et al., 2022). The incidence of this disease in the world is estimated at 38 per 100,000 and in Iran at 20 per 100,000. Breast cancer forms about 24% of all cancers in Iran (Fatehi et al., 2019). The evidence indicates that about 60% of breast cancer cases in Iran are in women under 50; a quarter of that occurs in young women under 40. However, only 7% of patients in developed countries are less than 40 years old, and the patients are mostly over 50 years (Hayati and Mahmoudi, 2008- Esfandiari Dolabi et al., 2015). Studies have shown that the diagnosis and treatment of breast cancer can affect women's lives in general and their sex life in particular (Ghizzani , 2018-Hsiao et al., 2018).

The sexual quality of life (SQL), mainly referring to the feeling of sexual attraction, interest, and participation

in sexual activity, is associated with factors such as sexual desire, sexual ability, and different life situations (Henson, 2002). SQL is one of the essential issues in sexual and reproductive health (Tan, 2002), which has a mutual and intertwined relationship with the overall quality of life (Chow et al., 2017 – Dogan et al., 2013). Several factors affect it, including various diseases (Lottes, 2000). Among them, breast cancer can affect women's quality of life, especially their SQL (Heimani, 2002- Arrington et al., 2004). Furthermore, the drugs used in patients with breast cancer cause sexual dysfunction and reduce the SQL by causing ovarian insufficiency, decreased estrogen and testosterone, vaginal atrophy, reduction of vaginal moistening, vasoconstriction, and reduced sexual desire (Lottes, 2000 – Ganz et al., 2003).

Scant research has been conducted on the SQL of breast cancer survivors in recent years (Lusti-Narasimhan and Beard, 2013- Ramezani et al., 2012). For instance, studies have shown that the feeling of sexual attractiveness

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and sexual pleasure of survivors of this disease decreases and affects their SQL (Brandberg, 2008). Moreover, other studies have shown that these people have low body image, sexual self-esteem, and sexual pleasure that highly affect their sexual identity and their SQL (Moin, 2009-Panjari, 2011). Talking about SQL is different in different societies and cultures. For example, in Iran, talking about sexual relations or sexual problems may show a lack of inhibition (Irandoost et al., 2020). Besides, Iranian women speak cautiously about sexual issues due to the traditional culture. It is shameful to raise sexual matters, so they deal with this issue conservatively because it is private. Therefore, they try to treat the illness and ignore the sexual problems caused by the disease; this decreases the SQL in these patients (Irandoost et al., 2020).

Due to the lack of information related to the SQL in breast cancer survivors and considering the high prevalence of this cancer, the researchers conducted this study to investigate the SQL of breast cancer survivors.

Materials and Methods

Study design

This cross-sectional study conducted between December 2020 and September 2021.

Settings

This study investigated female breast cancer survivors in two referral teaching hospitals in Sari and Ramsar, Mazandaran province, north of Iran.

Inclusion criteria

The inclusion criteria included married women surviving breast cancer who lived with their spouses and were capable of using a smartphone (WhatsApp).

Exclusion criteria

The exclusion criteria encompassed patients with metastatic cancer and those who took medications related to depression, diabetes, thyroid, and cardiovascular diseases.

Sample size

The number of samples was determined to be 410 women based on the previous study findings on this issue (Den Oudsten et al., 2010), considering the standard deviation of 3.10, precision of 0.30, confidence level of 95%, and using G Power software.

Sampling

First, the researchers employed the quota method and continued with the convenience sampling method. They went to the medical records department of Imam Khomeini Referral Teaching Hospital, Sari, and Imam Sajjad Referral Teaching Hospital, Ramsar (both cities are located in the north of Iran). Then, they determined the population of women with breast cancer whose medical records were in the two hospitals. At this stage, according to the proportion of the total number of the estimated sample (410 samples) to the population of women surviving breast cancer with medical records

in two centers, 282 of the participants entered the study from Imam Khomeini Referral Teaching Hospital, Sari, and 128 from Imam Sajjad Referral Teaching Hospital, Ramsar. Afterward, the researchers phoned the participants and provided them with the necessary explanations about the research and its objectives. Then, the questionnaires were sent via WhatsApp to the eligible patients willing to participate in the study. To reach a sufficient number of samples, the researchers would contact the following person if the patient was unavailable or unwilling to participate in the study. The participants were asked to click on the link of the questionnaires and download and complete them. Figure 1 is a flowchart illustrating the number of participants in each center.

Measurement

Sexual Quality of Life-Female (SQOL-F) Questionnaire

Symonds et al. (2005) developed this instrument in 2005. This study employed its Persian version with Cronbach's alpha of 0.77 for Iranian women (Maasoumi et al., 2013). This questionnaire consists of 18 questions on a 6-point Likert scale (from 1 to 6). A higher score indicates a better SQL (Maasoumi et al., 2013).

Female Sexual Function Index-FSFI

Rosen et al. (2000) developed this instrument to assess female sexual function. It is a 19-item questionnaire with six domains based on the Likert scale, scored from zero or 1-5. Its Cronbach's alpha coefficient is 0.82 (Rosen et al., 2000). A higher score indicates better sexual function. Mohammadi et al. (2008) evaluated the validity of its Persian version and reported Cronbach's alpha coefficient > 0.70.

Revised Religious Attitude Questionnaire

Ebrahimi et al. (2008) developed this questionnaire to measure and determine religious attitudes. It has 25 questions based on a five-point Likert scale ranging from 1 to 5. A higher score indicates a more favorable level of religious attitude. The reliability of this questionnaire was confirmed with Cronbach's alpha of 0.95 (Ghobari Bonab et al., 2001).

Data analysis

The data were analyzed using SPSS version 24. Descriptive statistics were used to describe the variables, including percentage, mean, and standard deviation. Moreover, an independent t-test or its non-parametric equivalent, Mann-Whitney, was run to compare the two-way variables. On the other hand, quantitative variables with more than two groups were analyzed using ANOVA or its non-parametric equivalent, the Kruskal-Wallis test. Pearson or Spearman correlation coefficients were run to analyze the correlation between quantitative variables. Finally, multivariate regression tests were employed to moderate the effect of confounding variables in investigating the relationship between variables. The significance level was considered less than 0.05.

Ethical considerations

All procedures performed in the studies involving

human participants were in accordance with the ethical standards of the institutional and/or National Research Committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The Ethics Committee of Mazandaran University of Medical Sciences (MAZUMS) approved the study (Ethical code: IRMAZUMS.REC. 1398.8310) and the participants were provided informed written consent before participation and were assured of the confidentiality of the data.

Results

The mean and standard deviation of the women's age and their spouses were 42.64 ± 6.02 years and 47.96 ± 5.93 , respectively (Table 1). The highest frequency in education levels was related to women and their spouses with associate and Bachelor's degrees. The mean duration of disease diagnosis was 13.9 ± 4.80 months. Table 2 summarizes the demographic characteristics of the participants.

Multiple linear regression analysis showed that the SQL of breast cancer survivors is significantly associated with factors such as patients' occupation ($\beta=0.12$, $P<0.008$), education ($\beta=-0.23$, $P<0.001$), spouse's

education ($\beta=0.16$, $P<0.001$), a belief that the husband should initiate sex ($\beta=0.23$, $P<0.001$), fear of harming due to sex ($\beta=0.21$, $P < 0.001$), receiving training about sexual relationship ($\beta = 0.1$, $P < 0.049$), lumpectomy ($\beta = 0.11$, $P < 0.001$), sexual function ($\beta = 0.13$ $P=0.001$, β), and religious attitude ($\beta=0.27$, $P<0.001$). These factors determine 60% of the variance of the SQL score.

Discussion

Breast cancer is one of the most common cancers in women and can affect various sexual health functions, especially the SQL (Bobrie et al., 2022; Nia et al., 2022). It depends on several factors, each manifesting itself in different degrees in various socio-cultural contexts. Therefore, the researchers conducted this study to investigate the SQL in breast cancer survivors. Unfortunately, there is not sufficient and well-documented data regarding this issue in Iran. Therefore, there is a void of studies in this field comparing their results to the present study's results.

The results of the present study showed that the mean score of the SQL of women diagnosed with breast cancer

Table 1. Demographic Characteristics of Breast Cancer Survivors

Demographic characteristics	Mean / Frequency	Standard deviation / percentage
Age (Year)	42.64	6.02
Duration of Marriage (Year)	20.37	5.11
Duration of diagnosis (month)	13.9	4.80
Number of chemotherapy sessions	7.11	0.96
Sexual function index score	16.16	2.84
Religious attitude score	68.42	12.86
Sexual quality of life score	66.65	10.23
Occupation		
Housewife	310	75.61
Employed	100	24.39
Diploma and lower	145	35.37
Education		
Associate degree / Bachelor's degree	244	59.51
Master's degree and higher	21	5.12
Type of surgery		
Lumpectomy	373	90.98
Unilateral mastectomy	37	9.02
I believe that the woman should wait until her spouse initiates the sex relationship.		
No	180	43.90
Yes	230	56.10
I do not want to have sex with my husband out of fear of infecting him.		
No	409	99.76
Yes	1	0.24
My husband refuses to have sex with me, fearing that my disease may hurt him.		
No	406	99.02
Yes	4	0.98
My husband refuses a sexual relationship out of fear that it may hurt me.		
No	228	55.61
Yes	182	44.39

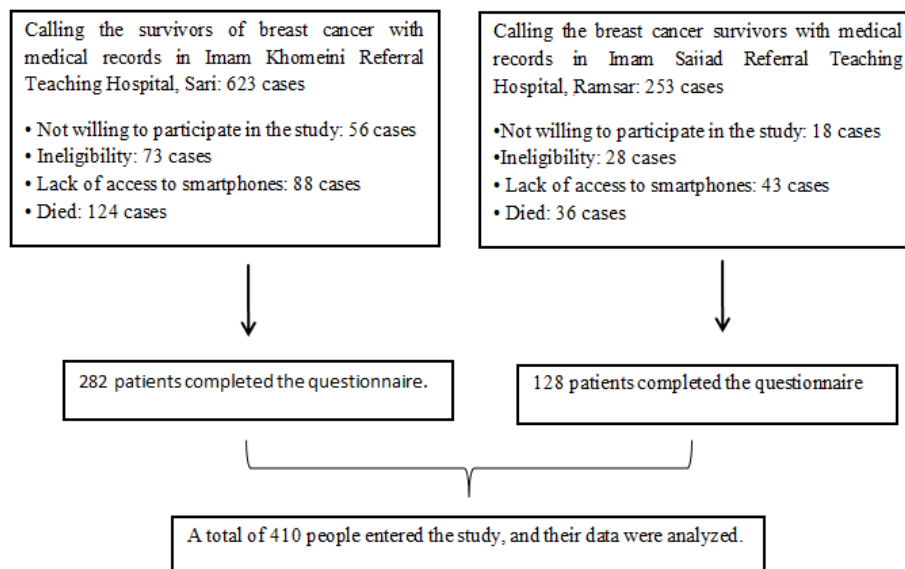


Figure 1. Flowchart of the Participants

was 66.6 ± 10.2 , indicating a moderate level of the SQL. Consistent with the present study, Telli et al., (2020) showed a moderate SQL with a mean value of 43.3 ± 29.4

in mastectomy patients compared to healthy people, showing the multidimensionality of the SQL, affected by the variables related to cancer survival.

Table 2. Results of Multiple Linear Regression Test in Survivors of Breast Cancer

Model	Unstandardized coefficient		Standardized coefficient Beta	t	P-value	95% confidence Interval	
	B	Std. Error				lower limit	upper limit
Constant	50.43	6.24		8.07	0.001	38.15	62.7
Patient's occupation							
Employed	2.82	1.06	0.12	2.64	0.008	0.72	4.92
Housewife	reference	-	-	-	-	-	-
Patient's Education							
Diploma and less	- 4.94	1.37	- 0.23	- 3.61	<0.001	- 7.64	- 2.25
Associate degree/ Bachelor's degree	reference	-	-	-	-	-	-
Master's degree and higher	- 1.62	1.55	- 0.03	- 1.04	0.296	- 4.68	1.42
Husband's education							
Diploma and less	- 1.36	0.96	- 0.64	- 1.41	0.158	- 3.26	0.53
Associate degree/ Bachelor's degree	reference	-	-	-	-	-	-
Master's degree and higher	- 6.39	1.56	- 0.16	- 4.07	<0.001	- 9.47	- 3.30
Belief in the sex initiation by the husband							
Yes	4.62	1.42	0.23	3.25	0.001	1.83	7.41
No	reference	-	-	-	-	-	-
My husband refuses sexual relations for fear of hurting me							
Yes	4.36	1.05	0.21	4.13	<0.001	2.29	6.43
No	reference	-	-	-	-	-	-
Training in a sexual relationship							
Yes	2.2	1.11	0.1	1.97	0.049	4.4	0.01
No	reference	-	-	-	-	-	-
Type of surgery							
Lumpectomy	4.34	1.16	0.11	3.72	<0.001	2.05	6.63
Unilateral mastectomy	reference	-	-	-	-	-	-
Sexual function index score	0.54	0.17	0.13	3.21	0.001	0.88	0.21
Religious attitude score	0.22	0.03	0.27	6.94	<0.001	0.15	0.28

According to the study results, breast cancer women with lower education levels had better SQL. On the other hand, Manganiello et al., (2011) showed that education level has a positive relationship with women's SQL (Adili et al., 2018). This contradiction can be because women's lower level of education and knowledge predicts their adaptation to the disease and stress level and can affect their SQL (Chang et al., 2014). Correspondingly, this study revealed that in spouses with higher education, the SQL had a meaningful and negative relationship. These results are probably because educated people are usually employed, and suffer from fatigue, job burnout, and lack of time to establish relationships, so their SQL is lower. In line with these results, Shivandi et al., (2016) showed that when job burnout occurs, a person becomes emotionally depleted and experiences negative thoughts and feelings that negatively affect their marital relationships.

In this study, working women had a better SQL than non-working women. This can be due to the financial dependence of non-working women on their husbands, making it hard to express their sexual needs. Feeling powerless and having low self-confidence in expressing sexual needs is a factor that diminishes the women's SQL (Langen et al., 2005). Conversely, Chang et al., (2011) and Blouet et al., (2019) declared that working women experience more stress concerning their body image, which can be due to the lack of social support; this negatively affects their sexual function.

In the present study, the SQL of women with lumpectomy was better than those with mastectomy. By the same token, other studies have shown that the surgical treatment type, including breast reconstruction, leads to a better mental image and a higher SQL. In contrast, total mastectomy negatively influences it (Molavi et al., 2015; Kronowitz et al., 2004). This study demonstrated a direct relationship between the SQL and the sexual function of women with breast cancer. A similar result can be observed in the study conducted by Zeighami et al., (2009), while Thors et al., (2001) have found that breast cancer reduces sexual function and affects women's SQL.

Religious attitudes and coping strategies and the ability to use their tactics have a positive and direct effect on the patient's SQL, i.e., people with a more favorable religious attitude have a better SQL. This finding is consistent with Azimzadeh et al., (2020), indicating that religious beliefs preserve and improve the patient's SQL, enhancing their adaptation to the disease and sexual self-esteem.

Improving information, awareness, and support can enhance the physical condition, reduce anxiety, and improve the patient's adaptation and adaptive behaviors, enhancing the SQL. Receiving sexual information and participating in courses and workshops increase self-help strategies to overcome sexual problems, improve intimate relationships with sexual partners, and ultimately increase the SQL. Similarly, Den Oudsten et al., (2010) and Sharabafchi et al., (2019) have shown that training the patients on sexual issues can predict the increase in sexual pleasure and SQL.

Another factor affecting the SQL in this study is that husbands of women with breast cancer refuse to have sex

due to the fear of harming their wives. Khajehaminian et al., (2014) demonstrated that some people or their sexual partners were not able to have sex due to the fear of disease transmission and disease aggravation because of sexual intercourse. Moreover, most participants wanted their husbands to initiate sexual relations; they had a better SQL due to the feeling of increased sexual attractiveness. It seems that SQL in these women can be better to some extent by providing them and their spouses with proper training to strengthen the correct sexual beliefs (Bobrie et al., 2022).

This study is subject to some limitations. Information bias is possible due to the sensitive nature of the questions about sexual issues, especially in the context of conservative societies such as the Islamic Republic of Iran. Since the self-reported questionnaires were employed to collect data, the participants may have been reluctant to answer these questions honestly and the results may be prone to social desirability bias. Moreover, it is a cross-sectional study, so one cannot determine the cause-and-effect relationships from the findings. It makes the results susceptible to temporality bias.

In conclusion, based on the results of this study, a set of biopsychosocial determinants affect the SQL of women with breast cancer. Therefore, health service providers and therapists can help improve their SQL by knowing these factors and providing appropriate advice. The researchers hope this study can contribute to other studies investigating the SQL and the factors affecting it in patients with breast cancer. Correspondingly, they expect this study to efficiently apply the quality-of-life index as an essential criterion in the country's treatment planning evaluation. They recommend that future research examine the cause-and-effect relationship between the study variables and the SQL of women with breast cancer.

Author Contribution Statement

Elham-Sadat Momeni and Zohreh Shahhosseini contributed to the design of the study. Mahmonir Danesh, Mahmood Moosazadeh, Fatemeh Hamidi, Zohreh Shahhosseini contributed to the implementation and analysis plan. Elham- Sadat Momeni Contributed to data collection. Elham- Sadat Momeni and Fatemeh Hamidi have written the first draft of this manuscript. All authors approved the final version of the manuscript.

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Approval

The research was part of an approved Elham-Sadat Momeni thesis.

Ethical Approval

The Ethics Committee of Mazandaran University of Medical Sciences (MAZUMS) approved the study (Ethical code: IRMAZUMS.REC. 1398.8310).

Data Availability Statement

Since our data contain sensitive personal information, it is forbidden to share these data with a third party without obtaining an additional written form of informed consent for information sharing. We did not obtain the additional written consent for information sharing.

Conflict Of Interest

No conflict of interest.

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