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Relationship between social support and fatigue in geriatric patients receiving outpatient chemotherapy

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A B S T R A C T

Purpose: This descriptive study was conducted with the purpose of determining the relationship between fatigue and social support in elderly individuals receiving chemotherapy.

Methods: It was conducted in the oncology outpatient chemotherapy units of two university hospitals and one research hospital. A total of 71 patients who were 60 years old and older and receiving outpatient chemotherapy were included. Data were collected using a "Personal Information Form," "Social Support Scale in Cancer Patients," and "Visual Analogue Scale for Fatigue."

Results: Fatigue was the most common symptom (93%) in elderly patients receiving chemotherapy. The elderly individuals' perceived level of social support was found to be "good", the main form of support they received from those around them was "security" and the area most lacking was felt to be "information." As the individuals' level of social support increased, the severity of the fatigue they experienced decreased.

Conclusions: The data demonstrate that social support was imperative in coping with fatigue.

Introduction

The elderly population in both developing and developed countries is steadily increasing. In 2007, it was reported to be 7.1% in Turkey. While the life expectancy was found to be 74.2 years for women and 69.3 years for men in 2007, it is estimated that it will rise to 74.5 years for women and 69.6 for men in 2010 (Turkey Health Statistics 2007). As the life expectancy increases, chronic health problems, particularly cancer, become progressively more common. Studies have revealed that 60% of the new cancer cases and 70% of the deaths caused by cancer occur in patients over 60 years of age (Yancik and Ries 2000).

Chemotherapy is widely used in cancer treatment, but its associated side effects significantly decrease the quality of life (Dooms et al., 2006). Compared with younger patients, the elderly may more severely experience the impact of increasing dependency in daily activities, a reduction in mental capacity, a weakening of social support systems, the intensity of the side effects caused by the physiological alterations in the body organs and systems, and their debilitating effects (Balducci, 2007; Wedding et al., 2007). Moreover, comorbid chronic diseases in elderly patients can also complicate the diagnosis and augment the intensity of symptoms (Extermann et al., 1998; Ogle et al., 2000). Studies have shown that managing these symptoms will result in an improvement in the course of the disease and quality of life (Dooms et al., 2006; Schonwetter et al., 2006).

Stone et al., (2000) stated that 58% of patients who complained of fatigue were affected "considerably or excessively" by the symptom, whose impact was considered to be more serious than that of others. Yurtsever (2007) conducted a study with patients with a mean age of 50 who were receiving chemotherapy and indicated that the symptom significantly restricted daily activities (climbing stairs, doing housework, walking at a slow or normal pace, etc.).

Curt et al. (2000) also acquired similar results in that fatigue had a negative effect on the daily activities of 91% of the patients and it interfered with the daily activities of 88% of the patients. The patients who participated in the study stated that they could do only 55% of their normal activities when they felt fatigue.

In studies conducted with cancer patients fatigue has been determined to decrease individuals' physical abilities, which interferes with their social relationships (Ahlberg et al., 2005; Thoits, 1986; Vogelzang et al., 1997). In a study conducted by Crawford and Gabrilove (2000) fatigue observed in patients receiving chemotherapy was determined to be a cause of

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disturbance in individuals' activities of daily living as well as in their social activities with friends and family. In a study by Hong et al. (2006) involving prostate cancer patients who were 50 years and older in the individuals' physical ability status was determined to have an effect on their ability to fulfill their social roles as well as to maintain their relationships with friends and family.

Fatigue is the most debilitating symptom in elderly patients receiving chemotherapy, because it increases functional dependency in individuals who have experienced many physical and socioeconomic losses with aging and who have decreased self confidence and quality of life (Tralongo et al., 2003).

However, there are very few studies reported in the literature on fatigue that develops in the elderly during cancer treatment (Rao and Cohen, 2004). Although some studies have shown that fatigue increases together with aging, other studies have obtained opposite results. No correlation was found between age and fatigue in a study conducted in patients with prostate cancer (Stone et al., 2000), liver cancer (Shun et al., 2005), and breast cancer (Donovan et al., 2004; Geinitz et al., 2004).

An increase in the level of fatigue with age was reported in studies by Okuyama et al. (2000) in breast cancer patients, by So and Tai (2005) in patients with hematological cancer, and by Loge et al. (2000) in patients with Hodgkin's lymphoma. In a study by Respini et al. (2003) in patients 60 years and older whose mean age was 71 years, the incidence and severity of fatigue were greater in the elderly and fatigue affected 84% of the patients in their activities of daily living. In a study conducted by Liao and Ferrell (2000) with elderly individuals whose mean age was 88 years, 98% of the individuals experienced fatigue (40% at a moderate level, 7% at a severe level). In studies conducted in elderly individuals, strong correlations have been found between fatigue and the inability to perform activities of daily living (Liao and Ferrell, 2000; Respini et al., 2003). In addition, the decrease in physical capacity that accompanies fatigue is a major reason for interrupting cancer treatment in the elderly (Tralongo et al., 2003).

Studies have shown that social support is an effective source of support in coping and a preventive factor against illnesses, and that there is a positive relationship between social support and emotional and physical health (Cohen, 2004; Leung et al., 2007; Kornblith et al., 2001; Reynolds and Kaplan, 1990).

The foundation of the social support theory is the assumption that patients need to be trusted, loved, respected, cared for, and esteemed by other people as well as their need to assume responsibilities. Cohen and Syme (1985) basically define social support as "emotional or physical support derived from other people," while it is defined by Thoits (1986) as "assistance provided by other people close to the person in times of stress or crisis." Shumaker and Brownell (1984), on the other hand, consider it to be "a resource exchanged between at least two people".

The most comprehensive definition of the concept was made by Caplan and Nelson (1973). According to these authors, "social support is the kind of help provided by family, friends, and relatives of patients by encouraging psychological resources for overcoming problems of a psychological disorder, sharing tasks the individual must perform, providing material and financial resources, skills and supervision necessary to face stressful situations". Social support in this sense is assumed to help protect the physical and psychological well-being of the individual.

Social support appears to be a reliable resource for helping cancer patients cope with their anxiety and insecurity (Eylen, 2002). In cancer patients, social support decreases the death rate (Kroenke et al., 2006) and improves quality of life by increasing physical and emotional well-being (Campbell, 2007; Holzner et al., 2001; Kroenke et al. 2006). There are studies that have found that the level of social support in cancer patients can be effective in the control of symptoms that they experience (Kim and Baik, 2002; Kroenke et al., 2006; Passik et al., 1995). In a study by Manning-Walsh (2005) involving 100 breast cancer patients whose mean age was 46 years, social support from family and friends was found to have a negative correlation with individuals' symptoms. Budin (1998) determined that social support was important for the control of symptoms in breast cancer patients.

However, there are a limited number of studies that have specifically examined the relationship between fatigue and social support in elderly cancer patients. In a study by Serveas et al. (2002) of breast cancer patients a correlation was found between individuals' perceived social support and the severity of the fatigue they experienced. Additionally, it has been reported that fatigue is a major factor that disrupts interpersonal relationships and impedes the progress of socialization (Lee, 2001), and that social support attenuates physical disabilities in chronic disease (Heidrich 1996; Tak et al., 2007).

Social support, as mentioned above, is regarded to be a fundamental part of improving the quality of life and well-being of cancer patients. In particular, the significance of social support may be of utmost importance in elderly chemotherapy patients with weakening physical or cognitive abilities. Fatigue may reduce the physical and social mobility of such patients, which results in a parallel decrease in socialization (Lee, 2001). Inadequate social support may also cause fatigue in patients (Serveas et al. 2002). It has been suggested that social support curtails the negative effects of the symptoms on cancer patients and enhances the quality of life (Manning-Walsh, 2005). Therefore, it is proposed that mapping out the correlation between social support and fatigue will yield estimable consequences in enhancing the quality of life in elderly patients who receive chemotherapy.

Effective social support in the elderly patients might motivate the patients against an unbearable condition, provide them with the practical and factual assistance they need, and teach them how to cope with the symptoms.

This study was conducted for the purpose of evaluating the levels of fatigue and social support in elderly patients receiving outpatient chemotherapy and to determine the relationship between fatigue and social support. As part of this evaluation, the objectives were to answer the following questions.

Primary objective

- What are the fatigue and social support levels in elderly cancer patients who receive chemotherapy? Is there any correlation between the two variables?

Secondary objectives

- Is there a correlation between fatigue or social support and patients' sociodemographic characteristics, such as gender, educational status, marital status, economic status and the people with whom they live?
- Is there a correlation between disease- and treatment-related factors such as diagnosis, the disease duration, treatment, number of chemotherapy courses, and other chronic diseases, and fatigue or level of social support?

Methods

Setting and participants

This descriptive study was conducted in the outpatient chemotherapy units of two university hospitals and a research

hospital in Adana and Mersin between November 2006 and April 2007. Consecutive convenience sampling was used. The study sample consisted of 71 patients over 60 who were under treatment in the outpatient chemotherapy units and who agreed to participate voluntarily in the study. The patients had no physical or cognitive disorders that might prevent them from filling in the research forms. The participants reported no hearing, speaking or vision impairment (for example, those with tongue or pharynx cancer were excluded) and they could understand and speak Turkish well. The patients also had no cognitive, neurological or psychiatric disorders and they could use their dominant hand without any restraints (restraints were a result of chemotherapy infusion and caused a difficulty in marking the items on the fatigue scale properly). Eight patients refused to participate in the study, in most cases (6 patients) because of the dissent of their family members. The other two patients were aggressive.

We chose to include among the elderly patients those aged 60 and older because of the relatively low life expectancy in Turkey (women 74.2, men 69.3).

Instruments

The study data were collected using a "Personal Information Form", a "Cancer-Specific Social Support Scale" to determine the social support levels of the patients, and a "Visual Analogue Scale for Fatigue".

The Personal Information Form was designed for the purpose of finding out sociodemographic as well as disease- and treatment-related factors that are presumed to have an influence on fatigue and the social support levels of the patients. This form includes information about sociodemographic variables such as age, gender, marital status, economic status (earnings less than expenses, earnings equal to expenses, and earnings more than expenses) educational status, and disease- and treatment-related factors such as diagnosis, disease duration, the number of chemotherapy courses, treatment, and chronic diseases.

The Visual Analogue Scale for Fatigue (VAS-F) was developed by Lee et al. in 1990 (Lee et al. 1991). The scale consists of two subscales, fatigue (13 items) and energy (5 items). Scoring on the visual analogue scale is carried out on a 10-point basis for each item that shows the most negative statement at one end of a 100-mm line and the most positive at the other end of the line by giving points from 0 to 10 after measuring them with a ruler. While the items of the fatigue scale are scored from the most positive to the most negative, the scoring of the items of the energy scale extends from the most negative to the most positive. The highest score on the fatigue scale and the lowest score on the energy scale indicate the highest level of intensity of fatigue.

The reliability of the VAS-F in cancer patients who receive chemotherapy in Turkey was tested by Yurtsever (2007). Because the scoring intervals on the scale were not identified precisely, it may be suggested that the scale provides more sensitive measurements in comparison to those with precise scoring intervals. Moreover, the scale was preferred in this study because it is relatively simple, brief, comprehensible (Lee et al., 1991), and practical for illiterate elderly patients as the scoring intervals are not measured with verbal or numerical values.

The Cancer-Specific Social Support Scale was developed by Eylen in Turkey in order to determine the kind and level of social support provided by families as perceived by cancer patients, and its reliability has already been tested by Eylen (2002). Factor analysis was performed to test the validity of the scale. The Cancer-Specific Social Support Scale incorporates three subscales; "trust" (13 items), "emotional support" (12 items), and "information" (10 items), which comprise 35 items (13 negative and 22 positive statements) in total. The Cronbach alpha value was found to be 0.92 (item number: 35), 0.88 (trust, 13 items), 0.88 (emotional support, 12 items), 0.87 (information, 10 items). The responses of the patients were scaled from 5 (very appropriate for me) to 1 (not appropriate for me at all) in positive statements and from 1 to 5 in negative statements. The social support provided by families as perceived by cancer patients was measured with a five-point scale in which higher scores on the scale reflect higher levels of perceived social support (Eylen, 2002).

The Cancer-Specific Social Support Scale was preferred because it was first developed in Turkey and therefore it was considered to reflect the values of Turkish society. Moreover, the scale has been used with chemotherapy patients in Turkey and provides the opportunity to analyze trust, emotional support, information support, and perceived social support levels individually (Dedeli et al. 2008).

Procedures and ethics approval

A written report stating the purpose and method of the study along with the data collection forms were sent to hospital management and nursing management offices in order to receive authorization in writing before implementing the study. Having been granted the authorization, the study was implemented between November 2006 and April 2007. The patients and their relatives were informed about the purpose and method of the study, and their verbal consent and authorization were obtained. The researchers also reminded the patients that it was a volunteer-based study and that they could leave whenever they wanted. All data forms in the study were filled in by interviewing patients because of common visual impairment and low levels of literacy in the elderly patients so as to provide a more relaxed atmosphere. Data collection was performed by a researcher. Before the interview the researcher was trained to score the VAS fatigue lines. This is the reason why the scale was used with 10 patients at a university hospital inpatient oncology service. The scale was used at the conclusion of the implementation. The patients were interviewed during their chemotherapy treatment. Filling in the questionnaire forms took from 40 to 70 min. Information about the number of chemotherapy courses, diagnosis, treatment and laboratory data was obtained from the patient files.

Analysis of the study data

Data coding and evaluation procedures were carried out with the Statistical Package for the Social Sciences (SPSS) 11.5. The distribution of the fatigue scale scores and social support subscale scores was evaluated with the Kolmogorov–Smirnov test, which demonstrated that only the energy subscale scores presented normal distribution, and parametric tests were utilized in the statistical analysis of the energy subscale scores performed with predetermined variables. The significance test (t test) of the difference between the two mean scores was used in the statistical evaluation of the energy subscale scores with two-category classification; and ANOVA was used in the evaluation with more than two categories. The Tukey test was used to test the significance of the multiple variables.

For the statistical analysis of the fatigue subscale scores and social support subscale scores, which do not present normal statistical distribution, the Mann–Whitney U test was used for measuring two-category classifications and the Kruskal–Wallis test was utilized for those with more than two categories. The significance test of the multiple variables was carried out using the Dunn test. The correlations between fatigue and energy subscale scores and other measured score and laboratory findings were analyzed

using Pearson's correlation test. Also, mean scores and standard deviation were measured for the energy subscale scores with normal statistical distribution while the median value and quartiles were measured for the fatigue subscale scores and social support subscale scores that did not present normal statistical distribution.

Results

Patients characteristics

In this study 43.7% of the patients were between 60 and 64 years of age, 56.3% were 65 and over, and the mean age was 65.75 years. The sample comprised 49.3% women and 50.7% men; 57.7% of the patients were primary school graduates, 74.6% were married, 12.7% were living alone, and 42.3% had a low economic status. The participants' diagnoses were breast (19.7%), lung (19.7%), stomach (7%), colorectal (25.4%), genitourinary (14.1%), skin (4.2%) and hematologic–lymphatic (9.9%) cancer. The majority (73.2%) of the patients had been recently diagnosed with cancer, 33.8% were receiving their second chemotherapy course, and 62% had at least one comorbid chronic illness.

Characteristics of fatigue and social support

Almost all (93%) of the patients included in the study stated that they had fatigue, which was also found to be the most common symptom. The mean scores of the VAS-F fatigue and energy subscales were recorded to be 51.9 and 31.5, respectively. An evaluation of the subscale scores of the Cancer-Specific Social Support Scale has shown that the mean score of the trust subscale was 59.65, that of the information support subscale was 37.21, while it was 53.39 for the emotional support subscale and 150.25 for the perceived social support subscale.

There was a strong negative correlation ($P < 0.001$) between the scores of the VAS-F fatigue subscale and the subscale scores of the Cancer-Specific Social Support Scale, while the former was found to have a strong positive correlation ($P < 0.001$) with the scores of the energy subscale (Table 1).

Sociodemographic factors, fatigue, and social support

The mean scores of the VAS-F energy subscale for men (57.4) were found to be higher than those for women (46.2) and a significant difference ($P < 0.05$) was found between the groups in the statistical analysis of the study data. It was further noted that gender as a sociodemographic factor did not influence the social support scores. It was also suggested that as the educational status of the patients increased, their VAS-F energy subscale scores equally increased and there was a statistically significant difference between the groups ($P < 0.05$). Additionally, the mean score for the information support subscale was higher in the high school/university graduate patients and the mean score for the perceived social support scale increased with the educational status. The difference between the groups was found to be statistically significant ($P < 0.05$). Marital status was not found to be influential on fatigue and social support scores. Patients who lived alone experienced more fatigue and received less support from family and friends than those who lived with their spouses, but these factors did not have an effect on fatigue and social support scores.

Patients with low economic status had a lower mean energy score, yet they had a higher fatigue score and there was a statistically significant difference between the groups ($P < 0.001$). Those with a low economic status had lower scores on all subscales of the Cancer-Specific Social Support Scale and there was a statistically significant difference between the groups ($P < 0.04$; $P < 0.006$; $P < 0.001$; $P < 0.002$, respectively) (Table 2).

Illness and treatment factors, fatigue, and social support

As can be seen in Table 3, the diagnosis and duration of disease did not have an effect on fatigue and social support scores. Moreover, it was reported that the mean scores from the fatigue subscale were higher during the first chemotherapy course, and that the difference between the groups was statistically significant ($P < 0.05$). It was further noted that comorbidity was not an influential factor on fatigue and social support scores.

Discussion

In this study 93% of the elderly patients receiving chemotherapy experienced fatigue and it was their most common symptom. This result is consistent with many other studies in the literature (Liao and Ferrell, 2000; Respini et al., 2003; Tralongo et al., 2003). Elderly individuals receiving outpatient chemotherapy rated their level of social support as "good." They received the most security support from their families and the least information support. Information support includes information from an individual's family or health care personnel about what they need to do, the illness and treatment process, guidance, warnings, recommendations or feedback. This support can have an effect on how individuals cope with stressful situations. However, it has been reported that individuals with cancer in our country are not adequately informed and therefore they experience fear and anxiety (Eylen, 2002). The finding in this research that the information support score was low is probably a result of their children or healthier spouse assuming the responsibility in the disease and treatment process because of the presumption that the patient's mental and physical abilities have declined together with old age and the disease process. Other reasons for low information support may be that in this culture there is a tendency not to talk about the cancer diagnosis with patients or ambivalence about how to tell or how much to tell the patient from fear of saddening or harming the patient with information.

Security support includes having positive feelings from those around the individual so that the individual feels supported. It makes the individual feel worthwhile and secure. This support in our traditional culture is indicated by patients' relatives acting as protectors and guardians. These behaviors are commonly shown to

Table 1
Correlation between the VAS-F Subscales and the Cancer-Specific Social Support Scale subscales (CSSSS).

	Min–Max	Mean ± SD	VAS-F			CSSSS		
			ES	FS	SSS	ISS	ESS	PSSS
			r	*r*	*r*	*r*	*r*	*r*
ES	0.92–10.0	51.9 ± 2.16	1***	0.867***	0.710***	0.781***	0.758***	0.816***
FS	0.0–7.70	31.5 ± 2.12	−0.867***	1***	−0.645***	−0.773***	−0.711***	−0.775***

***$p \leq 0.001$ ES: energy score; FS: fatigue score; SSS: Security support score; ISS: information support score; ESS: emotional support score; PSSS: perceived social support score.

Table 2
The distribution of the sociodemographic characteristics according to fatigue and social support score means.

Socio-demographics Characteristics	*n*	%	Visual Analogue Scale for Fatigue Score		Cancer-Specific Social Support Scale Score			
			ES Mean	FS Median	SSS Median	ISS Median	ESS Median	PSSS Median
Age								
60–64 years	31	43.7	49.4	33.3	61	38	53	149
65 years and above	40	56.3	53.8	23.4	64	40.5	58	162.5
P			0.398	0.244	0.179	0.651	0.074	0.310
Gender								
Female	35	49.3	46.2	29.3	61	39	54	157
Male	36	50.7	57.4	23.6	64	40	58	163
P			0.028	0.166	0.325	0.167	0.387	0.127
Educational Level								
Illiterate	20	28.2	46.6	2.4.6	61	39	53	155.5
Primary school	41	57.7	50.4	33.3	61	38	56	157
High school/university	10	14.0	68.6	14.7	65	47.5	58.5	169
P			0.022	0.094	0.092	0.022	0.295	0.054
Marital status								
Married	53	74.6	54.1	24.9	63	39	58	161
Widowed/single/divorced	18	25.4	45.6	34.2	62.5	38.5	52.5	155
P			0.152	0.267	0.558	0.299	0.280	0.163
Income level								
High	11	15.5	67.5	12.8	65	45	59	166
Equal	30	42.3	59.8	18.4	64	41.5	58	164
Low	30	42.3	38.3	46.3	58	33	50.5	137
P			<0.001	<0.001	0.004	0.006	0.001	0.002

ES: energy score FS: fatigue score SSS: social support score ISS: information support score ESS: emotional support score PSSS: perceived social support score.

elderly individuals who experience physical, mental, and socio-economic losses that occur with aging and probably had an effect on the high security support score in this study. In addition, the tendency of relatives to over-protect patients may decrease their self-confidence, make them feel like they are inadequate from inaction or make them feel more ill than they are. Security support that is demonstrated as over-protective behavior may interfere with patients' participation in the treatment process, and, by negatively affecting their acquisition of knowledge about their disease and treatment process, may also interfere with their acquisition of information support.

In our study, a negative correlation was found between fatigue and social support levels, which illustrated that as the intensity of fatigue increased, the mean scores of social support decreased accordingly. Cancer is considered to be a family illness because it is a physical, psychological, and socioeconomic burden to the individual and family. The social support received by individuals facing this difficult situation can encourage them and have an effect on distracting their attention from their disease to other things (Mitchell, 2007). In addition, their being able to share responsibilities caused by the disease process with their spouses, children, and friends can be effective in decreasing the fatigue experienced.

In this research the female patients' energy and social support levels were lower than those of the male patients. In a study by Respini et al., (2003) of individuals aged 60 or over receiving chemotherapy it determined that female patients experienced more severe fatigue than the male patients and that they were more affected by this symptom. In another study by Molassiotis and Chan (2001), the level of fatigue in female patients was also found to be higher.

Table 3
The distribution of patients' disease- and treatment-related characteristics according to their fatigue and social support score means.

Disease- and Treatment-Related Characteristics	*n*	%	Visual Analogue Scale for Fatigue Score		Social Support Scale in Cancer Patients Score			
			ES Mean	FS Median	SSS Median	ISS Median	ESS Median	PSSS Median
Length of disease								
0–1 year	52	73.2	53.1	24.6	63.5	39	58	161.5
1–5 years	15	21.1	50.3	33.3	60	39	54	157
5 years and above	4	5.6	42.5	33.4	65	40	57	162.5
P			0.612	0.592	0.533	0.863	0.462	0.862
Number of courses								
One course	14	19.7	68.3	12.4	65	41.5	59	165
Two courses	24	33.8	45.7	35.7	64	40.5	56	161
Three courses	11	15.5	50.0	19.5	61	39	56	157
Four courses and above	22	31.0	49.2	30.5	61	36	52	146
P			0.013	0.027	0.266	0.195	0.116	0.346
Chronic disease								
Yes	44	62	55.5	24.4	64	40	58	163
No	27	38	49.7	27.3	61.5	39	56.5	158.5
P			0.282	0.929	0.393	0.915	0.820	0.845

ES: Energy Score FS: Fatigue Score SSS: Social Support Score ISS: Information Support Score; ESS: Emotional Support Score PSSS: Perceived Social Support Score.

Although there are studies that found that female patients have higher levels of perceived social support (Kendler et al., 2005; Wang et al., 2002), in studies conducted with elderly individuals in Turkey the opposite findings have been obtained (Aksüllü and Doğan, 2004; Durmaz and Ünal, 2000). The finding that male patients' fatigue scores were lower and their energy and social support scores were higher may be related to the socio-cultural characteristics of the Turkish population. In our paternalistic society the need for men to appear to be strong is learned in families and so the male patients may have avoided talking about their illness more than the female patients. Also, in Turkish society women are traditionally responsible for housework, which may have caused the women to experience more fatigue. The reason why the female patients' social support scores were lower than the male patients may have been affected by the majority of the female patients being housewives and with lower educational levels than the male patients, because work life and educational level may have an effect on individuals' social network and development of communication skills.

As educational level increased individuals experienced less fatigue and perceived more social support. Educational level was also determined to have an effect on individuals getting information support. In studies by Andrykowski et al. (1998) in patients with breast cancer and by Loge et al. (2000) in patients with Hodgkin's lymphoma a correlation was found between patients' fatigue and their educational level. In a study by Hofman et al. (2004) in elderly patients receiving chemotherapy and radiation therapy, it was determined that patients with a lower educational level had more treatment-related side effects. Education increases individuals' ability to establish relationships and may be considered to be one of the factors that affects perceived social support. It is suggested that it is also a factor that ensures that individuals receive concrete assistance from their family, friends and relatives to help them cope with fatigue.

In this study 12.7% of the elderly patients were living alone and reported that they experienced more fatigue and received less social support compared with those who lived with their families. Recently, the number of people living alone has been reported to be increasing in Turkey, depending on the socioeconomic conditions. Keskinoğlu et al. (2006) conducted a study and found that 11.4% of Turkish people live alone, while Akın and Emiroğlu (2006) found that the percentage is 10.2%; these findings are consistent with our findings. Many studies in the literature confirmed that there is a negative correlation between the levels of fatigue and social support (Kim and Baik, 2002; Yeh and Lo, 2004). Yeh and Lo (2004) reported that elderly people who live alone receive less social support. Also, relevant studies have illustrated the decreasing levels of satisfaction gained from social relationships as the levels of loneliness increased (Kim and Baik, 2002; Kim, 1999). Kim and Baik (2002) found that elderly people who live with their families have a wider social network and, in contrast to those who live alone, they obtain more satisfaction from the social support provided by their relatives. Chalise et al. (2007) remarked that the perceived social support for elderly people who live with their families effectively produces well-being.

In our study, the primary reason why the elderly people who lived alone experienced more fatigue and received less social support is a result of comparatively less support provided by the relatives of the patients. The patients who live with their families report fewer complaints of fatigue and have higher levels of social support, which emphasizes the importance of family support for the elderly.

Individuals with a good income level experienced less fatigue and perceived more social support from their family. In studies conducted with breast cancer patients individuals with low income levels were found to have a higher level of fatigue (Can et al., 2004; Donovan et al., 2007). In a study conducted by Eversley et al., (2005) with postoperative breast cancer patients it was determined that as the income level decreased the number of symptoms the patients had increased. It is also known that the fatigue that cancer patients experience causes them economic losses (Curt et al., 2000). There are studies that have determined that there is a positive correlation between socioeconomic status and social support. In a study conducted by Katapodi et al. (2002) in breast cancer patients a high level of social support was found to be associated with high income and educational levels.

A decrease in individuals' income level has been observed to decrease their medical care expenses, such as cancer diagnosis and treatment (Selvin and Brett 2003). The reason for this may be that the diagnosis of cancer is made at a more advanced stage and they are less able to benefit from treatment opportunities. In addition, low economic status creates physical and emotional stress for individuals, which are significant reasons why these individuals experience more fatigue. It is suggested that the income of elderly individuals (material support) can have an influence on their perceived social support and their ability to cope with the difficulties they experience.

In this research, as the number of courses of chemotherapy increased, the fatigue that the patients experienced also rose. Other studies have also shown high fatigue levels (Donovan et al., 2004; Kumar et al., 2004; Mills et al., 2005). The increased fatigue experienced by patients as the number of courses of chemotherapy increased may be an indicator of the effect of chemotherapy on this symptom.

In light of the results of our study, it is clear that social support is vital for patients who have to cope with fatigue, a debilitating symptom. Assuming a holistic approach and activating the social support resources for elderly patients will help to manage the symptom. Optimal utilization of the social support resources will provide assistance in activating the resources, managing fatigue, maintaining functional sufficiency, and enhancing the quality of life for elderly patients.

A limitation of our study is that the sample size is too small to demonstrate significant differences. Also, the social support scale for this particular study included only trust, emotional support, and information support subscales. Nevertheless, it was also found that the economic status of the patients had a significant impact on both variables. Therefore, for future studies, it is recommended that the economic status be taken into account, and that increased patient numbers are used, in order to yield more precise results.

Conflict of interest statement

Authors disclose no financial and personal relationships with other people or organisations that could inappropriately influence (bias) our work.

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