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Assessment of Symptoms in Cancer Patients Undergoing Chemotherapy in Northern Greece

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ABSTRACT

Introduction: Cancer patients experience a variety of symptoms that can be physical or psychological. These symptoms may vary in terms of occurrence, severity and distress and can be the result of the illness or the treatment. **Purpose:** The purpose of this study is to investigate the frequency, severity and distress of symptoms that chemotherapy induces in cancer patients. **Material-Method:** This study included 200 cancer patients undergoing chemotherapy in a major city of Northern Greece. Data was collected using the Memorial Symptom Assessment Scale and Questionnaire, with demographic and clinical characteristics. **Results**: The vast majority of those included in the sample were male participants (n=127, 63.5%). Their mean age was 58.95 (SD=9.95, range 29-79). The most prevalent physical symptoms were numbness/tingling in the hands/feet (54%), followed by lack of energy (46%). Feeling nervous (52%) and having trouble sleeping (41%) were the two most common psychological symptoms. **Conclusions:** The results of this study demonstrate that cancer patients undergoing chemotherapy experience various symptoms in high prevalence, and that they are quite severe. Therefore nurses should take into account these findings and plan appropriate, suitable care plans and interventions in order to alleviate them and improve patients' quality of life.
Key words: chemotherapy, cancer, symptoms.

1. INTRODUCTION

Cancer is one of the leading causes of death all over the world. Its occurrence is increasing due to the aging of the world population and the increasing adoption of high-risk behavior which is the cause thereof (1). According to the National Plan Action for Cancer in Greece for 2011-15, released by the Greek Health Ministry, cancer is the second most frequent cause of death (2), as is true of other countries. The main cancer treatment modalities are surgery, chemotherapy, and radiotherapy and depend on the tumor (location, stage) to be treated. Recently targeted therapies, hormonal therapy and immunotherapy are being used (3). Not only has cancer increased mortality, but patients undergoing conventional treatment also suffer from variety of symptoms (4). Cancer patients experience a variety of symptoms that can be physical or psychological (5,6). These symptoms may vary in terms of occurrence and distress. They are the result of the illness or the treatment and can persist for a long period of time (4). Some symptoms are related to progression of the disease, whereas others are associated with the early and late effects of cancer treatment or with problems in connection with psychological adjustment (7).

Various studies have shown that cancer patients undergoing chemotherapy experience a variety of symptoms. Some of them were examined heterogeneous groups of cancer patients and other homogeneous cancer groups. It has been reported that the most frequently symptoms are problems related to sexual interest or activity (90%), lack of energy (85.8%), perspiration (75.8%) and changes with respect to food tastes (72.5%) (8). In another study involving 268 cancer patients, the most prevalent psychological problem reported was difficulty sleeping (58.2%) and the most frequent physical symptom was lack of energy (88.1%) and dry mouth (75%) (5).

The occurrence of symptoms can be different within a homogenous group of cancer patients. Thus, in 104 colorectal cancer patients, symptoms with the highest scores for frequency, severity and distress were lack of energy, followed by difficulty in sleeping and numbness in the hands/feet (9). In breast cancer patients at early stage of cancer receiving chemotherapy, it was reported that the most prevalent symptoms at the end of treatment were fatigue (44%), hair loss (65%), change in taste, drowsiness (56%) and emotional distress (44%) (10). In 110 non-Hodgkin's lymphoma patients in Turkey, it was reported that the most prevalent symptoms were lack of energy, hair loss and change in the way food tastes, whereas the most severe

symptoms were hair loss, change in the way food tastes and constipation (11). In recent years, there is a growing research interest in specific symptoms that cancer patients experience during treatment, such as pain (12), fatigue (13), mucositis (14) and nausea / vomiting (15). Despite the progress in this field of research, it has been found that the assessment of a single symptom is not always helpful in guiding clinical practice when patients are dealing with several concurrent symptoms. Also, it is important for cancer nursing to investigate symptoms and symptom clusters in order to develop appropriate measures to manage symptoms related to cancer and cancer treatment (16).

To our knowledge, there is no study in Greece that has focused on symptoms experienced by cancer patients undergoing chemotherapy. These reasons stimulated the researcher's interest to investigate this phenomenon further. The purpose of this study is to investigate the frequency, severity and distress of symptoms that chemotherapy induces in cancer patients.

2. MATERIALS AND METHODS

The study was descriptive and non-experimental. It was conducted in a large hospital in a major city in Northern Greece. The sample consisted of patients having received their third cycle of chemotherapy. Eligibility criteria were adult patients (≥ 18 years) with a cancer diagnosis, admitted for chemotherapy treatment to a chemotherapy clinic as outpatients. Exclusion criteria were patients with concomitant radiotherapy, patients assessed by a physician as unable to perform the assessments, or patients without a sufficient command of spoken and written Greek.

Data collection was carried out from December 2012 until December 2013. The study was approved by the hospital's Research Committee. A total of 220 patients met the inclusion criteria, of whom 20 were excused due to unwillingness to participate in the study, or complications with their treatment, or because they had discontinued chemotherapy. The remaining 200 patients (90%) were informed about the aim of the study by a member of the research team. Potential participants received a confidential letter informing them about the study and participant's rights. Patients had the right to withdraw their participation if they wished to. Confidential statements were they collected from the patients who agreed to participate, after which a questionnaire was distributed to them.

The Memorial Symptom Assessment Scale was used in order to evaluate the symptoms experienced by patients during chemotherapy. This scale contains 32 items which measure physical and psychological symptoms experienced by cancer patients over the past week, as a result of cancer or of its treatment. The items evaluate symptoms frequency, severity and distress by using a Likert scale (severity 0 = not at all to 4 = very severe, frequency 0 = not at all to 4 = almost constantly and distress 0 = not at all to 4 = very much) (17). The scale's reliability and validity (17) is well documented. The scale was translated into the Greek language using a standard backward translation (18). The content validity of the questionnaire was determined by a panel consisting of one oncology physician, two oncology nurses and one nursing professional. The Greek version was pilot tested with 40 cancer patients. All patients were asked to complete the MSAS scale and were interviewed in order to determine whether or not they had problems understanding the questions. None of the patients participating in the pilot study were included in the present study. Minor linguistic adjustments were required to make the questionnaire more easily understandable. Cronbach a in the present sample is 0.86 for total scale, which is consistent with other studies (8,17). Also the questionnaire provided information about demographic characteristics such as age, gender, marital status, level of education and employment status.

3. RESULTS

Of the 200 patients included, 127 (63.5%) were males and 73 (36.5%) were females. The mean age was 58.95 (SD=9.95, range 29-79). Most participants were married (n=159, 79.5%) or widowed (n=17, 8.5%). The majority had completed primary school (n=79, 39.5%) or high school (n=60, 30%), while the remaining 20% had a higher or university education. Nearly half of the sample (n=124, 62%) had retired. The most common cancers in the sample were lung cancer (n=96, 48%) and colon cancer (n=84, 42%). The most prevalent physical symptoms were numbness/tingling in the hands/feet (54%) followed by lack of energy (46%), diarrhea (46%), weight loss (52%), hair loss (66.5%), change in the way food tastes (68 %) and constipation (66.5%). Feeling nervous (52%) and difficulty sleeping (41%) were the two most common psychological symptoms. The least common symptoms experienced were feeling irritable (11.5%), "I don't look like myself" (11.5%) and problems with sexual interest or activity (8.5%). Table 2 shows the mean of the three dimensions of each symptom (frequency, severity and distress).

As can be seen in table 2, the symptoms of numbness/tingling in hands/feet has a higher mean in symptom frequency (3.01±1.12), symptom severity (2.88±1.13), distress (2.68±1.44). Also, change in the way food tastes, weight loss and hair loss have a high mean in symptom severity and distress. In the psychological area, the symptoms with a high mean in severity are nervousness (2.03±0.96) and distress (2.20±1.03). Also, feeling nervous has a high mean in the frequency of all symptom characteristics (2.73±1.22), severity (2.51±1.18) and distress (2.69±1.55). Other psychological characteristics with a higher mean are feeling sad and worrying.

Linear regression analysis was used to determine the predic-

Gender	N	%
Male	127	63.5
Female	73	36.5
Marital status		
Single	14	7
Married	159	79.5
Divorced	10	5
Windowed	17	8.5
Educational status		
Primary School	79	39.5
Middle School	16	8
High School	60	30
Secondary School	5	2.5
Technical Training	8	4
University	24	12
Doctorate	8	4
Type of Cancer		
Lung	96	48
Stomach	5	2.5
Colon	84	42
Pancreas	15	7.5

Table1. Patients' Demographic Characteristics

Symptoms	N	Symptom Prevalence (%)	Symptom Frequency M±SD	Symptom Severity M±SD	Symptom Distress M±SD
Difficulty Concentrating	36	18	1,38±0,80	1,30±0,46	0,58±1,05
Pain	59	29.5	2,09±1,13	2,31±1,19	1,98±1,41
Lack of Energy	92	46	2,73±0,79	2,57±0,85	2,55±1,44
Coughing	64	32	1,84±1,05	1,57±0,85	1,12±1,43
Feeling Nervous	104	52	1,52±0,50	2,03±0,96	2,20±1,03
Dry Mouth	78	39	2,29±0,88	2,10±0,73	1,87±1,07
Nausea	62	31	1,93±0,82	2,01±0,91	1,91±1,65
Feeling Drowsy	52	26	2,00±1,13	1,96±0,94	1,23±1,53
Numbness/Tingling in Hands/Feet	108	54	3,01±1,12	2,88±1,13	2,68±1,44
Difficulty Sleeping	82	41	2,73±1,22	2,51±1,18	2,69±1,55
Feeling Bloated	25	12.5	1,48±1,12	1,48±1,12	0,64±1,49
Problems with urination	39	19.5	1,87±0,86	1,76±0,90	1,35±1,51
Vomiting	44	22	1,70±1,19	1,79±1,17	1,22±1,56
Shortness of breath	60	30	1,78±0,92	1,73±0,91	1,16±1,30
Diarrhea	92	46	1,80±0,74	1,86±0,89	1,41±1,29
Feeling Sad	94	47	2,03±1,08	2,03±1,12	1,81±1,41
Sweats	64	32	2,00±0,97	1,84±0,94	1,42±1,47
Worrying	55	27.5	1,90±0,86	1,80±0,91	1,52±1,53
Problems with Sexual Interest or Activity	17	8.5	1,58±0,93	1,58±0,93	1,52±0,93
Itching	56	26	2,07±1,21	1,94±1,10	1,58±1,47
Lack of Appetite	73	36.5	1,94±0,99	1,97±1,10	1,87±1,51
Dizziness	27	13.5	1,88±1,08	1,81±1,03	1,33±1,79
Difficulty Swallowing	25	12.5	1,24±0,83	1,24±0,83	0,40±1,11
Feeling Irritable	23	11.5	1,00±0,31	1,00±0,00	1,00±0,00
Mouth Sores	37	18.5		1,13±1,47	1,68±0,46
Change in the way food tastes	136	68		2,36±1,19	2,25±1,53
Weight Loss	104	52		2,37±1,11	2,25±1,48
Hair Loss	133	66.5		2,45±1,13	2,11±1,47
Constipation	91	45.5		1,72±0,76	1,50±1,32
Swelling of Arms or Legs	43	21.5		2,06±1,26	1,41±1,66
"I don't look like myself"	23	11.5		1,60±0,89	1,21±1,78
Changes in Skin	73	36.6		1,87±0,99	1,53±1,33

Table 2. Symptoms characteristics of prevalence, frequency, severity and distress in cancer patients

	Dependent variables		
	Total score of severity symptoms		
Independent variables	Beta	t	Significance (P value)
Constant		-1,814	0,73
Age	0.460	3.688	0.000
Gender	0.142	1,241	0.218
Marital status	-0,206	-1,691	0,094
Occupational situation	-0,132	-1,083	0,282
Educational status	0.391	3.556	0.001
Cancer type	-0.072	-0.653	0.516
R		0.472	
R²		0.222	
F		4.101	
Significance (P value)		0.001	

Table 3. Results of regression analysis for the predictors of the symptoms experienced by the patients

tors of symptoms in all dimensions and the results are shown in table 3. Demographic and disease variables were put in a linear regression in order to identify the independent significance of each variable according to the symptoms. These variables explained 22.2% of this variance (R=0.472, F=4.101, p< 0.001). Age (β=0.460, p<0.000), educational status (β=0.391, p<0.001) were found to be independent predictors of the total symptoms.

4. DISCUSSION

This study suggests that cancer patients undergoing chemotherapy experience a variety of symptoms. The results provide significant knowledge to Greek health professionals, allowing them to recognize symptoms and intervene appropriately in order to alleviate them. In this study, the most prevalent symptoms are: change in way food tastes, hair loss, numbness/tingling in hands/feet, feeling nervous, weight loss, lack of energy, diarrhea, feeling sad and constipation. These symptoms are consistent with the symptoms reported by Esther Kim et al (2009) in their review compiling the most prevalent symptoms from 18 studies (19). It is noteworthy that the symptoms' prevalence is not exactly the same, but this can be explained by the fact that the symptoms experienced by patients depend on their type of cancer (20). An interesting finding is that patients experience a high prevalence of numbness/tingling, which was deemed to be the most severe and distressing symptom of all. This was an expected outcome, since the research sample included a high proportion of colon cancer patients. Neurotoxicity with numbness/tingling in the hands/feet is a symptom referred to in other studies examining homogeneous groups of colorectal patients and numbness can appear in the early stages of chemotherapy (9). This finding strengthens the position that patients should be informed about the neurotoxicity and the importance of reporting these symptoms to nurses and other healthcare professionals (9).

Furthermore, another interesting result of this study is that the symptom of lack of energy is one of the most prevalent symptoms, but at the same time it was found to be the second most severe and distressing symptom, thus concurring with other studies which have found that lack of energy is one of the most distressing symptoms in heterogeneous groups of cancer patients (5) and in homogenous groups of patients (9,11). In the aforementioned studies, the prevalence of lack of energy is somewhat higher, but this difference is probably related to patients' individual characteristics, different cancer stages as well as to different treatment protocols (11). It should be emphasized that the concept of lack of energy is close to cancer-related fatigue (9). It has been documented that although it has a deleterious effect on physical, social, cognitive and vocational functions, it is under-recognized and under treated (21). The results of this study renew the stress on the importance of informing patients about this symptom and underline the necessity of acting on this information in order to improve the management of cancer-related fatigue (9,21). In our study, changes in the way food tastes and weight loss are prevalent symptoms and are both severe and distressing. These findings are similar to the findings of other studies (11, 22) which found this change to be one of the most distressing symptoms of all. Also, Yan & Selik found that weight loss is one of the most frequently reported symptoms in gastro-intestinal cancer patients (22). Although the groups of patients are homogenous in the above studies and despite the fact that in our study the sample consisted of heterogeneous patients, we believe that this similarity in the results can be explained by the suggestion of Esther Kim et al that "the occurrence of multiple symptoms may be related to the disease itself, active treatment, sequale of treatment or comorbid conditions"(19).

Furthermore, patients in our study reported hair loss as one of the most frequent and distressing symptoms. This finding, too, is consistent with the findings of other studies (11, 23), which

report that most patients experienced this symptom, thus providing insight and emphasizing once again how important it is for healthcare professionals to assess and educate their patients.

In our study, we found that nervousness, difficulty sleeping and feeling sad are the most prevalent psychological symptoms, experienced by nearly half of all patients (24, 25). It has been documented that these symptoms have a negative impact on quality of life (24), and it has been referred that the combination of fatigue and sleep disturbances in colon cancer patients undergoing chemotherapy results in a worsening of patients' physical activity (9). It is noteworthy that the prevalence rates of the symptom "problems with sexual interest or activity' has the lowest rank in the present study. There are conflicting results with respect to this symptom; Yildirim et al (2011) suggest that Turkish patients reported this symptom as the most frequent. The possible explanation of this difference can presumably be attributed to cultural differences. In Greece, sexual activity is a taboo subject for this specific age group of patients, which most probably resulted in under-reporting. The regression analysis showed that age and educational status are the predictors of symptoms prevalence. This is along the lines of the results of other studies in which age, level of education, treatment characteristics and stage of cancer are were found to be predictors. This difference results from the fact that different research methods were chosen in the two studies. Undoubtedly there is a great need for further research in Greece, in order to identify predictors and other characteristics of symptoms experienced by cancer patients undergoing chemotherapy or other active treatment.

This study has certain limitations. One of these is that the research was conducted in one major city in Northern Greece, so that the result cannot be generalized for Greek cancer patients. Another limitation is only very few clinical characteristics such as stage of cancer and previous therapy were applied. There is a great need for further research on a larger population with precise characteristics in order to arrive at more conclusive results.

5. CONCLUSIONS

The results of this study show that cancer patients undergoing chemotherapy experience a variety of symptoms. These can be interesting for nurses and other health care professionals wishing to enhance their knowledge of such symptoms. The assessment of symptoms experienced by cancer patients is essential for nurses, since it allows them to provide individualized nursing care. Their nursing care plan should include appropriate measures aimed at alleviating the most distressing symptoms. Furthermore, assessments should evaluate frequency, severity and distress, as well as helping patients to recognize if the symptom is a result of cancer or its treatment.

CONFLICT OF INTEREST: NONE DECLARED.

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