



## Factors Affecting Quality of Life and Fatigue in Gynaecologic Cancer Patients

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### ABSTRACT

**Background:** Cancer-related fatigue (CRF) is the most commonly reported and most distressing symptom in cancer patients. Health-related quality of life (QOL) is an important outcome in cancer management, the authors sought to better understand its determinants. **Aim:** This study aims to identify quality of life and fatigue levels and the affecting factors in gynaecologic cancer patients. **Method:** This descriptive and cross-sectional study was conducted with 154 volunteer women with gynaecologic cancer. The data were collected through the interview form, functional assessment of cancer therapy-general (FACT-G) Quality of Life Scale, and Piper Fatigue Scale. **Results:** The mean score of total quality of life in gynaecologic cancer patients was low,  $53.4 \pm 15.4$ . Physical and emotional states were found to be the mostly affected states in the quality of life. According to the Piper Fatigue Scale, the total fatigue score was mild,  $3.5 \pm 2.4$ . Total fatigue scores were found to be high in metastatic cancers. Multivariate analyses indicate that the most important factor affecting the quality of life is economic condition, and the most important variables affecting fatigue are the level of activity and use of medicine. **Conclusion:** This study found that quality of life dimensions in women with gynaecologic cancer was affected by factors such as cancer type, time of diagnosis, and stage and spread of the cancer.

**Keywords:** Cancer, gynaecologic cancer, quality of life, fatigue

### INTRODUCTION

Prevalence of gynaecologic cancers is ranked as the fourth around the world and it is ranked as the second after breast cancer in Turkey [1,2]. Studies indicate that the effects of gynaecologic cancers on women's health are multi-factorial and multi-dimensional [3,4]. Methods such as surgery, chemotherapy and radiotherapy used in gynaecologic cancer treatment have been shown to prolong the survival duration of individuals but the course of the disease and the treatment methods were found to have negative effects on the quality of life in relation to the disease [3,5]. In addition to the aforementioned treatment methods applied in gynaecologic cancers and the problems experienced in other organ cancers, women's quality of life is negatively affected by problems in relation to body image, sexual identity and reproduction ability [5-7]. Cancer patients' quality of life can be affected by many factors such as problems in spouse and family relationships, changes in body image, difficulties in adapting to these changes, changes in social support systems, psychological problems and loneliness, isolation, financial difficulties, early menopause, and sexual problems in relation to the treatment applied and fear of death and recurrence of the disease [8,9]. Fatigue is one of the most common complaints which distracts people from daily activities by affecting all domains of the quality of life including physical, social, psychological, emotional, cognitive and which is defined by patients as weakness, exhaustion, weariness, and powerlessness [5,10]. Not only is fatigue one of the most common symptoms but it is also one of the most serious or disturbing ones in the long term. The most commonly used definition for CRF is found in the national comprehensive cancer network's (NCCN) CRF evidence-based guidelines, where CRF is defined as a distressing persistent subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion related to

cancer or cancer treatment that is not proportional to recent activity that interferes with usual functioning [11-14]. While the American Cancer Society defines cancer-related fatigue as the sense of physical, mental, and emotional tiredness, The European Association for Palliative Care defines it as a subjective feeling of tiredness, weakness, or lack of energy [15]. Fatigue related to cancer or cancer treatment is experienced as a long-term and multidimensional phenomenon with physical, emotional, and behavioural effects. This problem which is defined by patients in various ways should be monitored and managed closely not only in the treatment period but also after the treatment according to their individual characteristics, the development process of the disease and the type of treatment applied [10]. It is reported that cancer patients experience fatigue problem with an estimated proportion between 21% and 34.5% after the treatment is complete [5,7,16]. Servaes, et al., reported that fatigue was significantly high in cancer patients after the treatment [17]. Fatigue in cancer patients can be accompanied with sleep disturbance, pain, depression, and anxiety. Besides, usually fatigue is not an issue that patients share with the health personnel. In fact, fatigue is an issue which affects cancer patients considerably but it is usually ignored. Studies which evaluate quality of life and fatigue in gynaecologic cancers in our country are quite limited in number [3,4]. In this regard, the present study is believed to contribute to the identification of factors affecting quality of life and fatigue after treatment in gynaecologic cancer patients.

## METHODS

### Purpose

This study aims to identify quality of life and fatigue levels and the affecting factors in gynaecologic cancer patients.

### Research design

This study is descriptive and cross-sectional in nature.

### Research questions

- What is the general level of quality of life in physical, social, emotional, and functional dimensions in gynaecologic cancer patients?
- What is the level of fatigue in gynaecologic cancer patients
- What are the factors that affect quality of life and fatigue level in gynaecologic cancer patients?

### Participants

The participants were 154 women who were diagnosed with gynaecologic cancer and visited the Gynaecologic Oncology Polyclinic at a university hospital in Istanbul between January and June 2014, who did not have terminal cancer, who had the capability to answer all the questions, who did not have any communication problems or mental problems and who volunteered to participate in the study.

### Procedures

Once the participants meeting the research criteria were given information about the study and their verbal consent was received, the questionnaires were filled in by the researchers through interviews in the polyclinic. The clinic where the study was conducted was informed about the study and all necessary permission was obtained.

### Ethical considerations

In this study, a university hospital (IRB 2014-53) from the institutional review board (IRB) has approved. The research team obtained approval from the institutional review board at the university hospital where the data were collected. The researchers explained the study purposes and methods to potential study participants along with privacy, confidentiality, and the right to withdraw at any time before obtaining written consent to participate.

### Measures

**Data collection tools:** The data were collected through a Patient Identification Form which was prepared by the researchers and included questions about socio-demographic features, state of health and treatment of the patients, functional assessment of cancer therapy-general (FACT-G) quality of life questionnaire (Turkish FACT-G, Version-4) which identified gynaecologic cancer patients' quality of life and Piper Fatigue Scale which evaluated fatigue.

**Functional assessment of cancer therapy-general (FACT-G):** The scale was developed by Cella, et al. [18] with

a view to evaluating multidimensional quality of life in patients receiving cancer treatment (Cronbach alpha=0.89). The scale has 27 items and four subscales: Physical (7 items), Social (7 items), Emotional (6 items) and Functional (7 items). Patients rate all items using a 5-point rating scale ranging from “not at all” to “very much”. FACT-G is scored by summing the individual scale scores after reversing the scoring of negatively worded items with higher scores indicating a better quality of life [18]. FACT-G scale was translated into Turkish by Cetiner, et al. [19].

**Piper fatigue scale:** Piper Fatigue Scale, which was developed and revised by Piper, et al., consists of 22 items evaluated through VAS (Visual Analog Scale) by scoring between 0 to 10. The patients’ subjective perception of fatigue is evaluated through four subscales. These subscales are the behavioural/severity subscale which evaluates the impact and severity of fatigue on the activities of daily living, affective meaning which consists of emotional meaning attributed to fatigue, the sensory subscale which reflects the mental, physical, and emotional symptoms of fatigue and the cognitive/mood subscale which reflects the fatigue level which affects cognitive functions and mood. The subscale scores are obtained by summing up the scores of all the items in that subscale and dividing it by the number of items. The total fatigue score is obtained by summing the items and dividing by the total number of items [20]. The present study used the Turkish version of the scale which was developed in 2004 [21]. The total Cronbach Alpha values of the scale were found to be 0.97 in the original language and 0.94 in the Turkish version.

The Eastern cooperative oncology group (ECOG) performance status criteria are used to assess how the cancer affects the daily living abilities of the patient. (0-fully active, 1- restricted in physically strenuous activity, 2- in bed during <50% of the day, 3-in bed during >50% of the day, 4- completely disabled) [22].

#### Data analysis

Data were analyzed in a statistical program by computer. Descriptive statistics, frequencies, percentage, and means were used to present the data about demographical characteristics, information about cancer and treatment, FACT-G quality of life scores and fatigue scores. Parametric (independent samples t-test, One-way ANOVA) and nonparametric (Mann-Whitney U test, Kruskal-Wallis test) significance tests were used to compare the mean quality of life scores or fatigue scores according to several demographical and cancer-treatment related variables.  $P < 0.05$  was considered to be statistically significant. Variables which showed significant differences in the significance tests about FACT-G quality of life scores and Piper fatigue scale scores were included in the model for backward linear regression and analyzed for potential risk factors.

### RESULTS

The average age of the women with gynaecologic cancer was found  $53.5 \pm 12.1$  and 65.6% of them were aged  $\geq 50$ . Of all the participants, 76% were married and lived with their spouse, 87.7% had children, 46.8% graduated from primary school, 79.2% were housewives and 89.6% had middle income. For the majority of the patients, the main source of support was their children and spouse.

Of the women participating in the study, 41.6% had endometrium cancer, 33.1% had ovarian cancer, 18.2% had cervix cancer and 7.1% had other gynaecologic cancer diagnosis. 83.1% of the cancers were primary cancer, 63% were stage 1 and for 56.5% the time of diagnosis was  $>2$  years. 98.7% of the patients had an operation, 30.5% received radiotherapy and 42.9% had chemotherapy. The quality of life total mean score of gynaecologic cancer patients was low,  $53.4 \pm 15.4$ . 44.2% of the patients had a chronic disease (hypertension, diabetes, etc.) and 38.3% of them used medicine for these chronic diseases. The majority of them (75.3%) had a normal activity level to maintain their daily life.

According to FACT-G Quality of Life Scale (min:0-max:108), the quality of life total mean score for gynaecologic patients was found low ( $53.4 \pm 15.4$ ). An evaluation of sub-scale mean scores shows that physical well-being (min:0-max:28) was  $9.8 \pm 6.7$ , social well-being was (min:0-max:28)  $17.7 \pm 5.8$ , emotional well-being was (min:0-max:24)  $9.8 \pm 5.9$  and functional well-being was (min:0-max:28)  $16 \pm 8.1$ , the subscales which were affected most negatively were found to be physical and emotional well-being (Table 1).

**Table 1 FACT-G quality of life vs piper fatigue scales and sub-scale scores (N=154)**

FACT-G Quality of Life Scale	Min-Max Scores	Mean	±SD
Physical well-being	(min:0-max:28)	9.8	6.7
Social well-being	(min:0-max:28)	17.7	5.8
Emotional well-being	(min:0-max:24)	9.8	5.9
Functional well-being	(min:0-max:28)	16	8.1
Total FACT-G	(min:0-max:108)	53.4	15.4

PIPER Fatigue Scale			
Behavioural/severity	(min:0-max:10)	3	2.7
Affective meaning	(min:0-max:10)	3.6	2.7
Sensory	(min:0-max:10)	4.05	2.9
Cognitive/mood	(min:0-max:10)	3.6	2.7
Total PIPER	(min:0-max:10)	3.5	2.4

FACT-G, Functional Assessment of Cancer Therapy-General; SD, Standard deviation

According to the Piper Fatigue Scale (min:0-max:10), the total fatigue score was mild ( $3.5 \pm 2.4$ ). Subscale mean scores showed that among the behavioural/severity ( $3 \pm 2.7$ ), affective meaning ( $3.6 \pm 2.7$ ), sensory ( $4 \pm 2.9$ ) and cognitive/mood ( $3.6 \pm 2.7$ ) subscale scores, the highest score belonged to the sensory subscale (Table 1).

No statistically significant correlation was found between FACT-G Quality of Life total score and the Piper Fatigue Scale total score ( $r=0.021$ ,  $p>0.05$ ). A comparison of FACT-G general total quality of life and its subscale mean scores according to some variables in relation to demographic features and cancer treatment showed that the quality of life of the women aged  $<50$  was more negatively affected in the functional well-being subscale ( $p=0.037$ ). Similarly, the functional well-being subscale scores of the women who never went to school/were uneducated were found to be lower. Both emotional ( $p=0.011$ ) and functional ( $p=0.011$ ) subscale mean scores of patients in the low-income group and their general quality of life mean scores ( $p=0.011$ ) were found to be significantly low ( $p=0.011$ ). An evaluation performed according to cancer types showed that the physical well-being subscale of the quality of life was more negatively affected in cervix cancer than the other cancer types ( $p=0.038$ ). Additionally, physical well-being subscale scores of the quality of life in patients with a diagnosis time of  $>2$  ( $p=0.013$ ) and in primary cancer patients ( $p=0.033$ ) were lower. It was found that general total quality of life scores and physical and emotional well-being subscale scores in Stage I and Stage IV cancer patients were lower (Table 2). No significant difference was found when FACT-G general quality of life scores and subscale scores were compared in terms of radiotherapy, chemotherapy, activity level, chronic disease, and other demographic features ( $p>0.05$ ).

Table 2 FACT-G variables affecting quality of life questionnaire and sub-scale scores

Variables	FACT-G Quality of Life Scale					
	n	Physical	Social	Emotional	Activity	Total
Age (year)						
<50	53	10.7 ± 7.3	17.4 ± 6.5	9.7 ± 6.7	14.1 ± 8.8	52.0 ± 18.2
≥50	101	9.3 ± 6.3	17.9 ± 5.5	9.8 ± 5.5	17.0 ± 7.7	54.2 ± 13.8
-	-	t=1.178	t=-0.554	t=-0.106	t=-2.102	t=-0.841
-	-	p=0.241	p=0.580	p=0.916	p=0.037	p=0.402
<b>Education</b>						
No education	27	11.8 ± 6.3	16.9 ± 6.0	8.2 ± 6.1	12.5 ± 8.7	49.5 ± 12.9
Primary/secondary school	84	9.8 ± 7.2	17.4 ± 6.3	10.0 ± 5.5	16.4 ± 7.6	53.6 ± 16.6
High school and ovarian	43	8.6 ± 5.6	19.0 ± 4.7	10.5 ± 6.6	17.4 ± 8.3	55.6 ± 14.3
-	-	χ <sup>2</sup> KW=3.57	χ <sup>2</sup> KW=2.02	χ <sup>2</sup> KW=2.89	χ <sup>2</sup> KW=7.61	χ <sup>2</sup> KW=5.70
-	-	p=0.168	p=0.364	p=0.235	p=0.022	p=0.058
<b>Economic condition</b>						
Low income	11	10.9 ± 7.3	16.1 ± 8.0	5.4 ± 6.8	9.5 ± 8.0	42.0 ± 15.2
Middle or higher income	143	9.7 ± 6.6	17.9 ± 5.7	10.1 ± 5.8	16.5 ± 8.0	54.3 ± 15.1
-	-	ZMWU=-0.61	ZMWU=-0.46	ZMWU=-2.42	ZMWU=-2.87	ZMWU=-2.53
-	-	p=0.539	p=0.643	p=0.015	p=0.004	p=0.011
<b>Cancer Type</b>						
Endometrium Ca	64	9.7 ± 6.6	17.0 ± 6.3	9.7 ± 6.3	15.5 ± 8.5	52.0 ± 17.7
Cervix Ca	28	6.9 ± 5.4	18.8 ± 6.3	9.3 ± 6.0	19.1 ± 6.2	54.2 ± 11.6
Ovarian Ca	51	11.0 ± 6.8	18.0 ± 5.4	9.4 ± 5.7	14.6 ± 8.6	53.3 ± 15.4
Other (vulva, tuba)	11	12.1 ± 7.5	18.0 ± 3.8	13.1 ± 3.5	17.4 ± 6.4	60.9 ± 7.1
-	-	χ <sup>2</sup> KW=8.43	χ <sup>2</sup> KW=2.89	χ <sup>2</sup> KW=4.66	χ <sup>2</sup> KW=4.16	χ <sup>2</sup> KW=3.01
-	-	p=0.038	p=0.407	p=0.198	p=0.244	p=0.389
<b>Time of Diagnosis</b>						
0-2 years	67	11.3 ± 6.5	17.5 ± 6.0	9.9 ± 5.6	15.4 ± 8.1	54.2 ± 14.4
>2 years	87	8.6 ± 6.6	17.9 ± 5.7	9.7 ± 6.2	16.5 ± 8.2	52.9 ± 16.3
-	-	t=2.507	t=-0.474	t=0.147	t=-0.828	t=0.507
-	-	p=0.013	p=0.636	p=0.883	p=0.409	p=0.613

Spread of cancer						
Primary	128	9.3 ± 6.7	17.8 ± 6.0	9.4 ± 6.1	16.1 ± 8.5	52.7 ± 16.0
Metastatic	26	12.2 ± 6.2	17.5 ± 5.2	12.0 ± 4.5	15.4 ± 6.1	57.1 ± 12.1
		ZMWU=-2.13	ZMWU=-0.49	ZMWU=-1.60	ZMWU=-0.96	ZMWU=-0.78
		p=0.033	p=0.624	p=0.108	p=0.336	p=0.433
Stage of Cancer						
Stage I	97	8.8 ± 6.7	17.5 ± 6.2	8.5 ± 6.4	15.5 ± 9.1	50.4 ± 16.7
Stage II	25	13.2 ± 6.2	18.0 ± 5.3	13.2 ± 4.5	17.4 ± 5.0	62.0 ± 9.0
Stage III	29	10.3 ± 6.3	18.0 ± 5.3	11.5 ± 4.0	16.5 ± 6.9	56.4 ± 13.0
Stage IV	3	9.6 ± 6.6	20.3 ± 1.5	6.6 ± 3.0	14.0 ± 8.1	50.6 ± 8.5
		$\chi^2$ KW=12.62	$\chi^2$ KW=0.66	$\chi^2$ KW=14.33	$\chi^2$ KW=0.41	$\chi^2$ KW=10.52
		p=0.006	p=0.882	p=0.002	p=0.936	p=0.015

FACT-G, Functional Assessment of Cancer Therapy-General; t, Student's t-test;  $\chi^2$ KW, Kruskal-Wallis test; ZMWU, Mann-Whitney U test.

The Piper Fatigue scale total scores and subscale mean scores were compared according to some variables in relation to demographic features and cancer treatment. The analysis results showed that behavioural/severity ( $p=0.006$ ) and affective meaning ( $p=0.026$ ) subscales and total fatigue scores ( $p=0.020$ ) of the Fatigue Scale were significantly higher in metastatic cancers. When compared to patients with activity level (normal activity level) in ECOG performance scoring, the Piper Fatigue scale total score ( $p=0.002$ ) and subscales were significantly higher in those with activity level  $\geq 1$ . Affective meaning ( $p=0.011$ ), sensory ( $p=0.018$ ) and total score ( $p=0.014$ ) of patients with a chronic disease was higher and all subscales and total score ( $p=0.002$ ) were higher in those who used medicine due to their chronic disease (Table 3). No significant differences were found when the fatigue scores were compared in terms of other cancer-related variables such as cancer type, time of diagnosis, stage of cancer, radiotherapy, chemotherapy, and other demographic features ( $p>0.05$ ).

Table 3 Variables affecting piper fatigue scale and sub-scale scores

Variables	PIPER Fatigue Scale					
	n	Behavioural/severity	Affective Meaning	Sensory	Cognitive/Mood	Total
Spread of cancer						
Primary	128	2.7 ± 2.5	3.3 ± 2.6	3.9 ± 2.8	3.5 ± 2.6	3.3 ± 2.3
Metastatic	26	4.4 ± 3.1	4.8 ± 2.9	4.7 ± 3.2	4.4 ± 3.2	4.6 ± 2.8
-	-	ZMWU=-2.72	ZMWU=-2.21	ZMWU=-1.40	ZMWU=-1.33	ZMWU=-2.32
-	-	p=0.006	p=0.026	p=0.160	p=0.181	p=0.020
ECOG Performance Score						
0-normal activity	116	2.7 ± 2.5	3.2 ± 2.5	3.6 ± 2.7	3.3 ± 2.7	3.2 ± 2.3
$\geq 1$	38	4.0 ± 3.0	4.7 ± 2.8	5.2 ± 3.0	4.7 ± 2.7	4.6 ± 2.5
-	-	t=-2.531	t=-2.990	t=-2.991	t=-2.728	t=-3.202
-	-	p=0.012	p=0.003	p=0.003	p=0.007	p=0.002
Chronic Disease						
No	86	2.6 ± 2.6	3.1 ± 2.7	3.5 ± 2.8	3.3 ± 2.7	3.1 ± 2.3
Yes	68	3.5 ± 2.7	4.2 ± 2.6	4.6 ± 2.9	4.1 ± 2.8	4.1 ± 2.4
-	-	t=-1.923	t=-2.584	t=-2.393	t=-1.893	t=-2.483
-	-	p=0.057	p=0.011	p=0.018	p=0.060	p=0.014
Use of Medicine due to a Chronic Disease						
No	95	2.6 ± 2.6	3.1 ± 2.6	3.4 ± 2.7	3.2 ± 2.7	3.1 ± 2.3
Yes	59	3.6 ± 2.7	4.4 ± 2.5	4.9 ± 2.9	4.3 ± 2.7	4.3 ± 2.3
-	-	t=-2.246	t=-3.062	t=-3.224	t=-2.482	t=-3.128
-	-	p=0.027	p=0.003	p=0.002	p=0.014	p=0.002

ECOG, Eastern Cooperative Oncology Group; t, Student's t-test; ZMWU, Mann-Whitney U test

Variables which showed significant differences in significance tests about FACT-G quality of life scores and Piper fatigue scale scores were included in the model for backward linear regression and analyzed for potential risk factors. Economic condition was found to be the most important factor which affected the quality of life in gynaecologic cancer patients ( $B=11.043$ ,  $p=0.022$ ,  $CI=1.642-2.443$ ). The activity level ( $B=1.272$ ,  $p=0.004$ ,  $CI=0.408-2.137$ ) and use of medicine ( $B=1.173$ ,  $p=0.003$ ,  $CI=0.418-1.929$ ) were found to be the most important variables that affected fatigue.

## DISCUSSION

It is reported that there are 12.4 million (2008) new cancer cases around the world and following breast cancer,

gynaecologic cancers are reported to have the most severe morbidity and mortality proportion [23]. Studies show that cervix cancer is the most prevalent type of gynaecologic cancer [23,24]. According to The Ministry of Health Department of Cancer Control data in Turkey (2011), endometrium cancer (5.6%) is ranked first and it is followed by ovarian cancer (3.9%) and cervix cancer (2.5%) respectively [1]. Epidemiological studies conducted in developed countries also report that uterus cancer is the most prevalent gynaecologic cancer type [23,24]. It was found that endometrium was the most prevalent cancer type, and it was followed by ovarian cancer, cervical cancer, and other genital organ cancers respectively. Studies in relation to the gynaecologic cancer types report that sociodemographic features such as the socioeconomic level, existence of chronic diseases, polygamy and delivery at an older age can be a risk factor for genital organ cancers [25]. These risk factors which were identified for gynaecologic cancers can actually be a determiner for quality of life as well. An analysis of the sociodemographic features of the participants in this study showed that the majority of the participants were aged 50 and ovarian, graduated from primary school, were housewives and did not work anywhere, had at least one child and a middle income and almost half of them had a chronic disease. Hence, it could be said that these women had serious risk factors in relation to both gynaecologic cancer and quality of life.

Quality of life is defined as the state of perceived well-being in the dimensions of physical well-being, the psychological state, economic condition, level of independence, social participation, family and interpersonal relationships, the realization of one's own potential, intellectual development, and spiritual areas [25]. The quality of life in gynaecologic cancer patients changes constantly throughout their lives, depending on the changes in the physical, social, intellectual, and economic facilities or limitations. It was found that women with gynaecologic cancer received low scores in all subscales of the quality of life scale including physical, social, emotional, and functional well-being and the most negatively affected subscales were physical and emotional well-being. In their study conducted using The Quality of Life Questionnaire Cancer Patient form, Reis, et al. found that gynaecologic cancer patients obtained low scores from all subscales of the Quality of Life Questionnaire and the most negative effect was found in the psychological subscale [26]. In another study, Pinar, et al., used EORTC QLQ-C30 (The European Organization for Research and Treatment of Cancer Quality of Questionnaire) found that emotional and social subscales of the scale were the most negatively affected ones and they were followed by role functions, physical functions, and cognitive functions [4]. In their study conducted with gynaecologic cancer patients, Nazik, et al. found that women with gynaecologic cancer received low scores from all subscales of the quality of life questionnaire, particularly physical and psychological subscales [3]. Findings of this study are similar to the ones in the related literature.

Studies on women with gynaecologic cancers show that apart from the variables related to cancer, some sociodemographic features may also have effects on their quality of life [4,26-28]. It was found that patients' quality of life was affected by features in relation to gynaecologic cancer such as cancer type, time of diagnosis, spread and stage of cancer as well as age, education level and economic condition.

Pinar, et al. found that quality of life of deteriorated in elderly patients (>60) and in patients with low education level and financial problems, Nazik, et al. revealed that education level had effects on physical well-being, Chan, et al. found that young patients' (<40) quality of life were affected more negatively, Gelin and Ulus identified a positive relationship between quality of life and education level and economic condition [3,25,27,29]. Reis, et al., Matsushita, et al., Shutz and Winstead reported that the quality of life of patients with gynaecologic cancer was not affected by sociodemographic features [26,28,30]. This finding indicates that individual characteristics of patients with gynaecologic cancer affect their quality of life perceptions. It was found that features in relation to gynaecologic cancer affected quality of life. The quality of life of patients with cervix cancer, patients diagnosed with cancer for more than two years, patients in Stage I- IV and with primary cancer were found to be affected negatively. Reis, et al. found that the quality of life of women with cervix cancer in advanced stages (stage III-IV) decreased in their study conducted with gynaecologic cancer patients using EORTC QLQ-C30 scale, Göker, et al. found that general well-being and the quality of life of the women with gynaecologic cancer was low, Levin et al. and Rannestad, et al. monitored the effects of gynaecologic cancer types and treatment style on the quality of life and found that there were no differences between the groups in terms of their quality of life scores, Ravasco, et al. found that the general quality of life of the patients was related with the stages of the disease and in their observation study, Tahmasebi, et al. found that cancer stage and organ involvement had no effects on quality of life [26,31-34]. Findings of this study display similarity with those found by Reis, et al., Göker, et al., Ravasco, et al. The low quality of life of women with cervix cancer is related to the fact that these women are at a younger age and have a long and difficult treatment process just like in all cancer treatments. As the cancer progresses, the quality of life, particularly physical well-being, is affected in every aspect.

Fatigue is an important factor which affects the quality of life of cancer patients both during and after the treatment [14]. In their study conducted with gynaecologic cancer patients, Liavaag, et al., Vistad, et al., Pinar, et al. and Sekse, et al. found that fatigue experienced during and after the treatment was associated with low quality of life [4,35-37]. This study revealed that fatigue level was low and there was no relationship between quality of life and level of fatigue. This finding might be associated with the facts that the participants' cancer type was at the early stages which were not metastatic, the majority of the patients were married and they had social support to help them maintain their daily activities. The study also evaluated anxiety and depression levels of women with gynaecologic cancer. Studies show that anxiety and depression can affect cancer-related fatigue and thus psychological, emotional, functionality/liveliness dimensions of quality of life [35,36].

It is reported that cancer-related fatigue can differ depending on the patients' individual characteristics, emotional state, activity level and problems in relation to the disease and the treatment [10,17,35]. Sekse, et al. found that young women with ovarian and cervix cancer who received radiotherapy and chemotherapy had increased fatigue levels, Holzner, et al. monitored 98 women with ovarian cancer for 5 to 7 years and found that fatigue continued (33%), Pure, et al., Vollrath et al. found that age and the stage of the cancer had no effects on cancer-related fatigue, Pinar, et al., Bjelic-Rasidic, et al., Wenzel, et al. found that fatigue levels of patients increased because of the side effects of the chemotherapy and radiotherapy treatments, Vistad, et al. monitored women with cervix cancer who had radiotherapy for 7 to 9 years and found that fatigue continued (30%), Liavaag, et al. found that fatigue was not related with the treatment methods [4,5,7,14,35-39]. This study found no differences between the fatigue scores in terms of the patients' individual characteristics and cancer treatment in relation to the cancer type, time of diagnosis, stage of cancer and treatment methods (surgery, chemotherapy, radiotherapy). Vollrath et al. found that a low activity level was related with physical and general fatigue levels, Singer et al. found that fatigue levels increased in gynaecologic cancer patients with metastatic spread (stage IV), NCCN found that activity levels, other diseases in relation to the heart, kidney, lung, endocrine system and organs can be important variables in the fatigue that develops in cancer patients, Stone and Minton reported that chronic diseases such as diabetes, hypertension, multiple sclerosis, chronic obstructive lung disease and asthma should be evaluated in cancer-related fatigue [11,39-41]. This study revealed that fatigue levels increased in gynaecologic cancer patients with low activity levels and with a chronic disease other than cancer. Although negative indicators of the quality of life in cancer are reported as depression and higher anxiety levels, financial problems/burden experienced in the diagnosis, treatment and care process are shown to affect the quality of life of both patients and the people who provide care to them [42,43]. In this study, logistic regression analysis results performed in line with this information showed that economic conditions were the only and the most important indicator of quality of life. In their study on the aetiology of cancer-related fatigue, Piper, et al. reported that factors affecting fatigue could be personal characteristics, accumulation of metabolic products, changes in energy levels, activity level, the sleep cycle, disease-treatment process, symptoms in relation to the disease, environmental and psychosocial factors [20]. In line with the related literature, this study also found that fatigue was affected mostly by activity level and use of medicine.

### CONCLUSION

This study found that women with gynaecologic cancer received low scores from all subscales of the quality of life including physical, social, emotional, and functional well-being, physical and emotional well-being was found to be affected most negatively. It was found that patients' quality of life was affected by features in relation to gynaecologic cancer such as cancer type, time of diagnosis, spread, stage of cancer and also by age, education level and mostly by economic condition. No relationship was found between quality of life and fatigue level and the fatigue level was found to be mild. Fatigue level was found to be affected mostly by activity level and use of medicine. The quality of life in cancers can be negatively affected by many factors in the diagnosis, treatment and after treatment periods.

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### CONFLICT OF INTEREST

The authors declare no conflict of interest.

### AUTHOR CONTRIBUTION

İ.G., and U.O. contributed to the conception and design of this study; N.Ş., G.İ., İ.K., B.D collected data, İ.G., U.O. and M.D. performed the statistical analysis and drafted the manuscript; İ.G., U.O. and M.D. critically reviewed the manuscript and supervised the entire study process. All authors read and approved the final manuscript.

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