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Quality of Life of Patients After Bladder Cancer Surgery: A 1-year Prospective Study

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ABSTRACT

Purpose: Bladder cancer is one of the most common malignant diseases and significantly impacts the quality of life of patients. This prospective descriptive study aims to assess the 1-year quality of life in patients who underwent bladder cancer surgery.
Methods: The study included twenty-eight patients who had received a first-time diagnosis of bladder cancer and had undergone surgery in the Urology Clinic of a university hospital. Data were collected using the Patient Information Form, Post-Discharge Problems Evaluation Form, and the EORTC QLQ-C30 during the preoperative period and at the 1st, 6th, 9th, and 12th months after discharge.
Results: The mean scores on the EORTC QLQ-C30 functional scales were 89.9±11.5 (1st month) and 93.3±7.6 (12th month), those on the symptom scales were 10.4±10.2 (1st month) and 2±4.1 (12th month), and those on the global health status/QoL were 65.5±20.4 (1st month) and 76.8±10.5 (end of the 12th month) ($p<.005$). These findings reflect an improvement in quality of life over time. In the first month, patients experienced pain, fatigue, anorexia, and urinary incontinence problems.
Conclusions and Suggestions: The quality of life of patients who underwent bladder cancer surgery improved over time. The one-year follow-up period for patients' problems serves as a guide for developing patient-specific care plans and support for enhancing their quality of life.

Mesane Kanseri Cerrahisi Sonrası Hastaların Yaşam Kalitesi: 1 Yıllık Prospektif Çalışma

Makale Bilgileri

Makale Geçmişi

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ÖZ

Amaç: Mesane kanseri en sık görülen malign hastalıklardan biridir ve hastaların yaşam kalitesini olumsuz etkilemektedir. Bu prospektif ve tanımlayıcı çalışma, mesane kanseri cerrahisi sonrası hastaların 1 yıllık yaşam kalitelerini değerlendirmeyi amaçlamaktadır.
Yöntem: Çalışmaya bir üniversite hastanesinin Üroloji Kliniği'nde ilk kez mesane kanseri tanısı almış ve ameliyat olmuş 28 hasta dahil edilmiştir. Veriler preoperatif dönemde ve taburculuk sonrası 1., 6., 9. ve 12. aylarda Hasta Bilgi Formu, Taburculuk Sonrası Sorunları Değerlendirme Formu ve EORTC QLQ-C30 kullanılarak toplanmıştır.
Bulgular: EORTC QLQ-C30 fonksiyonel ölçeklerinde ortalama puanlar 89,9±11,5 (1. ay) ve 93,3±7,6 (12. ay), semptom ölçeklerinde 10,4±10,2 (1. ay) ve 2±4,1 (12. ay), genel sağlık durumu/yaşam kalitesi ise 65,5±20,4 (1. ay) ve 76,8±10,5 (12. ayın sonu) bulunmuştur ($p<.005$). Bulgular, zaman içinde yaşam kalitesinde bir iyileşmeyi olduğunu belirtmektedir. Hastalarda birinci ayda ağrı, halsizlik, iştahsızlık ve idrar kaçırma sorunları gözlenmiştir.
Sonuç ve Öneriler: Mesane kanseri cerrahisi sonrası hastaların yaşam kalitesi zamanla artmaktadır. Hastaların sorunlarının 1 yıllık takibi, hastaya özgü bakım planlarını geliştirmek ve yaşam kalitesini desteklemek için bir rehber niteliğindedir.

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INTRODUCTION

Bladder cancer (BC), according to GLOBOCAN 2020 data, is the thirteenth most common cause of cancer death and the tenth most common malignant disease in the world (Sung et al., 2021). In Türkiye, BC ranks as the fourth most common cancer, with an incidence of 22.9 per100.000 men, following lung, prostate, and colorectal cancers. Among females, its incidence is 3.1 per100.000 (Globocan, 2020).

Because of BC, certain some physical problems both before and after treatment can significantly impact the patient's quality of life (QoL). Patients with BC often experience substantial issues, including pain, dysuria, alternation in future plans and goals, social isolation, physical dysfunctions, and difficulty in daily activities. These challenges may lead to decreased self-esteem and deterioration in body image (Leite et al., 2015). Previous studies have shown that patients emay encounter problems such as stoma-related issues, urinary incontinence, skin problems, altered body image, and sexual difficulties following BC treatment (Edmondson et al., 2017; Goonewardene et al., 2021). Yoshimura et al. (2005) reported that the perceived health status of BC patients was significantly impaired after Transurethral Resection of Bladder Tumor (TUR-BT), their mental health was adversely affected following the first TUR-BT, and they experienced social and psychological challenges after the subsequent TUR-BT (Yoshimura et al., 2005).

The concept of cancer, the fear it instills, anxiety about the future, stress associated with the disease process, and the adverse effects of treatment significantly impact the QoL of both patients and their relatives. Despite these negative consequences of treatment, it remains crucial to enhance and sustain the QoL of patients throughout and after the treatment (Ruiz-Rodríguez et al., 2021). It is widely acknowledged that the QoL of BC patients is influenced by varoius factors from the diagnostic stage to the conclusion of the treatment. Numerous studies have endeavored to determine the optimal duration for monitoring the QoL of these patients. For example, Kulaksizoglu et al. (2002) sought to figure out the timeframe for patients’ adaption to their altered health status following cystectomy. They reported that QoL and psychological measures returned to baseline scores and stabilized after a year, recommending this timeframe for patients undergoing radical cystectomy to adapt. In the study, it is recommended that QoL assessment should not be used as an endpoint criterion for comparing treatment approaches before 12 months (Kulaksizoglu et al., 2002). In Türkiye, only a limited number of studies have followed-up on the QoL of BC patients, and none of them had a 1-year follow-up period (Kırkalı et al., 2000; Kulaksizoglu et al., 2002, Sarı et al., 2010). Monitoring changes in the QoL of the patients over time is believed to assist nurses in developing treatment protocols, especially for planning long-term patient care. Additionally, the relevant literature generally focuses on the QoL (Gopalakrishna et al., 2017; Hevér et al., 2015; Large et al., 2014) or the symptoms (Gezginci et al., 2017; Goonewardene et al., 2021) of the patients in advanced disease stages. So, this study's aim is to investigate the QoL of patients with stage 1 BC.

Research Questions

- What is the quality of life for patients after a 1-year follow-up following bladder cancer surgery?
- Is there a difference in the of quality of life in before and after bladder cancer surgery during follow-up?
- What are the problems experienced by patients following bladder cancer surgery?

METHOD

Research Design

This study utelized a prospective descriptive design The study sample included 28 patients diagnosed with BC within the past year who had undergone surgery in the Urology Clinic of a university hospital. The study concluded after a 1-year follow-up of the last participant in June 2016.

Research Sample

Patients diagnosed with cancers other than BC and those with mental health issues were excluded from the study. Initially, twenty-nine patients participated in the study, but one patient decided to withdraw, resulting in 28 patients who completed the survey.

Research Instruments and Processes

Data were collected using a Personal Information Form, a Post-discharge Problems Evaluation Form, the European Organization for Research and Treatment of Cancer Quality of Life Core Questionnaire (EORTC QLQ-C30 Version 3). The purpose of the study was initially explained to the participants, and the Patient Information Form was completed through face-to-face interviews at the clinic. Subsequently, researchers explained the Post-Discharge Problems Evaluation Form and the EORTC QLQ-C30 to the patients. Additional clarification was provided for any points that were not clearly understood after the patients had reviewed the forms. The EORTC QLQ-C30 and Post-Discharge Problems Evaluation Form were administered through face-to-face interviews before the surgery (baseline) and via a telephone interview at the 1st, 3rd, 6th, 9th, and 12th months after discharge. On average, the telephone interviews lasted for approximately 30 minutes (range: 20 - 45 minutes).

The Personal Information Form

The Personal Information Form prepared in accordance with the literature (Perlis et al., 2014; Schmidt et al., 2015; Somans et al., 2009), consisted of 35 questions related socio-demographic characteristics (age, gender, education status, marital status, employment status, income level, the presence of chronic disease, previous surgeries etc.), factors affecting the disease (smoking consumption, alcohol consumption, exercise habits, etc.), and disease-related data (hematuria, urinary burning, dysuria, urinary incontinence etc.).

The Post-discharge Problems Evaluation Form

This form developed in accordance with existing literature (Hevér et al., 2015; Large et al., 2014; Schmidt et al., 2015), consisted of 21 questions convering a range of aspects, including treatment-related data (such as TNM stage, surgical procedure, chemotherapy, radiotherapy, and receiving preoperative and postoperative treatment information) the physiological factors (like surgical site infection, pain, evisceration, malnutrition), psychological (including anxiety, hopelessness, helplessness, depression, body image deterioration, and concerns related to sexual health), social considerations (sucha s reduced social interactions and communication difficulties with family), and treatment-related problems (comprising sleep difficulties, fatigue, appetite loss, constipation, diarrhea, alopecia, anaemia, and nausea/vomiting). To ensure the form's content validity, feedback was sought from five nursing academicians who employed the Davis technique, resulting in a content validity index of 0.88.

The European Organization for Research and Treatment of Cancer Quality of Life Core Questionnaire (EORTC QLQ-C30 Version 3

This form is a 30-item tool developed by the European Organization for research and Treatment of Cancer in 1993 (Aaronson et al., 1993). In Türkiye, Beser and Oz (2003) conducted a validity and reliability study of the scale, resulting in a Cronbach’s alpha coefficient of 0.901. The EORTC QLQ-C30 includes five functional scales (emotional, physical, role, cognitive, and social functioning), nine symptom scales (pain, dyspnea, fatigue, insomnia, appetite loss, constipation, diarrhea, nausea and vomiting, financial difficulties), and questions pertaining to global health status and QoL. Items on the functional and symptom scales are rated on a four-point scale, ranging from “not at all” (1) to “very much” (4). The global health status/QoL questions are rated on a scale of “very poor” (1) to “excellent” (7). The score on functional and symptom scales are converted to a 0–100 scale, where a higher score on a functional scale and global health status/QoL correlates with a higher score on a level of functioning, while a high score on a symptom scale relates corresponds to a higher level of functioning, while a higher score on a symptom scale reflects an increase in symptoms (Beser & Oz, 2003). In this study, the baseline assessment Cronbach’s alpha was 0.918.

Data Analysis

Data analysis in this study was conducted using the SPSS 21.0 software package (SPSS Inc., Chicago, IL, USA). Descriptive statistics, including frequency and percentage, were computed. When the parametric test assumption were not met, Friedman’s Two-Way ANOVA was employed to analyze multiple dependent variables. To assess inter-group differences, Mann-Whitney U, Kruskal-Wallis H, and Post-Hoc multiple comparison tests were utelized. A significance level of $p<.05$ was set for determining statistical significance.

Ethic

Written consent was obtained from the university hospital, and ethical approval was granted by Gazi University’s Clinic Studies Ethics Board (B.30.2.GÜN.0.20-176). Additionally, patients were provided with information, and their informed consent was obtained in both written and oral forms.

RESULTS

Descriptive Characteristics of Patients with BC

The mean age of patients was 62.5±12.4 years; with 92.9% of the sample being male. Additionally, 75% of the patients were smokers, 28.6% consumed alcohol, and 32% engaged in regular exercise. Furthermore, 85.7% of the patients had prior knewledge of their disease, and the same percentage had a Stage 1 tumorwithout metastasis or lymph node involvement. Among participants, 78.6% underwent TUR-BT, while 21.4% underwent radical cystectomy. Notably, 67.9% (*n*=19) of participants did not receive hospital discharge education (Table 1).

The EORTC-QLQ-C30 Scale Scores

The mean total functional scales score on the EORTC QLQ-C30 was 89.9±11.5 at the 1st month and 93.3±7.6 at the end of the 12th month. The mean total symptom scales was 10.5±10.2 at the 1st month and 2±4.1 at the end of the 12th month. The mean global health status/QoL was 65.5±20.4 at the 1st month and 76.8±10.5 at the end of the 12th month (Table 2). Consequently, it is evident that QoL improved over time.

Table 1. *Descriptive Characteristics of the Patient with BC (n=28)*

Descriptive characteristics	*n*	%
Age		
31-64	14	50.0
65-81	14	50.0
X̄± SS (Min – Max)	62.5±12.4 (31-81)	
Gender		
Male	26	92.9
Female	2	7.1
Marital status		
Married	28	100.0
Single	-	-
Education status		
Literate†/Primary school	8	28.6
Secondary school	7	25.0
High school	5	17.9
Higher education	8	28.6
Employment status		
Employed	8	28.6
Not employed	20	71.4
Income level		
Inadequate	8	28.6
Moderate	16	57.1
Adequate	4	14.3
The presence of chronic disease		
Yes	15	53.6
No	13	46.4
History of previous surgeries		
Yes	8	28.6
No	20	71.4
Smoking consumption		
Yes	21	75.0
No	7	25.0
Alcohol consumption		
Yes	8	28.6
No	20	71.4
Exercising		
Yes	9	32.1
No	19	67.9
TNM stage*		
T1	24	85.7
T2	4	14.3
N0	28	100,0
M0	26	92.9
M1	2	7.1
Surgical procedure		
Transurethral Resection of Bladder Tumor (TUR-BT)	22	78.6
Radical cystectomy	6	21.4
Receiving chemotherapy		
Yes	2	7.1
No	26	92.9
Receiving radiotherapy		
Yes	1	3.6
No	27	96.4
Receiving information about disease preoperatively		
Yes	24	85.7
No	4	14.3
Receiving information about treatment at discharge		
Yes	9	32.1
No	19	67.9

† Literate (1), *n folded.

There was a notable improvement in the global health status/QoL at the 9th and 12th months when compared to the baseline status (Baseline–the 9th and 12th months, *p*=0.001) with no significant differences observed in the other months (Baseline–the 1st, 3rd, and 6th months, *p*>.05). Among the five functioning scales, significant improvement was observed in the scores for emotional and social functioning at all assessment points when compared to the baseline (Baseline–the 3rd, 6th, 9th, 12th months, *p*<.001) (Table 2).

Table 2. *Patients' Pre-Operation and Follow-Ups Functioning and Global Quality of Life Scores as Measured by the EORTC QLQ-C30† (n=28)*

Scales	Baseline	1st month	3rd month	6th month	9th month	12th month	*p**
	X̄±SS	**X̄±SS**	**X̄±SS**	**X̄±SS**	**X̄±SS**	**X̄±SS**	
Functional scales (total score)	86.5 (14.1)	89.9 (11.5)	92.4 (8.3)	93.2 (7.2)	93.5 (7.6)	93.3 (7.6)	**.001**
Physical functioning	87.4 (19.3)	87.6 (14.5)	89 (14.1)	89 (14)	89.3 (14.6)	89 (14.5)	.123
Role functioning	92.3 (14.7)	87.5 (21.6)	92.3 (14)	91.7 (14)	92.9 (11.5)	93.5 (11.4)	.582
Emotional functioning	80.7 (19.6)	90.5 (16.8)	94.3 (12.6)	96.7 (8)	97.6 (7.5)	97 (7.9)	**.001**
Cognitive functioning	85.1 (17.2)	91.1 (14.7)	89.3 (17.1)	91.1 (16.7)	89.9 (18.3)	89.9 (18.3)	.084
Social functioning	91.7 (17.3)	95.8 (12.5)	100 (0)	100 (0)	100 (0)	100 (0)	**.001**
Global health status/QoL	61.6 (17.5)	65.5 (20.4)	70.8 (13.3)	72 (12.9)	77.4 (10.4)	76.8 (10.5)	**.001**

†The higher values indicate higher level of functioning and quality of life (min: 0, max: 100).
*Friedman's Two Way Anova Test was applied.

Additionally, statistically significant differences in patients' symptom scores were observed, at all assessment points, except for the diarrhea scale (Table 3). Furthermore, when compared to the baseline and the 1st months' assessments, the symptoms of fatigue, nausea and vomiting, pain, dyspnoea, sleep difficulties, appetite loss, constipation, and financial difficulties decreased consistently across all follow-up assessment points.

Table 3. *Patients' Pre-Operation and Follow-Ups Symptoms Scores as Measured by the EORTC QLQ-C30† (n=28)*

Scales	Baseline	1st month	3rd month	6th month	9th month	12th month	*p**
	X̄±SS	**X̄±SS**	**X̄±SS**	**X̄±SS**	**X̄±SS**	**X̄±SS**	
Symptom scales (total score)	15.7 (18.9)	10.4 (10.2)	15.7 (18.9)	4.1 (4.8)	1.8 (3.9)	2 (4.1)	**.001**
Fatigue	21 (25)	18.3 (20.8)	12.3 (14)	7.5 (10.1)	3.2 (7,3)	4.4 (9.2)	**.001**
Nausea and vomiting	10.7 (23.2)	0.6 (3.1)	0.6 (3.1)	0.6 (3.1)	0 (0)	0 (0)	**.001**
Pain	20.8 (27.1)	15.5 (18.7)	5.4 (10.2)	4.2 (8.6)	1.8 (5.2)	1.2 (4.4)	**.001**
Dyspnoea	13.1 (29.2)	8.3 (19.5)	6 (1.9)	3.6 (13.9)	3.6 (13.9)	3.6 (13.9)	**.009**
Sleep difficulties	15.5 (24.8)	15.5 (24.8)	7.1 (13.9)	8.3 (14.7)	2.4 (8.7)	3.6 (10.5)	**.001**
Appetite loss	14.3 (26.3)	8.3 (17.3)	3.6 (10.5)	1.2 (6.3)	0 (0)	0 (0)	**.001**
Constipation	10.7 (20.4)	11.9 (20.7)	4.8 (14.9)	4.8 (14.9)	3.6 (13.9)	2.4 (12.6)	**.01**
Diarrhoea	7.1 (21)	3.6 (10.5)	2.4 (8.7)	2.4 (8.7)	1.2 (6.3)	1.2 (6.3)	.354
Financial difficulties	15.5 (29.4)	1.2 (6.3)	0 (0)	1.2 (6.3)	0 (0)	0 (0)	**.01**

† The higher scores represent higher levels of symptoms or problems (min: 0, max: 100).
*Friedman's Two Way Anova Test was applied.

Although not presented in a table, the analysis of the EORTC QLQ-C30 scores based on the socio-demographic characteristics of the participants revealed that older age, alcohol use, and a lack of regular exercise had a negative impact on QoL (*p*<.005). Specifically, older age negatively affected post-operative scores on the functional scales at the 1st, 3rd, 6th, 9th, and 12th months. Alcohol use had a negative effect on scores on the functional scales and global health status/QoL at the 1st and 3rd months. Non-exercise negatively affected scores on the functional scales at the 6th month. Additionally, when the QoL scores were compared based on type of surgery, it was found that pain symptom scores, especially at the 1st month, and nausea and vomiting symptom scores at the 3rd month were significantly higher for radical cystectomy patients compared to TUR-BT patients.

However, at the 1st month, the emotional functioning scores in radical cystectomy patients was higher than that in TUR-BT patients was (*p*<.005).

Problems Experienced by the Patients

Patients experienced physical problems (64.3%) associated with surgery at the 1st month post-surgery, treatment-related problems at the 3rd month (46.4%), and issues-related to physical functioning and treatment at the 6th month. However, all these problems decreased in subsequent visits (Figure 1). At the 1st month post-surgery, patients reported physical pain (57.1%), fatigue associated with treatment (42.9%), loss of appetite (28.6%), and psychological problems such as anxiety (35.7%) and desperation (7.1%). Notably, sexual questions were not adequately answered in the present study. However, some patients (17.8%) reported problems including a decreased frequency of sexual intercourse and fear and anxiety during sexual intercourse, especially at the 3rd month post-surgery, with these issues gradually decreasing in the following months.

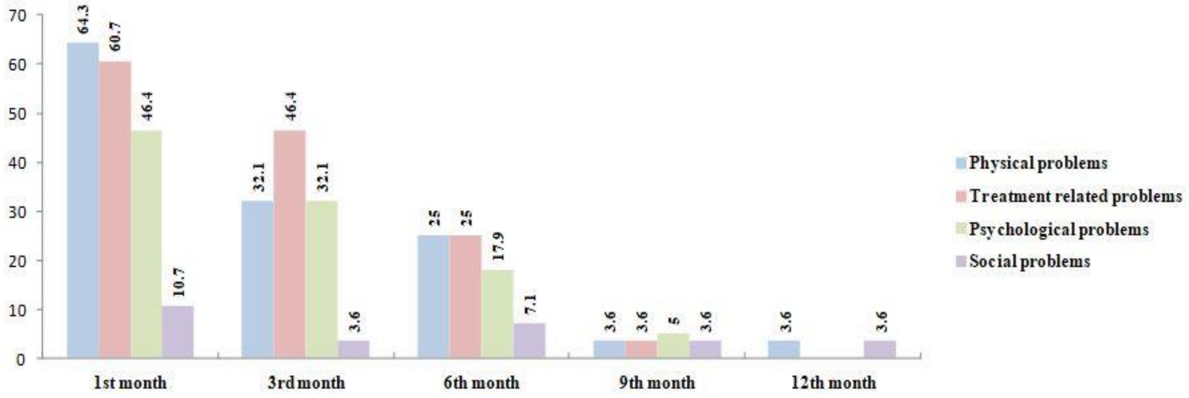

Figure 1. *The Problems Experienced by Patients (n=28)*

DISCUSSION

Studies on the QoL of patients who have undergone bladder preservation surgery and those with superficial BC are scare in the literature (Gezginci et al., 2017; Sarı et al., 2010). This study is significant as it provides data on superficial BC. Our research offers valuable insights into the QoL of 28 BC patients over a 12-month follow-up period. The finding demonstrate that all functional scales and global health status/QoL scores increased after the 1st and 3rd months; however, symptom scale scores decreased more gradually.

In summary, the present results showed that functional scales, symptom scales, and global health status/QoL improved over the course of one year following BC surgery. Consistent with our findings, a study conducted by Schmidt et al. (2015) on the QoL of patients with non-invasive BC over one year found that the 52 patients with Stage I cancer exhibited improvement in the QoL related to urinary, intestinal, and sexual functions during the 1-year period (Schmidt et al., 2015). Based on the literature, changes in body image, urinary and sexual function resulting from radical cystectomy also affect patients’ perceived QoL (Goonewardene et al., 2021; Hevér et al., 2015).

Similarly, a study conducted by Liu et al. (2016) revealed that patients with BC and an ileal conduit had a generally good overall QoL, with the exception of issues related to sexual functions (Liu et al. (2016). Our study also showed that sexual functions were affected in six of the radical cystectomy patients. The reconfiguration of the urinary tract after surgery can have an impact on both the social and sexual aspects of a patient's life. In such case, it is the patient needs to be supported so that improve his adaptation to his new life. In such cases, it is crucial to provide support to help the patient adapt to their new life.

Studies have emphasized that psychological rehabilitation involving family support, coupled with stomatherapy nursing counseling, can enhance the QoL of patients, reduce stress, and increase self-care agency (Harris et al., 2020; Roveron et al., 2021). However, it's important to note that a significant portion of the population in Türkiye is Muslim, and discussions related to sexual matters in Islam often revolve around modesty and privacy, making it socially less accepted to address these issues openly (Smerecnik et al., 2010). Therefore, It is possible that sexual questions may not have been adequately answered in this study. The cultural differences sorrounding this topic should be thoroughly examined in future research endeavors. Previous studies have consistently reported that patients with BC often experience emotional challenges regardless of the type of surgery they undergo. For instance, Pham et al. (2019) found that the BC patients frequently grapple with depression and anxiety (Pham et al., 2019). Similarly, Çelik et al. (2015) noted that the patients' functional status is frequently compromised, encompassing aspects of social functioning, physical functioning, and role limitation stemming from both physical and emotional issues (Çelik et al., 2015). In line with these findings, our study also revealed that emotional functions were impacted by the surgery, but importantly, they showed improvement over time. Additionally, Large et al. (2014) reported no significant differences between the baseline and follow-up visits in terms of scores on physical, social, and functional aspect of QoL; however, they did observe a significant improvement in emotional scores (Large et al., 2014). Given the emotional challenges faced by BC patients, a multidisciplinary approach is essential to provide comprehensive support for both the patient and their family in coping with these issues.

Our study showed that the patients experienced physical problems, including pain due to surgery, fatigue due to treatment, and anorexia, as well as psychological problems such as anxiety and desperation during the first month post-surgery. In a systematic review of literature on QoL in BC patients, Perlis et al. (2014) also noted that patients often faced a myrial of physical, emotional, and psychological challenges, including urinary incontinence, sexual problems, pain, body image disturbance, anxiety, and sleep disorders (Perlis et al., 2014). Enhancing the perceived social support of BC patients could play a crucial role in preventing or reducing psychological suffering, including depression and anxiety. Age and gender are significant risk factors for BC. The incidence of BC is nearly four times higher in males than in females (Globocan, 2020), and it is more prevalent among older adults (Talji & Mottet, 2020). In our srudy, where we investigate the relationships between the QoL scores and the demographic and clinical characteristics of the BC patients, the majority of patients were male, and approximately half of them were elderly. Our finding revealed that the QoL tend to decreases with increasing age, which aligns with the findings of John et al., 2021 (John et al., 2021). Additionally, Liu et al. (2016) reported that both physiological and psychological QoL are compromised in patients aged over 65 years (Liu et al., 2016). Furthermore, in their systematic review, Somani et al. (2009) highlighted that family, social relations, health and economic situation are among the most influential factors determining QoL BC patients (Somani et al., 2009).

CONCLUSION AND SUGGESTIONS

This study demonstrated that the global health status/QoL of patients with BC improved by the 9th and 12th months post-surgery compared to the baseline. Furthermore, significant improvements were observed in social and emotional functioning across all the follow-up assessment points among the five functioning scale. Assessing the QoL of BC patinets is vital for tailoring patient-specific nursing services and evaluating the impact of nursing interventions. By assessing the QoL of patients, healthcare providers can gain insights into each patient's unique condition, particularly considering the cultural and social factors that influence their QoL. This understanding can guide the delivery of appropriate nursing care. Providing counseling and education to BC patients and their families can aid in the prevention and management of symptoms that may arise during the treatment process, ultimately enhancing the QoL of the patients.

LIMITATIONS

A limitation of the present study was the relatively small sample size, as it included BC patients from only one hospital. Furthermore, its worth nothing that the majority of the patients in our study had Stage 1 BC. Further research should focus on investigating the long-term QoL of patients with advanced stages of BC who undergo additional treatment such as radiotherapy and/or chemotherapy. needs to be investigated.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Author Contributions

Design: H.B., S.G., S.E., Data Collection or Processing: N.K., E.A.T., Analysis or Interpretation: All authors, Literature Search: All authors, Writing: H.B., S.G., N.K.

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