The Relationships between Frailty and Quality of Life in Elderly Women with Breast Cancer

B. Depboylu[1,*], N. Ozturk[1], B. Nigdelioglu[2] and G. Discigil[3]

[1]*Department of Radiation Oncology, Aydin Adnan Menderes University Faculty of Medicine, Aydin, Turkey*

[2]*Division of Medical Oncology, Aydin Adnan Menderes University Faculty of Medicine, Aydin, Turkey*

[3]*Department of Public Health, Aydin Adnan Menderes University Faculty of Medicine, Aydin, Turkey*

Abstract: *Background*: It is well known that oncologic management of elderly patients is complicated, and physicians should well define the ultimate goals when choosing treatment modalities. Cancer treatment should not necessarily focus on survival but aim for a good quality of life for the patient in light of their frailty.

Patients and Methods: This is a retrospective cross-sectional survey study. One hundred fifty-eight women with breast cancer participated in this study. The PRISMA-7 Frailty Index and WHOQOL-OLD Module assessed participants' frailty and quality of life. SPSS 26.0 and Medcalc 14 [Acacialaan 22, B-8400 Ostend, Belgium] programs were used for statistical analyses. Statistically significant associations between the PRISMA-7 scale and the WHOQOL-OLD Module were assessed.

Results: Of the158 participants, the median age [min-max] was 71 [65-96] years, and 61.2% had stage I and II breast cancer. Lumpectomy was 61.1%, and 75% received chemotherapy-radiotherapy and hormone therapy. For the WHOQOL-OLD domains; financial status [p=0.001] with the sensory ability domain, work status [p<0.001] and education status[p=0.004] with the autonomy domain, education status [p=0.002] with PPF activity domain, education status [p=0.001] and work status [p=0.007] with the social participation domain, treatment modality [p=0.003] with death &dying domain, number of comorbidities [p=0.004] with intimacy domain statistically significant. The total score was associated with education status [p=0.005] and the number of comorbidities [p=0.010]. Frailty correlated positively with age [cut-off age 68 years; p<0.001]. Education status was inversely associated with increased frailty [p=0.003]. The relationship between the PRISMA-7 scale and the WHOQOL-OLD Module correlated negatively in five out of six dimensions except for the Intimacy domain.

Conclusions: It is necessary to design customized cancer management programs to improve specific components of elderly women with breast cancer with increased frailty by revealing the associations in domains of QoL.

Keywords: Breast cancer in the elderly, quality of life, WHOQOL-OLD Module, PRISMA7 Frailty Index, frailty.

INTRODUCTION

According to GLOBOCAN 2020 data, the estimated number of incident cases of female breast cancer [BC] in all ages [excluding non-melanocytic skin cancers] is 2,261,419; approximately 45% are 60 years older. Moreover, slightly over 400,000 cases are expected to die in this cohort [1]. It is estimated that 60% of all cancers involve patients over 65 years, and this percentage will increase to 70% by 2030 [2].

As society ages, elderly individuals are at an increased risk of having debilitating diseases and worsening functional disabilities. Thus, it becomes an increased burden to society to suffer from dependency and disability problems. The aging population and higher unemployment rate significantly impact the elderly. It caused them to face extra challenges in their health status, healthcare service utilization, social welfare, lifestyles, and the overall quality of life [3]. Researchers of the World Health Organization [WHO] specifically investigated the quality of life[QoL]is called the WHOQOL group, defined it "the perception of the individual of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns" [4]. The challenge of science in the 21st century is to delay the onset of the disability and lead an optimal quality of life for the elderly [5]. Therefore, the WHOQOL working group developed the WHOQOL-OLD Module to define standards of QoL for people aged 60 and over [6]. The

Module was tested in 22 countries, among which Turkey also exists. The field validity study was done by Eser *et al*. [7].

Besides developing various oncologic treatment modalities, the increasing number of elderly cancer patients has led .to the fastest-growing segment of the cancer population: the elderly cancer survivors [8]. Also, increasing practice with the elderly patients imperatively reminds us that these patients may prefer treatment modalities if they are to improve their quality

*Address correspondence to this author at the Department of Radiation Oncology, Aydin Adnan Menderes University, Faculty of Medicine, Kepez Mevkii, 09100 Aydin, Turkey; Tel: (+90)532 6332903;
E-mail: bengu.depboylu@adu.edu.tr

ISSN: 1927-7210 / E-ISSN: 1927-7229/22

of life rather than necessarily their survival [9]. It cannot be denied that there is a critical gap in knowledge regarding uncalculated results and outcomes that are most vital for them [10]. The diverse heterogeneity in the health status of elderly cancer patients makes it vital for physicians to identify their vulnerabilities when predicting their treatment-related toxicity [11]. Frailty is one of these vulnerabilities.

The definition of frailty by Fried *et al*. is that frailty is a clinical syndrome in which three or more of the following criteria were present: unintentional weight loss [10 lbs in the past year], self-reported exhaustion, weakness [grip strength], slow walking speed, and low physical activity [12]. As Moreno-Aguilar *et al*. mentioned, this definition is operational, and since frailty is an excellent predictive validity for mortality and morbidity, a holistic approach to the patient should be adopted [13, 14]. Therefore, WHOQOL-OLD would be an acceptable complementary descriptive definition to obtain the best description of health and its consequences. Unfortunately, few studies relate to the domain of QoL, which is affected by the frailty in the first place [15-18].

This study investigates the independent associations between frailty and quality of life in elderly women with BC using the PRISMA-7 Frailty Index and WHOQOL-OLD Module. In addition, this study focuses on assessing the impact of demographic variables, which are considered predictors of both Frailty and QoL.

PATIENTS AND METHODS

The universe of this study consists of female patients ≥65 years diagnosed with BC who applied to Adnan Menderes University Training and Research Hospital between January 2013 and December 2018. Patients accepted to participate in the study did not have communication problems and had completed or ongoing adjuvant treatments were included. Patients with second or third primary cancer were excluded. It is aimed to reach the entire universe. A total of 158 women participated in the study.

All participants filled out the identification questionnaire either alone or with a family member, including the following data: age; sex; date of birth; marital status; the number of children; level of education; profession or current occupation; financial status; type of family; type of social supporter; entitlement to health insurance, place of residence; type of surgical treatment; stage of breast cancer; adjuvant oncologic treatments received [chemotherapy, radiation treatment, hormone therapy]; duration of hormone therapy; comorbid diseases [hypertension, diabetes mellitus, heart disease, other]; tobacco and alcohol use. They also answered the necessary information for the PRISMA 7 Frailty Index and the WHOQOL-OLD Module.

The PRISMA-7 is a questionnaire with seven items which consist of domains such as age >85 years, male gender, health problems that limit activities, need for support by others, health problems that require staying at home, having someone to count on, use of stick or walker or wheelchair. Each positively answered item provides one point. A score of three or more indicates Frailty and warrants a further evaluation. We chose to use this questionnaire because it was found to be relatively sensitive by Yaman *et al*., after comparing with the Système de Mesure de l'Autonomie Fonctionnelle scale [SMAF] [sensitivity =0.78 and specificity =0.74 [14-16]. PRISMA-7 showed the best accuracy after using Fried's frailty criteria as a reference standard [Area under the curve: AUC=0.85] [19-21].

To evaluate QoL, we used the WHOQOL-OLD instrument, a specific module for assessing QoL in the elderly. This questionnaire has 24 items attributed to six domains: sensory function, which evaluates vision, auditory function, touch, olfaction, and taste and the impact of the loss of sensory abilities in QoL; autonomy, which concerns the capability of living autonomously and making decisions; past, present, and future activities, which describe satisfaction with life achievements and desires; social participation, which concerns participation in daily activities and the community; death and dying, which is related to worries, disturbances, and fear of death and dying; and intimacy, which evaluates the capability of having personal and private relationships. Each domain had four items scored from 1 to 5: the scores for all domains ranged between 4 and 20. Scores are combined to produce a total score between 24 and 120. A high total score indicated better QoL. Eser *et al*. conducted the Turkish Validity and Reliability Study of this tool and found Cronbach's alpha value 0.85 [7].

This study is designed as a retrospective cross-sectional survey study to investigate the independent associations between frailty and quality of life in elderly women with BC using the PRISMA-7 Frailty Index and WHOQOL-OLD Module. Furthermore, this study focuses on correlating demographic variables' impact on frailty and QoL.

The Ethics Committee of the Noninvasive Research Studies of Aydin Adnan Menderes University Medical Faculty has approved the design of this study. [Protocol number: 2019/37]

Statistical Analysis

SPSS 26.0 and Medcalc 14 [Acacialaan 22, B-8400 Ostend, Belgium] programs were used to analyze the variables. The Shapiro-Wilk Francia test evaluated the data that conforms to the normal distribution. The homogeneity of variance was evaluated with the Levene test. Independent-Samples T-test with Bootstrap results and Mann-Whitney U test with Monte Carlo results were used to compare the sub-dimensions of the WHOQOL scale with the total score according to other independent two-group variables. One-Way ANOVA [Robust Test: Brown-Forsythe] test was used to compare the variables with more than two groups, while Tukey HSD was used for the post hoc test. Among the nonparametric tests, Kruskal-Wallis H Tests were tested using the Monte Carlo simulation results, while Dunn's Test was used for Post Hoc analyses. Spearman's rho test was used to assess the correlations between the sub-dimensions of the WHOQOL-OLD Module and the total score according to age and number of children. Pearson Chi-Square and Fisher Exact tests were tested with the Monte Carlo Simulation technique compared with subgroups of the prism scale and other descriptive categorical variables. The comparison of the column ratios in the significant results was expressed with the Benjamini-Hochberg corrected p-value results. Odds ratio with 95% confidence intervals was used to show how many times higher those with a risk factor were in these significant variables than those without them. Sensitivity and specificity ratios were analyzed and expressed by ROC [Receiver Operating Curve] curve analysis for the relationship between the classification that the cut-off value calculated according to age separates the subgroups of the prism scale and the actual classification. While quantitative variables were expressed as mean [standard deviation] and Median [Minimum/Maximum] in the tables, categorical variables were shown as n [%]. Variables were analyzed at a 95% confidence level, and a p-value less than 0.05 was considered significant.

RESULTS

The sociodemographic and clinical characteristics of participants are presented in Table **1**. All 158 participants were women with breast cancer, with a median age [min-max] of 71 [65-96] years. Most [56.3%] were married, while 43.7% were single with a median of 3[0-9] children. Almost 20% of the women were illiterate, while 33.5% were able to read and write. Women with <9 years of formal education were 31.6%, while women with formal education >9 years were 14.6%. About two-thirds of the women [65.8%] were full-time housewives, and one-third [34.2%] were pensioners. The participants' financial status was as follows:29.4%had income below the minimum wage, 34.2% had a minimum wage, and 36.1% had over the minimum wage. While half of the women [52.5%] had a nuclear family, 22,8% lived alone, and 24,7%of them lived with their children. Social support was provided by the children and others in 57.0%, by spouses in 31.%, whereas 12% were without any support. Almost all participants had health insurance. Participants primarily resided in cities [79.1%], and 20.9% resided in the countryside. No other comorbidity was reported in 14.6% of the women. However, one-third [31.6%] of the remaining women had one comorbidity, the other one-third [31.6%] had two comorbidities, and 22.2% had three or more comorbidities. Tobacco use was reported in 12.7% of women, while only 3.2% reported themselves as social drinkers. Two-thirds of the participants [56.3%] had an accompanying person during the interview.

A great majority of the women had early breast cancer [stage I 10.8%; stage II 51.3%], and women who had locally advanced breast cancer were 25.3%. Of the remaining women, 12.7% with metastatic breast cancer. All participants underwent breast surgery; lumpectomy was 60.1%, and mastectomy was 39.9%. Almost half of the women [47.5%] received adjuvant oncologic treatment with three modalities [chemotherapy, radiotherapy, and hormone therapy]. Adjuvant oncologic treatment provided in two modalities to 37.3% [ChT+RT 15.2%; RT+HRT 14.6%; ChT+HRT 7.6%] and in one modality to 15.2% of the patients. Patients who received hormonal treatment for five years and over were 47.5%, whereas 31% received less than five years.

The WHOQOL-OLD Module evaluated the quality of life. The total median score was 90 [53-120]. The best quality of life score was discovered in the intimacy domain, and the worst score was discovered in the social participation domain (Table **2**).

When the sociodemographic and clinical characteristics of the participants were correlated with the scores discovered in the domains of the WHOQOL-OLD

Table 1: Sociodemographic and Clinical Characteristics of the Participants

Sociodemographic and Clinical Characteristics	Groups	Mean (SD.)	Median (Min-Max)
Age		72.2 (5.4)	71 (65-96)
Number of children		2.8 (1.5)	3 (0-9)
		n	**%**
Marital Status			
	Single &widowed	69	43,7%
	Married	89	56,3%
Education Status			
	Illiterate	32	20,3%
	Able to read &write	53	33,5%
	<9 years formal education	50	31,6%
	≥9 years formal education	23	14,6%
Work Status			
	Pensioner	54	34,2%
	Housewife	104	65,8%
Financial Status			
	Below Minimum Wage	47	29,7%
	Minimum Wage	54	34,2%
	Over Minimum Wage	57	36,1%
Family Type			
	Nuclear Family	83	52,5%
	Living Alone	36	22,8%
	Living with Children	39	24,7%
Social Supporter			
	No Social Supporter	19	12,0%
	Spouse	49	31,0%
	Children and Others	90	57,0%
Place of Residence			
	Countryside	33	20,9%
	City	125	79,1%
Type of Surgical Treatment			
	Lumpectomy	95	60,1%
	Mastectomy	63	39,9%
Stage of BC			
	Stage I	17	10,8%
	Stage II	81	51,3%
	Stage III	40	25,3%
	Stage IV	20	12,7%
Adjuvant Oncologic Treatment Modality			
	I	24	15,2%
	II	59	37,3%
	III	75	47,5%
Duration of Hormone Therapy			
	No Hormone Therapy	34	21,5%
	<5 years	49	31,0%
	≥5 years	75	47,5%
Number of Comorbidities			
	No Comorbidity	23	14,6%
	1 Comorbidity	50	31,6%
	2 Comorbidities	50	31,6%
	≥3 Comorbidities	35	22,2%
Health Insurance		150	94,9%
Tobacco Use		20	12,7%
Alcohol Use		5	3,2%
Accompanying Person to the Participant		89	56,3%

SD: Standard Deviation.

Table 2: Descriptive Statistics for PRISMA7 Frailty Index and WHOQOL-OLD Domains

	n	Mean (SD.)	Median (Min-Max)
Prisma 7 Score	158	2.2 (1.4)	2 (0 - 5)
WHOQOL-OLD domains			
Autonomy	158	14.6 (2.3)	15 (6 - 20)
PPF Activity	158	14.9 (2.5)	15 (7 - 20)
Social Participation	158	14.2 (2.9)	15 (7 - 20)
Death &Dying	158	14.5 (4.2)	15 (4 - 20)
Intimacy	158	15.9 (2.3)	16 (9 - 20)
Sensory Ability	158	15.1 (3.5)	16 (6 - 20)
TOTAL SCORE	158	89.2 (11.8)	90 (53 - 120)

SD: Standard Deviation **n**: number.

Module, statistically significant findings were obtained (Table **3**). The total score of the WHOQOL-OLD Module was significantly related to educational status [p=0.005], work status [p=0.013], adjuvant oncologic treatment modalities[p=0.02], and comorbidities [p=0.010], of the participants. Detailed analyses between the sociodemographic characteristics and QoL module domains, the educational status significantly related to autonomy [p=0.004], past-present and future activities [p=0.002], and social participation [0.001] domains.

Work status was strongly statistically correlated with autonomy [p<0.001] and social participation [p=0.007] domains, while this relation was weaker with sensory abilities [p=0.046] domain. Therefore, there was a robust statistical correlation between financial status and sensory ability [p=0.001] domain. Autonomy [p=0.034] and past-present-future activity [p=0.011] domains had weaker significant correlations with the participants' financial status.

The family type only significantly correlated with the sensory ability [p=0.028]. This correlation was even more significant when participants lived with their nuclear family than those living with their children [p=0.026].

When tobacco and alcohol use correlated with the WHOQOL-OLD Module domains, autonomy [p=0.044], social participation [p=0.023], and intimacy [p=0.026] domains had significant correlations with tobacco use. In addition, past-present-future activity [p=0.005], social participation [p=0.028] domains had significant correlations with the alcohol use.

Comorbidities of the participants affected QoL of elderly breast cancer at a statistically significant level in autonomy [p=0.020] and intimacy [p=0.004] domains. While having comorbidity was significant in both domains, the number of comorbid conditions determined the strength of statistical significance (Table **3**).

The breast cancer-related characteristics had an essential impact on QoL domains. While the stage of the BC was not statistically significant, the type of breast surgery affected the autonomy [p=0.018] domain significantly. As previously mentioned, the number of adjuvant treatment modalities was significantly associated with the death and dying [p=0.004] domain and the total score [p=0.010]. As the number of treatment modalities increased, the strength of statistical significance decreased; however, it increased in the total score of the Module (Table **3**). Duration of hormone therapy also had no impact on the QoL domains of the elderly women with BC.

We used PRISMA 7 Frailty Index to identify the frail participants. The median score of the index was 2 [0-5], and the majority [60.1%] of the participants were not frail.

The sociodemographic and clinical characteristics of the participants were correlated with the PRISMA 7 Frailty Index scores. Statistically significant points of the analyses are shown in Table **4**. Age was the main characteristic that determined the frailty; 68 years was the cut-off point. There was a statistically significant correlation between participants 68 years old and over and participants younger than 68 years old [p<0.001]. As age increased, so the frailty increased. The median age was 70 [65-90] in the Not Frail group and 73 [65-96] in the Increased Frailty group [p=0.001]. Other participant characteristics significantly correlated with

Table 3: The Distribution of the WHOQOL-OLD Module Domain Scores according to the Sociodemographic and Clinical Characteristics of Participants

Sociodemographic Characteristics		Sensory Ability	p	Autonomy	p	PPF Activity	p	Social Participation	p	Death Dying	p	Intimacy	p	Total Score	p
Age		r=-0.146	0.067 [s]	r=0.016	0.841 [s]	r=0.001	0.994 [s]	r=-0.017	0.831[s]	r=0.011	0.895 [s]	r=-0.011	0.896 [s]	r=-0.004	0.896 [s]
Number of Children		r=0.017	0.832 [s]	r=-0.188	0.018 [s]	r=-0.098	0.222 [s]	r=-0.116	0.147[s]	r=0.019	0.813 [s]	r=-0.060	0.450 [s]	r=-0.076	0.450 [s]
Marital Status			0.189 [u]		0.580 [u]		0.210 [u]		0.498[u]		0.868 [u]		0.358 [u]		0.230 [t]
Single+ Widowed (n=69)		16 (6-20)		14 (6-20)		15 (9-20)		14 (7-20)		15 (4-20)		16 (9-20)		87.9±12.2	
Married (n=89)		16 (7-20)		15 (9-20)		15 (7-20)		15 (8-20)		16 (4-20)		16 (10-20)		90.2±11.4	
Education Status			0.254 [k]		**0.004** [k]		**0.002** [a]		**0.001** [k]		0.738 [k]		0.323 [k]		**0.005** [a]
Illiterate (n=32)	1	16 (7-19)		13 (9-20)	1 vs 2=0.016	**13.9±2.9**	1 vs 4=0.001	13 (8-19)	1 vs 4<0.001	16 (4-20)		16 (9-20)		85.0±14.2	1 vs 4=0.001
Literate (n=53)	2	16 (7-20)		15 (6-19)	1 vs 3=0.031	**14.6±2.3**	2 vs 4=0.014	14 (8-19)	2 vs 4=0.001	15 (4-20)		16 (10-20)		88.9±10.8	2 vs 4=0.034
<9 years of formal education (n=50)	3	15 (6-20)		15 (11-20)	1 vs 4<0.001	**15.2±2.2**		15 (7-20)	3 vs 4=0.009	15 (5-20)		16 (11-20)		88.8±10.4	
≥9 years of formal education (n=23)	4	17 (9-20)		16 (10-20)		**16.4±2.1**		16 (10-20)		16 (8-20)		16 (10-20)		96.7±10.6	
Work Status			**0.046** [u]		**<0.001** [u]		0.156 [u]		**0.007** [u]		0.728 [u]		0.115 [u]		**0.013** [t]
Pensioner (n=54)		17 (6-20)		15 (10-20)		15 (9-20)		15 (8-20)		15.5 (4-20)		16 (9-20)		92.5±12.1	
Housewife (n=104)		15.5 (7-20)		14 (6-20)		15 (7-20)		13.5 (7-20)		15 (4-20)		16 (10-20)		87.5±11.4	
Financial Status			**0.001** [k]		**0.034** [k]		**0.011** [k]		0.102 [k]		0.604 [k]		0.387 [k]		0.252 [k]
Below Minimum Wage (n=47)	1	13 (7-20)	1 vs 2=0.003	15 (10-20)	2 vs 3=0.028	16 (10-20)	1 vs 2=0.007	14 (7-20)		14 (4-20)		16 (10-20)		**87 (66-113)**	
Minimum Wage (n=54)	2	17 (7-20)	1 vs 3=0.002	14 (6-17)		14 (7-18)	2 vs 3=0.023	13.5 (8-18)		16.5 (5-20)		16 (9-20)		**89.5(68-104)**	
Over Minimum Wage (n=57)	3	16 (6-20)		15 (8-20)		15 (9-20)		15 (8-20)		15 (4-20)		16 (10-20)		**91 (53-120)**	
Family Type			**0.028** [k]		0.528 [k]		0.204 [k]		0.088 [k]		0.983 [k]		0.903 [k]		0.127 [k]
Nuclear Family (n=83)	1	16 (7-20)	1 vs 3=0.026	15 (6-20)		15 (9-20)		15 (8-20)		16 (4-20)		16 (10-20)		**92 (53-120)**	
Living Alone (n=36)	2	16 (9-20)		14 (10-19)		14 (10-19)		13 (7-19)		15 (5-20)		16 (9-20)		**85 (66-113)**	
Big Family (n=39)	3	15 (6-19)		15 (8-20)		15 (7-20)		14 (8-17)		15 (6-20)		16 (11-20)		**86 (69-113)**	
Social Supporter			0.287 [k]		0.775 [k]		0.579 [a]		0.202 [k]		0.428 [k]		0.876 [k]		0.568 [a]
No Social Supporter (n=19)		16 (6-20)		15 (10-18)		**14.8±2.4**		14 (9-19)		13 (4-20)		16 (9-20)		87.8±11.0	

(Table 3). Continued.

Sociodemographic Characteristics		Sensory Ability	p	Autonomy	p	PPF Activity	p	Social Participation	p	Death Dying	p	Intimacy	p	Total Score	p
Spouse (n=49)		16 (7-20)		15 (6-20)		**15.2±2.0**		15 (8-20)		16 (4-20)		16 (11-20)		90.6±12.2	
Children and others (n=90)		16 (7-20)		15 (8-20)		**14.7±2.7**		14 (7-20)		15 (4-20)		16 (10-20)		88.7±11.8	
Place of Residence			0.674 [u]		0.065 [u]		0.574 [u]		0.054 [u]		0.631 [u]		0.524 [u]		0.133 [t]
Countryside (n=33)		16 (7-20)		14 (8-18)		15 (7-20)		13 (8-19)		15 (4-20)		16 (11-20)		86.7±10.4	
City (n=125)		16 (6-20)		15 (6-20)		15 (9-20)		15 (7-20)		16 (4-20)		16 (9-20)		89.9±12.1	
Entitlement to Health Insurance			0.583 [u]		0.242 [u]		0.317 [u]		0.165 [u]		0.730 [u]		0.219 [u]		0.265 [t]
No (n=8)		14.5 (10-20)		13.5 (12-19)		14 (10-19)		12 (10-16)		14 (7-20)		15 (11-20)		85.4±10.8	
Yes(n=150)		16 (6-20)		15 (6-20)		15 (7-20)		15 (7-20)		15.5 (4-20)		16 (9-20)		89.4±11.9	
Type of Surgical Treatment			0.592 [u]		**0.018 [u]**		0.726 [t]		0.452 [u]		0.256 [u]		0.663 [u]		0.533 [t]
Lumpectomy (n=95)		16 (6-20)		15 (6-20)		**14.9±2.6**		15 (8-20)		15 (4-20)		16 (9-20)		89.7±11.6	
Mastectomy(n=63)		16 (7-20)		14 (9-20)		**14.8±2.4**		14 (7-20)		16 (4-20)		16 (11-20)		88.5±12.2	
Stage of BC			0.100 [k]		0.135 [k]		0.665 [a]		0.327 [k]		0.957 [k]		0.539 [k]		0.190 [a]
Stage I (n=17)		17 (9-20)		15 (12-19)		**15.5±2.1**		15 (10-19)		16 (6-20)		16 (14-20)		92.6±9.1	
Stage II (n=81)		16 (6-20)		15 (6-20)		**14.8±2.6**		15 (8-20)		16 (4-20)		16 (9-20)		90.2±11.7	
Stage III (n=40)		15 (7-19)		14 (8-20)		**15.0±2.8**		14 (7-20)		15 (4-20)		16 (11-20)		87.3±13.2	
Stage IV (n=20)		14 (9-20)		14.5 (10-17)		**14.5±1.7**		13.5 (8-19)		17 (4-20)		16 (11-18)		86.3±10.8	
Adjuvant Oncologic Treatment Modality			0.653 [k]		0.255 [a]		0.134 [k]		0.129 [k]		**0.003 [k]**		0.681 [k]		**0.020 [k]**
I (n=24)	1	15.5 (9-20)		**14.1±2.7**		13 (9-20)		13.5 (8-19)		14 (4-20)	1 vs 2=0.002	16 (13-19)		**85 (57-109)**	1 vs 2=0.021
II (n=59)	2	16 (7-20)		**15.0±2.5**		15 (9-20)		15 (7-19)		17 (4-20)	2 vs 3=0.008	16 (9-20)		**93 (66-113)**	2 vs 3=0.019
III (n=75)	3	16 (6-20)		**14.5±2.1**		15 (7-20)		14 (8-20)		15 (4-20)		16 (10-20)		**87 (53-120)**	

(Table 3). Continued.

Sociodemographic Characteristics		Sensory Ability	p	Autonomy	p	PPF Activity	p	Social Participation	p	Death Dying	p	Intimacy	p	Total Score	p
Hormone Therapy			0.955 [k]		0.551 [k]		0.313 [k]		0.665 [k]		0.166 [k]		0.348 [k]		0.200 [a]
No(n=34)		16 (7-20)		14 (6-20)		14 (9-20)		15 (8-19)		15 (4-20)		16 (11-20)		87.3±14.9	
<5 years (n=49)		16 (9-20)		15 (10-20)		15 (7-20)		15 (7-19)		14 (4-20)		16 (9-20)		87.6±11.1	
≥5 years (n=75)		16 (6-20)		15 (10-20)		15 (10-20)		14 (8-20)		16 (5-20)		16 (10-20)		91.1±10.5	
Comorbidity			0.101 [k]		**0.020 [k]**		0.098 [k]		0.053 [k]		0.569 [k]		**0.004 [k]**		**0.010 [a]**
No (n=23)	1	17 (10-20)		16 (12-20)	1 vs 4=0.030	16 (13-20)		15 (11-19)		15 (7-20)		16 (14-20)	1 vs 4=0.024	94.2±9.0	1 vs 4=0.029
1 Comorbidity (n=50)	2	15.5 (8-20)		15 (6-20)	2 vs 3=0.039	15 (11-20)		15 (8-19)		15.5 (5-20)		16 (10-20)	2 vs 3=0.015	91.6±12.1	
2 Comorbidites (n=50)	3	16 (6-20)		14 (8-20)	2 vs 4=0.008	15 (9-20)		14.5 (7-20)		14.5 (4-20)		16 (9-20)	2 vs 4=0.001	87.1±12.5	
≥3 Comorbidities (n=35)	4	14 (7-20)		14 (9-18)		15 (7-17)		14 (8-18)		16 (7-20)		15 (10-20)		85.6±10.5	
Tobacco Use			0.456 [u]		**0.044 [u]**		0.089 [u]		**0.023 [u]**		0.549 [u]		**0.026 [u]**		0.104 [t]
No (n=138)		16 (7-20)		14.5 (6-20)		15 (7-20)		14 (7-20)		15.5 (4-20)		16 (9-20)		88.6±11.7	
Yes (n=20)		16 (6-20)		16 (10-20)		16 (10-20)		16 (10-20)		14.5 (5-20)		16 (12-20)		93.2±12.2	
Alcohol Use			0.244 [u]		0.100 [u]		**0.005 [u]**		**0.028 [u]**		0.467 [u]		0.202 [u]		0.196 [t]
No(n=153)		16 (6-20)		15 (6-20)		15 (7-20)		15 (7-20)		16 (4-20)		16 (9-20)		88.9±11.5	
Yes (n=5)		17 (15-20)		16 (12-20)		18 (15-20)		19 (10-20)		13 (8-20)		19 (10-20)		98.8±17.2	
Accompanying Person			0.388 [u]		0.906 [u]		0.849 [u]		0.053 [u]		0.491 [u]		0.898 [u]		0.245 [t]
No(n=69)		16 (8-20)		15 (11-20)		15 (7-20)		15 (7-20)		16 (4-20)		16 (9-20)		90.4±10.7	
Yes (n=89)		16 (6-20)		15 (6-20)		15 (9-20)		14 (8-19)		15 (4-20)		16 (10-20)		88.2±12.6	

[t]Independent t-Test (Bootstrap), [u]Mann-Whitney U Test (Monte Carlo), [k]Kruskal Wallis Test(Monte Carlo), Post Hoc Test: Dunn's Test, [a]One Way ANOVA (Robuts Statistic: Brown-Forsythe); Post Hoc Test: Tukey HSD, [s]Spearman's rho Test, parameters were shown as median (min-max) and mean±SD., vs.: versus.

Table 4: The Associations Between Sociodemographic- Clinical Characteristics of Participants and PRISMA 7 Frailty Index

Sociodemographic and Clinical characteristics	PRISMA-7 Frailty Index		p
	Not Frail (n=95)	Increased Frailty (n=63)	
Age	70 (65-90)	73 (65-96)	**0.001** u
Number of Children	3 (0-7)	3 (0-9)	0.892 u
Age(cut-off point)			**<0.001 ***
≤68	**33 (34.7)** sp	6 (9.5)	AUC (SE): 0.657 (0.043)
>68	62 (65.3)	**57 (90.5)** ss	5.1 (1.9-12.9) or
Marital Status			0.190 c
Single&widowed (n=69)	37 (38.9)	32 (50.8)	
Married(n=89)	58 (61.1)	31 (49.2)	
Eğitim Durumu			**0.003** c
Illiterate (n=32)	13 (13.7)	**19 (30.2)** A	15.3 (3.1-76.9) or
Literate (n=53)	30 (31.6)	23 (36.5)	8.1 (1.7-37.9) or
<9 years formal education (n=50)	31 (32.6)	19 (30.2)	6.4 (1.3-30.6) or
≥9 years formal education (n=23)	**21 (22.1)** B	2 (3.2)	Reference
Work Status			0.128 c
Pensioner (n=54)	37 (38.9)	17 (27.0)	
Hausewife (n=104)	58 (61.1)	46 (73.0)	
Financial Status			0.845 c
Below Minimum Wage Alti (n=47)	27 (28.4)	20 (31.7)	
Minimum Wage	32 (33.7)	22 (34.9)	
Above Minimum Wage (n=57)	36 (37.9)	21 (33.3)	
Type of Family			0.177 c
Nuclear Family (n=83)	55 (57.9)	28 (44.4)	
Living Alone	21 (22.1)	15 (23.8)	
Big Family (n=39)	19 (20.0)	20 (31.7)	
Social Supporter			0.132 c
No Social Supporter (n=19)	13 (13.7)	6 (9.5)	
Spouse (n=49)	34 (35.8)	15 (23.8)	
Children and Others (n=90)	48 (50.5)	42 (66.7)	
Place of Residence			0.999 c
Countryside (n=33)	20 (21.1)	13 (20.6)	
Urban (n=125)	75 (78.9)	50 (79.4)	
Sociodemographic and Clinical characteristics	**Not Frail (n=95)**	**Increased Frailty (n=63)**	**p**
Entitlement to Health Insurance			0.714 f
No(n=8)	4 (4.2)	4 (6.3)	
Yes (n=150)	91 (95.8)	59 (93.7)	
Type of Surgical Treatment			0.324 c
Lumpectomy (n=95)	54 (56.8)	41 (65.1)	
Mastectomy (n=63)	41 (43.2)	22 (34.9)	

(Table 4). Continued.

Sociodemographic and Clinical characteristics	PRISMA-7 Frailty Index		p
	Not Frail (n=95)	Increased Frailty (n=63)	
Stage of BC			0.338 [c]
Stage I (n=17)	11 (11.6)	6 (9.5)	
Stage IIa (n=81)	53 (55.8)	28 (44.4)	
Stage IIIa (n=40)	22 (23.2)	18 (28.6)	
Stage IV (n=20)	9 (9.5)	11 (17.5)	
Adjuvant Oncologic Treatment Modality			0.249 [c]
I (n=24)	14 (14.7)	10 (15.9)	
II (n=59)	31 (32.6)	28 (44.4)	
III (n=75)	50 (52.6)	25 (39.7)	
Duration of Hormone Therapy			0.644 [c]
NoHormone Therapy (n=34)	18 (18.9)	16 (25.4)	
<5 years (n=49)	30 (31.6)	19 (30.2)	
≥5 years (n=75)	47 (49.5)	28 (44.4)	
Number of Comorbidities			0.075 [c]
No comorbidity (n=23)	18 (18.9)	5 (7.9)	
1 Comorbidity (n=50)	33 (34.7)	17 (27.0)	
2 Comorbidities (n=50)	24 (25.3)	26 (41.3)	
≥3 Comorbidities (n=35)	20 (21.1)	15 (23.8)	
Tobacco Use			0.085 [c]
No (n=138)	79 (83.2)	59 (93.7)	
Yes (n=20)	16 (16.8)	4 (6.3)	
Alcohol Use			0.649 [f]
No (n=153)	91 (95.8)	62 (98.4)	
Yes (n=5)	4 (4.2)	1 (1.6)	
Accompanying Person to the Participant			**0.006 [c]**
No (n=69)	**50 (52.6) [B]**	19 (30.2)	2.6 (1.3-5.03) [or]
Yes (n=89)	45 (47.4)	**44 (69.8) [A]**	

[c]Pearson Chi-Square Test (Monte Carlo), [f]Fisher Exact test (Monte Carlo), [or]Odds Ratio (95% Confidence interval), *Roc Curve Analysis (Youden index J - Honley&Mc Nell), AUC: Area under the ROC curve, SE: Standard Error, SS: sensitivity, SP: Specificity, parameters were shown as median (min-max) and n (%).

PRISMA 7 scores were the educational status and presence of an accompanying person to the participants [p=0.003 and p=0.006; respectively]. As the years in formal education increased, the frailty decreased. Illiterate women were the frailest group. Participants with an accompanying person were found to have a median of 2.6 [1.3-5.03] times more frailty than the others.

The association between frailty and domains QoL were analyzed and described in Table **5**. The results showed statistically significant correlations in five out of six domains [except for intimacy] and total score of the WHOQOL-OLD Module: sensory ability [p<0.001], autonomy [p=0.049], PPF activity [p=0.001], social participation [p<0.001], death &dying [p=0.024] domains, and the total score [p=0.001]; respectively.

DISCUSSION

It is a fact that the incidence of breast cancer increases with advanced age. Furthermore, advances in both surgical techniques and adjuvant oncological treatments bring about an increase in the elderly cancer population. As Ganz *et al*. stated in their study, specific issues which are unique to elderly women with breast cancer essentially should be remembered each time for the topic of QoL: togetherness of other comorbidities, the increased likelihood of diminished

Table 5: The Associations between WHOQOL-OLD Module Domains and PRISMA 7 Frailty Index

WHOQOL-OLD Domains	Prisma 7 Frailty Index		p
	Not Frail (n=95)	Increased Frailty (n=63)	
Sensory Ability	16 (7-20)	14 (6-20)	<0.001 ᵘ
Autonomy	15 (6-20)	14 (8-19)	0.049 ᵘ
PPF Activity	15 (7-20)	14 (9-20)	0.001 ᵘ
Social Participation	15 (9-20)	13 (7-19)	<0.001 ᵘ
Death Dying	16 (4-20)	14 (4-20)	0.024 ᵘ
Intimacy	16 (10-20)	16 (9-20)	0.085 ᵘ
Total Score	92.7±10.3	83.9±12.1	0.001 ᵗ

ᵗIndependent t Test (Bootstrap), ᵘMann-Whitney U Test (Monte Carlo), parameters were shown as median (min-max) and mean±SD.

social support; social isolation, and deterioration in physical capacity which is a part of normal aging [22]. Our study's median age [min-max] was 71 [65-96] years. Almost 85%of the participants had at least one comorbidity besides breast cancer, only 12% lacked social support, and 43.7% were single or widowed. Social participation was not affected by aging. However, as their education status decreased, women socially isolated themselves [Illiterate vs.≥ 9 years of formal education; p<0.001 and Literate vs. ≥ 9 years of formal education; p=0.001]. Deterioration in physical capacity might have affected the autonomy, but it did not reach statistical significance.

In our study, educational status, work status, financial status, number of comorbidities, tobacco, and alcohol use number of adjuvant oncologic treatment use were the sociodemographic and clinical characteristics associated with two or more domains of the WHOQOL-OLD Module, including the total score. Education, work, and financial statuses were the strongest predictors of QoL, which are per studies by Sharma *et al*. [23] and Hongthong *et al*. [24].

The number of comorbidities was inversely correlated with QoL in our study. A cross-sectional study by Barnett *et al*. revealed that about 80% of people aged ≥65 years had at least one comorbidity, and about 60% had more. Especially, cancer patients had comorbidities, including coronary heart disease, diabetes, chronic obstructive pulmonary disease, and depression [25]. Similarly, Edwards *et al*. reported the distribution of the comorbidity burden of cancer patients who are ≥65 years as 40% had at least one, and 15% had two or more comorbidities [26]. The comorbidity distribution of participants in our study was as follows: 31.6% had one comorbidity, 31.6% had two comorbidities, and 22.2% had ≥ 3 comorbidities. Subgroup comparison of having one or ≥ 3comorbidities was highly significant [p=0.001].

Tobacco and alcohol use among the participants was relatively low [12.7% and 3.2%, respectively]. While tobacco use was associated with autonomy [p=0.044], social participation [p=0.023], and intimacy [p=0.026] domains, alcohol use was associated with PPF Activity [p=0.005] and social participation [p=0.028] domains. As stated by Hongthong *et al*. [24], social drinking caused them to have better QoL than those who were lonely" also seemed acceptable to us [24].

In our study, breast tumors of the elderly women were early-stage [stage I 10.8%; stage II 51.3%], hormone-positive tumors. Montroni *et al*. found that women ≥70 years presented in early stages regardless of histologic type [27]. Also, surgery is the primary choice of treatment; due to increased comorbidities, more conservative methods are preferred [28, 29]. In a recent meta-analysis of 11 studies, discussion of the possibility of a decline in functional status after breast cancer surgery was recommended in all elderly women considering surgery [30]. Unlike at this point, all women participating in our study were operated on. Lumpectomy was performed in 60%. Operation type [p=0.018] was significantly associated only with the autonomy domain.

Adjuvant oncologic treatment was a strong determinant of QoL. Women that received two treatment modalities [chemotherapy plus radiotherapy 15.2%, radiotherapy plus hormone therapy 14.6%, chemotherapy plus hormone therapy 7.6%] had the highest QoL score of 93 [66-113] but is negatively correlated with the death &dying domain [p=0.003]. We commented that hormone therapy was the most preferred modality to combine with other treatments,

and the patients better tolerated it. Even though old literature advocates that conservative adjuvant treatment modalities are associated with better QoL [31], Cheng *et al*., in their recent systematic review, emphasize that for most elderly patients with breast cancer, the non-significant negative change in the QoL is transient [32]. This emphasis was also reflected in our results because subgroup comparisons of p values of women were different [1 vs. two treatment modalities=0.002 and two vs. ≥3 treatment modalities=0.008], but the same comparison was p=0.021 and p=0.019, respectively for the total score of the Module.

We used PRISMA 7 Frailty Index to identify the frail participants. The median score of the index was 2 [0-5], and the majority [60.1%] of the participants were not frail. Frailty was increased with the increasing age [p=0.001]. The cut-off point for age was 68 years for our study. Participants over 68 years were almost five times frailer than 68 years and younger counterparts [p<0.001]. Frailty had a negative correlation with years of education. Participants who received formal education of ≥9 years were taken as a reference for comparison.

Results of the study showed that being frail is associated with worse QoL in sensory ability, autonomy, PPF activity, social participation, and death&dying domains of the WHOQOL-OLD Module (Table **5**). Frailty especially hit the sensory ability [p<0.001] and social participation [p<0.001]. The association between frailty and intimacy was not statistically meaningful. These findings are compatible with the literature that elderly women with breast cancer have an overall better quality of life despite experiencing more health problems in survivorship than younger counterparts, independent of the adjuvant oncologic treatment due to comorbid conditions [33, 34]. Low income, which may be a conspicuous life fact for elderly women whose families live on a fixed income or the minimum wage, can be a significant quotient of psychosocial distress [cause of frailty] that is directly associated with sensory ability, autonomy, and PPF activity domains of the module [34, 35]. However, factors such as having more life experiences, including prior experiences with the health care system, witnessing the diagnosis of beloved ones with cancer, and having few competing demands suggest a higher degree of psychosocial adaptation among elderly women with breast cancer [34, 36]. Our findings followed the literature in the aspects mentioned above.

The death &dying domain, which is related to worries, disturbances, and fear of death and dying of the participating women, was associated significantly with the frailty [p=0.024]. Women with increased frailty reported less median scores of 16 [4-20] and 14 [4-20], respectively. We commented that this relationship was attributed to the fact that they feel comfortable talking about the topic by the dogmatic acceptance that “all creatures will eventually die” and that their trust in the medical team is best-taken care of. At this point, the article by Witmann-Vieria *et al*. provides insight into another important factor which was the confidence in respecting their will by their family not to be transferred to a health care facility where they would possibly die without beloved ones [37].

This study investigated the independent associations between frailty and quality of life, elderly women with breast cancer ic variables on both Frailty and QoL. Mahfouz *et al*. revisited the most used QoL instruments for breast cancer patients across the trials [38]. Recently, Chambergo-Michilot *et al*. used the WHOQOL-OLD Module in their study of male cancer patients [39]. Studies that used this Module are still limited, perhaps because it is relatively new. However, it is a tool that has been developed especially for the elderly. Addressing the methodological limitations in assessing QoL in the elderly by Mahfouz *et al*., we decided to use the WHOQOL-OLD Module in our study.

Advanced age is a period of life when various vulnerabilities are unavoidable, and frailty is the new point of interest for oncologists in managing older patients. Therefore, when designing our study, we decided to use the PRISMA-7 index to identify the frail ones among the participants. Our ultimate aim is to understand better our elderly women’s breast cancer patients’ conditions and cancer while customizing their oncologic management.

Finally, our study should be considered in the context of its limitations. This is a retrospective, cross-sectional study reporting data from a single institution. The results are hard to extrapolate to a broader patient population, and the direction of the relationship between frailty and the WHOQOL-OLD Module may have been precluded. However, we think that our work has an adequate number of participants, and the reports a design of instruments which are scarcely studied modifiable to outcomes with other types of cancer.

CONCLUSION

It is well known that oncologic management of elderly patients is complicated, and physicians should well define the ultimate goals when choosing treatment modalities. In the 21st century, elderly people explain their healthy state as “good and reasonable” they do explain themselves to be without any morbidity, but they consider that even with their morbidities, they can function well in their habituating surroundings [40]. Furthermore, studies should be planned to design customized cancer management programs to improve specific components of elderly women with breast cancer with possible frailty by revealing the associations in domains of QoL.

CONFLICT OF INTEREST

None.

FUNDING

None.

ETHICS APPROVAL

This study has been approved by the Ethics Committee of the Noninvasive Research Studies of Aydin Adnan Menderes University Medical Faculty [Protocol number: 2019/37].

REFERENCES

[1] Global Center Observatory [homepage on the internet]. Available from: https://gco.iarc.fr/.

[2] Yancik RM, Ries L. Cancer and age: magnitude of the problem. In: Balducci L. LGH, EWB (ed) *Comprehensive geriatric oncology*. Harwood Academic Publishers, London, 1998; pp. 94-104.

[3] Sudnongbua S, Long S. Quality of life among elderly people in Kampong Cham province, Cambodia. 2017. Available from: https://www.tm.mahidol.ac.th/seameo/2017-48-4/19-717221-884.pdf

[4] World Health Organization [homepage on the internet]. WHOQOL-BREF. Available from: https://www.who.int/tools/whoqol/whoqol-bref

[5] Institute on Aging N. Aging well in the 21 st century: Strategic directions for research on aging. Available from: https://www.nia.nih.gov/sites/default/files/2017-07/nia-strategic-directions-2016.pdf

[6] Power M, Quinn K, Schmidt S; WHOQOL-OLD Group. Development of the WHOQOL-old module. Qual Life Res 2005; (10): 2197-214. https://doi.org/10.1007/s11136-005-7380-9

[7] Eser E, Eser S,Ozyurt CB, Fidaner C. Perception of quality of life by a sample of Turkish older adults: Whoqol-Old Project Turkish Focus Group Results. Turkish Journal of Geriatrics 2005; 8(4): 169-183.

[8] Bluethmann SM, Mariotto AB, Rowland JH. Anticipating the “silver tsunami”: prevalence trajectories and comorbidity burden among older cancer survivors in the United States 2016; 25(7): 1029-36. https://doi.org/10.1158/1055-9965.EPI-16-0133

[9] Silvestri G, Pritchard R, Welch HG. Preferences for chemotherapy in patients with advanced non-small-cell lung cancer: descriptive study based on scripted interviews. BMJ 1998; 317(7161): 771-5. https://doi.org/10.1136/bmj.317.7161.771

[10] Wedding U, Pientka L, Höffken K. Quality-of-life in elderly patients with cancer: A short review. European Journal of Cancer 2007; 43: 2203-2210. https://doi.org/10.1016/j.ejca.2007.06.001

[11] Wildiers H, Heeren P, Puts M, *et al*. International society of geriatric oncology consensus on geriatric assessment in older patients with cancer. Journal of Clinical Oncology 2014; 32: 2595-2603. https://doi.org/10.1200/JCO.2013.54.8347

[12] Fried LP, Tangen CM, Walston J, *et al*. Frailty in Older Adults: Evidence for a Phenotype, J Gerontol A Biol Sci Med Sci 2001; 56(3): M146-56. https://doi.org/10.1093/gerona/56.3.M146

[13] Moreno-Aguilar M, Garcia-Lara JMA, Aguilar-Navarro S, *et al*. The phenotype of frailty and health-related quality of Life. Journal of Frailty & Aging 2013; 1-6. https://doi.org/10.14283/jfa.2013.1

[14] Gill TM, Gahbauer EA, Han L, *et al*. Trajectories of disability in the last year of life. N Engl J Med 2010; (13): 1173-80. https://doi.org/10.1056/NEJMoa0909087

[15] Bilotta C, Bowling A, Casè A, *et al*. Dimensions and correlates of quality of life according to frailty status: a cross-sectional study on community-dwelling older adults referred to an outpatient geriatric service in Italy. Health Qual Life Outcomes 2010; 8: 56. https://doi.org/10.1186/1477-7525-8-56

[16] Kojima G, Iliffe S, Morris RW, *et al*. Frailty predicts trajectories of quality of life over time among British community-dwelling older people. Qual Life Res 2016; (7): 1743-50. https://doi.org/10.1007/s11136-015-1213-2

[17] Williams GR, Deal AM, Sanoff HK, *et al*. Frailty and health-related quality of life in elderly women with breast cancer. Support Care Cancer 2019; (7): 2693-98. https://doi.org/10.1007/s00520-018-4558-6

[18] Huang SM, Tseng LM, Chien LY, *et al*. Effects of non-sporting and sporting qigong on frailty and quality of life among breast cancer patients receiving chemotherapy. European Journal of Oncology Nursing 2016; 21: 257-265. https://doi.org/10.1016/j.ejon.2015.10.012

[19] Yaman H, Ünal Z. The validation of the PRISMA-7 questionnaire in community-dwelling elderly people living in Antalya, Turkey. Electron Physician 2018; 10(9): 7266-72. https://doi.org/10.19082/7266

[20] Hébert R, Raîche M, Dubois MF, *et al*. Impact of PRISMA, a coordination-type integrated service delivery system for frail older people in Quebec (Canada): a quasi experimental study. J Gerontol B Psychol Sci Soc Sci 2010; 65B(1): 107-18. https://doi.org/10.1093/geronb/gbp027

[21] Woo J, Goggins W, Sham A, Ho SC. Social determinants of frailty. Gerontology 2005; 51: 402-8. https://doi.org/10.1159/000088705

[22] Ganz PA, Guadagnoli E, Landrum MB, *et al*. Breast cancer in elderly women: Quality of life and psychosocial adjustment in the 15 months after diagnosis. Journal of Clinical Oncology 2003; 21: 4027-33. https://doi.org/10.1200/JCO.2003.08.097

[23] Sharma N, Purkayastha A. Factors affecting quality of life in breast cancer patients: A descriptive and cross-sectional study with review of literature. Journal of Mid-Life Health 2017; 8: 75-83. https://doi.org/10.4103/jmh.JMH_15_17

[24] Hongthong D, Somrongthong R, Ward P. Factors Influencing the Quality of Life (Qol) Among Thai Older People in a Rural Area of Thailand. Iran J Public Health 2015(4): 479-85. Available from: http://ijph.tums.ac.ir

[25] Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. Lancet 2012; 380(9836): 37-43. https://doi.org/10.1016/S0140-6736(12)60240-2

[26] Edwards BK, Noone AM, Mariotto AB, *et al*. Annual Report to the Nation on the status of cancer, 1975-2010, featuring prevalence of comorbidity and impact on survival among persons with lung, colorectal, breast, or prostate cancer. Cancer 2014; 120: 1290-1314. https://doi.org/10.1002/cncr.28509

[27] Montroni I, Rocchi M, Santini D, *et al*. Has breast cancer in the elderly remained the same over recent decades? A comparison of two groups of patients 70 years or older treated for breast cancer twenty years apart. J Geriatr Oncol 2014(3): 260-5. https://doi.org/10.1016/j.jgo.2014.02.006

[28] Sierink JC, de Castro SMM, Russell NS, *et al*. Treatment strategies in elderly breast cancer patients: Is there a need for surgery? Breast 2014; 23: 793-8. https://doi.org/10.1016/j.breast.2014.08.006

[29] Hancke K, Denkinger MD, König J, *et al*. Standard treatment of female patients with breast cancer decreases substantially for women aged 70 years and older: A German clinical cohort study. Annals of Oncology 2009; 21: 748-53. https://doi.org/10.1093/annonc/mdp364

[30] Harrison CA, Parks RM, Cheung KL. The impact of breast cancer surgery on functional status in elderly women-A systematic review of the literature. *European* Journal of Surgical Oncology 2021; 47: 1891-9. https://doi.org/10.1016/j.ejso.2021.04.010

[31] de Haes JCJM, Curran D, Aaronson NK, Fentiman IS. Quality of life in breast cancer patients aged over 70 years, participating in the EORTC 10850 randomised clinical trial. European Journal of Cancer 2003; 39: 945-51. https://doi.org/10.1016/S0959-8049(03)00149-7

[32] Cheng KKF, Lim EYT, Kanesvaran R. Quality of life of elderly patients with solid tumours undergoing adjuvant cancer therapy: A systematic review BMJ Open 2018; 8(1): e018101. https://doi.org/10.1136/bmjopen-2017-018101

[33] Battisti NML, Reed MWR, Herbert E, *et al*. Bridging the age gap in breast cancer: Impact of chemotherapy on quality of life in elderly women with early breast cancer. European Journal of Cancer 2021; 144: 269-80. https://doi.org/10.1016/j.ejca.2020.11.022

[34] Campbell-Enns H, Woodgate R. The psychosocial experiences of women with breast cancer across the lifespan: a systematic review protocol. JBI Database System Rev Implement Rep 2015; 13: 112-21. https://doi.org/10.11124/jbisrir-2015-1795

[35] Goerling U, Bergelt C, Müller V, Mehnert-Theuerkauf A. Psychosocial Distress in Women With Breast Cancer and Their Partners and Its Impact on Supportive Care Needs in Partners. Front Psychol 2020; 11: 564079. https://doi.org/10.3389/fpsyg.2020.564079

[36] Akechi T, Okuyama T, Uchida M, *et al*. Perceived needs, psychological distress and quality of life of elderly cancer patients. Jpn J Clin Oncol 2012; 42(8): 704-10. https://doi.org/10.1093/jjco/hys075

[37] Wittmann-Vieira R, Goldim JR. Bioethics and palliative care: decision making and quality of life* Bioética e cuidados paliativos: tomada de decisões e qualidade de vida Bioética y cuidados paliativos: toma de decisiones y calidad de vida. https://doi.org/10.1590/S0103-21002012000300003

[38] Mahfouz MA, Almaghrabi MY. Quality of life for elderly breast cancer patients: A new regard. Translational Cancer Research 2020; 9: S122-S125. https://doi.org/10.21037/tcr.2019.07.39

[39] Chambergo-Michilot D, Corcuera-Ciudad R, Runzer-Colmenares FM, *et al*. Pain management, activities of daily living and the assessment of the WHOQOL-OLD module: results of a cross-sectional analysis of a cohort of older men with oncological diagnoses. Journal of Gerontology and Geriatrics 2022; 70: 31-39. https://doi.org/10.36150/2499-6564-N395

[40] Oliveira Araújo Firmo JI, Uchôa EI, Saúde, das Graças Uchôa Penido Fonseca M, Loyola Filho II. Role of autonomy in self-assessment of health by the elderly. Rev Saúde Pública 2010; 44(1). Available from: https://www.scielo.br/j/rsp/i/2010.v44n1/

Received on 28-04-2022 Accepted on 03-06-2022 Published on 22-06-2022

https://doi.org/10.30683/1927-7229.2022.11.02