



ONCOLOGY

Cancer patients' satisfaction with day care unit services have impact on their quality of life

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Abstract

Objective and aim. Quality of life and quality of care are determinants that interact on the patients' health and satisfaction with care. The aim of the study is to investigate the satisfaction factors of day clinic cancer patients that influence their quality of life. The identification of the important health sectors and the improvement of the weak areas contribute to the amelioration of cancer patients' state of health as well as to the increase of their satisfaction with the day care unit.

Methods. The research is a cross-sectional, quantitative, descriptive and correlation study. It was conducted in a cancer day care unit of an oncology hospital in Greece, from January 2022 to July 2022. A convenient sample of 101 cancer outpatients with different diagnoses and disease progression completed the European Organization for Research and Treatment for Cancer Quality of Life Questionnaire- EORTCQLQ-30 and a validated satisfaction questionnaire for ambulatory patients based on the SERVQUAL quality dimensions.

Results. Higher satisfaction regarding waiting ($\rho=0.20$; $p=0.041$), medical care ($\rho=0.23$; $p=0.023$), nursing care ($\rho=0.25$; $p=0.014$) and overall satisfaction ($\rho=0.25$; $p=0.012$) was significantly positively associated with better general health status. Accordingly, patients' satisfaction with reception ($\rho=0.21$; $p=0.039$), waiting ($\rho=0.20$; $p=0.050$), medical care ($\rho=0.24$; $p=0.019$), nursing care ($\rho=0.25$; $p=0.013$) and overall satisfaction ($\rho=0.25$; $p=0.014$) were related positively to significantly better social functioning. Satisfaction with waiting was also significantly positively associated with better emotional functioning ($\rho=0.24$; $p=0.018$), while satisfaction with medical care was correlated with better cognitive functioning ($\rho=0.21$; $p=0.041$). Fatigue levels were significantly associated with patients' dissatisfaction with medical ($\rho=-0.23$; $p=0.021$) and nursing care ($\rho=-0.23$; $p=0.024$).

Conclusions. Cancer patients' satisfaction with the healthcare provided in the day clinic has a significant impact on their quality of life which is improved by prompt and effective medical and nursing interventions as well as by well organized health services.

Keywords: cancer care, quality of life, day clinic

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Background and aim

The development of cancer day care units is characterized by advantages. The clinical results, the safe administration of treatments [1], the new treatment regimens, of shorter duration or via other route of administration (oral or subcutaneous) [2], and the same-day clinical procedures [3] designate day clinic as the most appropriate choice, with benefits in terms of time, human and material resources [2] resulting in a better quality of life for patients.

Cancer patients' quality of life is known to be diminished as it has been associated with disorders of mental, physical [4,5], emotional, social nature [6], role functioning [7-9] and global status of health/QoL [10].

The lifestyle of oncology patients is restricted compared to the pre-diagnosis period [11], patients experiencing a dramatic change in their self-management and independence [12]. Deficient diet, sedentary lifestyle [13], awareness of disease progression in patients with advanced disease [14], metastasis and concomitant chronic diseases [7] are factors that contribute to low quality of life. In addition, the type of treatment (immunotherapy, chemotherapy and/or radiotherapy), side effects and symptoms have a negative impact on how patients cope with the changes in their life [12,15]. Fatigue, breathlessness, insomnia, pain [6] and loss of appetite are symptoms of higher intensity, while nausea and vomiting are less frequent [10,16,17].

Current and future changes have an impact on the patient's activities, experiences and her/his role functionality [12] causing depressing feelings [11,14]. However, changes over time differentiate the patients' needs due to the disease progression and the treatment received. Personality and the acceptance of the new health situation plays an important role in the recovery process [18].

Quality of life assessment of cancer patients identifies the discrepancy between the actual and the desired state of health, in a given period of time [16]. It focuses on health-related parameters (such as disease symptoms, treatment side effects) and broader factors, relating to well-being, social, economic and spiritual life [19].

Proactive symptom management and care planning reduce burden and improve the patient's experience of care [20]. Patients' satisfaction with healthcare is closely aligned with the extent to which the care received matches their preferences [21]. The patient's engagement in the treatment options and planning care contributes to better treatment adherence and disease results [22].

Timely provided care enhances satisfaction especially in patients with advanced disease since it improves relationships with health care providers addressing their emotional distress about the disease progression and personal concerns [23].

The mental and physical burden of the disease, the years of treatment and its side effects and therefore

the impact on the sociability are some of the reasons that influence cancer patients' dissatisfaction with care [24,25]. Advanced cancer stage and low self-reported health status are risk factors associated with patient satisfaction [26]. Conversely, patients with better self-perceived health status are more satisfied [27].

Generally, better symptom management, effective communication with medical and nursing staff, as well as patient's and family involvement in treatment options lead to better satisfaction outcomes and experiences [28,29]. Patient satisfaction on the above variables implies a better quality of life [29]. Cancer patient is empowered by her/his participation in therapeutic decision-making [30] and the relationship with the medical and nursing staff is improved. The treatment process is carried out normally [24] with direct and indirect positive consequences on the cancer care quality and his overall health [29], even during his survivorship [30,31].

The degree of the patients satisfaction and the ways to ameliorate it requires a comprehensive evaluation of patients' perception of care [32,33]. Transforming their views into measurable results [34] assists to comprehend their experiences and prioritize resource allocation, process redesign, and holistic care delivery needs. This procedure has positive effects on cancer patients' quality of life [16,35] and satisfaction with health care services [19].

The aim of the study was to investigate the satisfaction factors of ambulatory cancer patients that influence their quality of life.

Methods

Design

The main hypothesis of the research was to investigate the positive correlation between patients' quality of life receiving care in an oncology day setting and their satisfaction with health services. The study used simple random sampling to investigate the levels of the two dependent variables. The independent variables are defined as socio-demographic characteristics of the sample, clinical factors, physical, psychological and socio-economic impact of the disease, general health status of the patient, waiting time, communication, information, behavior, professional skills, competence of medical and nursing staff, empathy, coordination of services, access to care, ambient conditions.

Participants, questionnaire and data collection

The study included 101 oncology patients from the day clinic of a cancer hospital in Greece. Patients included in the study were mentally fit to participate and able to write and communicate in Greek. Cancer diagnosis and systematic therapy at the oncology day clinic were also inclusion criteria. Additionally, they may have undergone surgery or radiotherapy. Terminal stage and severe visual, hearing and mobility problems that made it difficult to complete the questionnaire were exclusion criteria.

The European Organization for Research and

Treatment for Cancer Quality of Life Questionnaire-EORTCQLQ-30 and a validated satisfaction questionnaire for ambulatory patients based on the SERVQUAL quality dimensions were used for the study. The questionnaires' distribution and the collection of sociodemographic and clinical data were carried out after the patient signed the consent. The questionnaires were administered by the principal researcher and completed through interviews with the patients.

Sociodemographic data

Patient demographics included gender, age, educational level, marital status, nationality, place of residence, number of children, current occupation, monthly family income, cohabitation with other persons, relationship with the caregiver, day of arrival and place of overnight stay in case the patient came from the countryside.

Additional items explored in the questionnaire were the mode of travel, the years/months treating in cancer day clinic, the number of treatments received each month, the time and type of health facility for laboratory blood tests, Covid-19 disease and vaccination, and the influence of the pandemic on the patient's life.

Clinical data

Clinical data of the disease and its treatment (diagnosis and stage of the disease, the time elapsed since the diagnosis of the disease, the number of sessions by type of treatment - chemotherapy, immunotherapy, radiotherapy, surgery), as well as comorbidities were extracted from the health record. In addition, the duration of treatment in cancer day clinic and the route of administration were recorded.

The European Organization for Research and Treatment for Cancer Quality of Life Questionnaire-EORTCQLQ-30 version 3.0

EORTCQLQ-30 is a questionnaire validated in Greek language which assesses cancer patients' health and quality of life for all types of cancer [36]. Its main feature is the ability to track changes in the health and quality of life of cancer patients [37]. The instrument is short, comprehensive [38] and shows satisfactory psychometric characteristics [37]. It consists of 30 questions classified into 3 domains (functioning, symptoms, health/quality of life): a) five sections on functioning with 16 questions for physical and role functioning, emotional, socio-economic and cognitive functioning b) a section on symptoms with 12 questions for fatigue, nausea/vomiting, pain, dyspnea, sleep disturbances, anorexia, constipation, diarrhea c) a section to assess general health and quality of life (two questions) [39].

The patient assesses her/his condition for the last week. The score on the first 28 items is graded on a 4-point scale from 1 (lower value) to 4 (higher value) [37]. Items for total health and total quality of life are scored on a 7-point scale, with the highest value corresponding to the best overall health and quality of life [37]. A higher

score on the functional subscales is also associated with a better level of health, while a higher score on the symptom subscales indicates their severity [37,40]. The Cronbach's alpha coefficient above the acceptable threshold (0.7) indicates acceptable reliability of the scale.

Satisfaction questionnaire for ambulatory cancer patients

The use of the selected questionnaire was designed and used for the needs of a survey to measure the satisfaction of outpatients with the health services provided, while it can also be used by inpatients. The version of the questionnaire is in Greek and was used in this study after obtaining permission for its use. The questionnaire has been tested for its psychometric properties and is characterized by a high level of validity and reliability, with a Cronbach's alpha coefficient of 0.95 [41]. The questionnaire is appropriate to examine operations and health care facilities, adapted to the Greek reality.

The tool follows the SERVQUAL model, including all dimensions of quality in health services [42]. The score is graded on a *Likert-type* measurement scale from total dissatisfaction (1) to total satisfaction (5). In the last two questions (distance time from the hospital and waiting time) the score is ranged on a scale from 1 (least time, up to 15 minutes) to 5 (maximum time, more than 2 hours). The dimensions relate to the services provided, the medical and nursing care divided into the following sections: a) reception (3 questions) b) ambient conditions and waiting time (5 questions) c) nursing care (8 questions) d) medical care (7 questions) e) general service (7 questions) g) specific elements (5 questions). More specifically, the questionnaire emphasizes characteristics such as behavior of medical, nursing, administrative staff (10 questions), quality and quantity of information (4 questions), skills/competencies of physicians and nurses (3 questions), responsiveness/readiness to care (4 questions), operational/organizational characteristics, service coordination (12 questions-procedures, time, environment), and overall satisfaction (2 questions).

Statistical analysis

Variables were first tested for normality using the Kolmogorov-Smirnov criterion. Log -transformations were conducted when the normality assumption was not satisfied. Quantitative variables were expressed as mean values (Standard Deviation) and as median (interquartile range), while categorical variables were expressed as absolute and relative frequencies. Spearman correlations coefficients (rho) were used to explore the association of two continuous variables. The coefficient is considered very high when it is above 0.9, high when it is 0.7-0.9, moderate when it is 0.5-0.7, low when it is 0.3-0.5, and very low when it is below 0.3 [43]. Multiple linear regression analysis, in a stepwise method (p for entry 0.05, p for removal 0.10), was used with dependent the QLQ-C30 and satisfaction subscales. The regression equation included

terms for patients' demographical and clinical information. In cases where QLQ-C30 subscales were used as dependent variables, satisfaction subscales were also included in the model as independent variables. Adjusted regression coefficients (β) with standard errors (SE) were computed from the results of the linear regression analyses. Internal consistency reliability was determined by the calculation of Cronbach's α coefficient. Scales with reliabilities equal to or greater than 0.70 were considered acceptable. All reported p values are two-tailed. Statistical significance was set at $p < 0.05$ and analyses were conducted using SPSS statistical software (version 26.0).

Ethical consideration

Confidentiality of information and anonymity of participants was respected. Participation in the study was voluntary and an informed consent form was requested from each participant. Permissions were obtained from all relevant institutions.

Results

Data from 101 patients (51.5% women), with mean age 65.8 years (SD=12.5 years old), were collected and analyzed. Their demographical and clinical data are presented in table I.

Table I. Sample characteristics.

		n (%)
Demographics	Gender	Men 49 (48.5)
		Women 52 (51.5)
	Age, mean (SD)	65.8 (12.5)
	Education	Primary school at most 37 (36.6)
		Middle/ High school 46 (45.5)
		University/ MSc 18 (17.8)
	Married	74 (73.3)
	Children	88 (87.1)
	Place of residence	Athens 85 (85)
		Out of Athens 15 (15)
Clinical information	Greek nationality	91 (91)
	Employed	20 (19.8)
	Monthly family income	0-500€ 19 (20.4)
		501-1000€ 39 (41.9)
		1001-1500€ 35 (37.6)
	Chronic somatic disease	94 (93.1)
	How long have you been visiting the hospital?	< 2 months 14 (13.9)
		2-5 months 37 (36.6)
		6-12 months 21 (20.8)
		1-2 years 14 (13.9)
		3-4 years 6 (5.9)
		More than 5 years 9 (8.9)
	Frequency of receiving treatment in hospital	Every week 31 (32.6)
		Every 2 weeks 19 (20)
		Every 20 days 25 (26.3)
		Once a month 15 (15.8)
		Every 3 months 2 (2.1)
		Every 6 months 2 (2.1)
		Depending on blood tests 1 (1.1)
	Months from diagnosis, median (IQR)	9 (3-28)
	Stage	I 8 (9.2)
		IIA 8 (9.2)
		IIB 2 (2.3)
		IIC 0 (0)
		IIIA 9 (10.3)
		IIIB 23 (26.4)
		IVA 21 (24.1)
		IVB 16 (18.4)
	Metastasis	46 (46)
	Treatment duration (minutes), median (IQR)	90 (60-210)
	Type of administration	Central Venous Catheter 0 (0)
		Port-a-Cath 6 (7.2)
		Intravenous - peripheral vein 73 (88)
		Subcutaneous administration 1 (1.2)
		Intravenous-peripheral vein & Subcutaneous administration 3 (3.6)
	Way of administration	Adjustable flow rate IV chemotherapy infusion pump 43 (53.8)
		Ambulatory Infusion Pump 1 (1.3)
		Non use of adjustable flow rate IV chemotherapy infusion pump 36 (45)
	Complication during administration	1 (1)

Table II. Patients' satisfaction with the services provided in the hospital.

	Very unsatisfied	Unsatisfied	Not satisfied nor unsatisfied	Satisfied	Very satisfied	Satisfied/ very satisfied (%)
	N (%)	N (%)	N (%)	N (%)	N (%)	
Reception						
The kind behavior of the staff who welcomed you	4 (4)	2 (2)	10 (10)	31 (31)	53 (53)	84.0
The information of the staff who welcomed you	2 (2)	4 (4.1)	8 (8.2)	43 (43.9)	41 (41.8)	85.7
The willingness to serve the staff who welcomed you	2 (2)	2 (2)	12 (12)	36 (36)	48 (48)	84.0
Waiting						
The care and cleanliness of the room	1 (1)	4 (4)	23 (23)	53 (53)	19 (19)	72.0
The spaciousness of the room	1 (1)	7 (7)	24 (24)	52 (52)	16 (16)	68.0
The ease of finding a seat to wait	11 (11)	6 (6)	10 (10)	46 (46)	27 (27)	73.0
Room temperature	3 (3)	5 (5)	15 (15)	51 (51)	26 (26)	77.0
The time you waited for examination	11 (11.2)	18 (18.4)	23 (23.5)	34 (34.7)	12 (12.2)	46.9
Nurse care						
The friendly behavior and courtesy of the nursing staff	2 (2)	0 (0)	6 (6.1)	25 (25.5)	65 (66.3)	91.8
The willingness of the nursing staff to answer your questions	1 (1)	1 (1)	4 (4.1)	29 (29.6)	63 (64.3)	93.9
The scientific and professional skill of the nursing staff	0 (0)	3 (3.1)	3 (3.1)	38 (39.2)	53 (54.6)	93.8
From your information from the nurses about the nursing operations	2 (2.1)	1 (1)	4 (4.2)	53 (55.2)	36 (37.5)	92.7
The ability and experience of the nursing staff	1 (1)	0 (0)	7 (7.3)	41 (42.7)	47 (49)	91.7
The emotional support of nurses about your problem	2 (2.2)	1 (1.1)	12 (13.5)	32 (36)	42 (47.2)	83.1
The time the nurses spent on your care	2 (2)	0 (0)	11 (11.2)	61 (62.2)	24 (24.5)	86.7
The speed with which the nursing staff performs the necessary nursing operations (venipunctures, medication administration, etc.)	0 (0)	1 (1)	10 (10.3)	41 (42.3)	45 (46.4)	88.7
Doctor care						
From being informed by the medical staff about your state of health and the results of your tests	0 (0)	2 (2)	5 (5.1)	19 (19.2)	73 (73.7)	92.9
The time the doctor spent on your examination	0 (0)	0 (0)	7 (7)	42 (42)	51 (51)	93.0
The instructions given to you by the doctor regarding the treatment/ medication	0 (0)	0 (0)	2 (2)	29 (29.3)	68 (68.7)	98.0
Your participation in the choice of treatment method	0 (0)	0 (0)	12 (12.4)	29 (29.9)	56 (57.7)	87.6
The friendly behavior and courtesy of the medical staff	0 (0)	1 (1)	3 (3)	23 (23)	73 (73)	96.0
The scientific and professional skill of the medical staff (diagnosis, treatment, etc.)	0 (0)	0 (0)	3 (3)	24 (24)	73 (73)	97.0
The willingness of the medical staff you are	0 (0)	0 (0)	5 (5)	27 (27)	68 (68)	95.0
General service						
The general behavior and communication with the secretariat staff	2 (2)	2 (2)	11 (11.2)	44 (44.9)	39 (39.8)	84.7
The ease of finding a parking space	23 (43.4)	13 (24.5)	8 (15.1)	7 (13.2)	2 (3.8)	17.0
The way your companions or relatives are treated The staff of the secretariat	2 (2.1)	3 (3.2)	17 (17.9)	44 (46.3)	29 (30.5)	76.8
The ease of access to the premises (signposts, lifts)	3 (3)	8 (8.1)	13 (13.1)	50 (50.5)	25 (25.3)	75.8
The speed of handling procedures The staff of the secretariat	4 (4.1)	2 (2)	9 (9.2)	48 (49)	35 (35.7)	84.7
The mechanism of service and cooperation regarding the processing of your needs	6 (6.1)	13 (13.1)	22 (22.2)	36 (36.4)	22 (22.2)	58.6
The discretion of the staff and respect for the personality of your patient during the examination (use of a screen)	0 (0)	1 (1)	8 (8.2)	51 (52)	38 (38.8)	90.8
Special elements						
The contribution of the hospital's health services to the improvement of health	0 (0)	0 (0)	10 (10.1)	49 (49.5)	40 (40.4)	89.9
Your overall visit to our hospital	2 (2.1)	2 (2.1)	9 (9.3)	51 (52.6)	33 (34)	86.6
Keeping quiet in the Hospital	1 (1.1)	5 (5.3)	18 (18.9)	46 (48.4)	25 (26.3)	74.7
	15 min at most	15-30 min	31 min-1 hour	1-2 hours	More than 2 hours	
How long did it take you to travel the distance to the hospital?	17 (17.5)	33 (34)	29 (29.9)	13 (13.4)	5 (5.2)	
At your visit how long did you wait to receive your treatment:	0 (0)	0 (0)	0 (0)	7 (7.2)	90 (92.8)	

The majority of patients were middle/ high school graduates (45.5%), Greeks (91%), married (73.3%), with children (87.1%), living in Athens (85%) and suffering from a chronic somatic disease (93.1%). Also, 32.6% of the patients visited every week the hospital for receiving their treatment and median time from diagnosis was 9 months (IQR: 3-28 months). Metastasis were recorded in 46% of the sample. Chemotherapy IV received 75.2% of patients and oral chemotherapy 4%. In 11.9% of patients some additional treatment (hormone therapy, calcium or targeted therapy) was done. Specifically, 5% were taking hormone therapy, 5.9% were taking calcium and 2% were taking targeted therapy. IV immunotherapy did 16.8% of the sample and per os 1%. Radiotherapy was done by 25.7% of the patients and 46.5% had undergone a surgery.

Information on patients' satisfaction for the services provided in the hospital is provided in table II. The percentages of satisfaction (i.e. being satisfied/ very satisfied) ranged from 17% to 98.0%. More specifically, only 17% were satisfied/ very satisfied from finding a parking spot for their car and 98% were satisfied/ very satisfied from the instructions given by the doctor regarding the treatment/medication.

Descriptive measures of QLQ-C30 and satisfaction scales and their reliability coefficients are provided in table

III. Satisfaction scores could range from 0% to 100%, with higher values indicating greater satisfaction. Similarly, QLQ-C30 subscale scores could range from 0% to 100%, with higher values indicating better quality of life and more symptoms. The Cronbach alpha coefficient was greater than 0.70 for all subscales, indicating acceptable reliability.

In table IV, Spearman correlation coefficients (ρ) between QLQ-C30 and satisfaction scales are provided. It was found that greater satisfaction regarding waiting ($\rho=0.20$; $p=0.041$), with medical care ($\rho=0.23$; $p=0.023$), nursing care ($\rho=0.25$; $p=0.014$) and greater overall satisfaction ($\rho=0.25$; $p=0.012$) were significantly associated with better general health status. Also, greater satisfaction with waiting was significantly associated with better emotional functioning ($\rho=0.24$; $p=0.018$) and greater satisfaction with medical care was associated with better cognitive functioning ($\rho=0.21$; $p=0.041$). Also, greater satisfaction with reception ($\rho=0.21$; $p=0.039$), waiting ($\rho=0.20$; $p=0.050$), medical care ($\rho=0.24$; $p=0.019$), nursing care ($\rho=0.25$; $p=0.013$) and greater overall satisfaction ($\rho=0.25$; $p=0.014$) were related to significantly better social functioning. Additionally, more fatigue symptoms were associated with significantly less satisfaction with medical ($\rho=-0.23$; $p=0.021$) and nursing care ($\rho=-0.23$; $p=0.024$).

Table III. Descriptive measures of QLQ-C30, satisfaction scales and their reliability coefficients.

Instrument	Subscale	Minimum	Maximum	Mean (SD)	Median (IQR)	Cronbach's α
QLQ-C30	Global health status	0.0	100.0	53.5 (22.3)	50 (33.3–66.7)	0.83
	Physical functioning	0.0	100.0	54.8 (27.3)	60 (33.3–73.3)	0.83
	Role functioning	0.0	100.0	44.5 (38.1)	33.3 (0–83.3)	0.89
	Emotional functioning	0.0	100.0	64.4 (27)	66.7 (41.7–83.3)	0.78
	Cognitive functioning	0.0	100.0	82.5 (22.5)	83.3 (66.7–100)	0.70
	Social functioning	0.0	100.0	56.1 (34.6)	50 (33.3–100)	0.70
	Fatigue	0.0	100.0	55.2 (30.7)	55.6 (33.3–77.8)	0.86
	Nausea and vomiting	0.0	100.0	8.8 (20.4)	0 (0–8.3)	0.75
	Pain	0.0	100.0	36.5 (35.2)	33.3 (0–66.7)	0.80
	Dyspnea	0.0	100.0	40.7 (35.6)	33.3 (0–66.7)	-
	Insomnia	0.0	100.0	42.9 (37.5)	33.3 (0–66.7)	-
	Appetite loss	0.0	100.0	28.4 (35.7)	0 (0–66.7)	-
	Constipation	0.0	100.0	21.7 (31.9)	0 (0–33.3)	-
	Diarrhea	0.0	100.0	16.0 (30.1)	0 (0–33.3)	-
	Financial difficulties	0.0	100.0	42.2 (37.7)	33.3 (0–66.7)	-
Satisfaction	Satisfaction with reception	0.0	100.0	80.9 (21.4)	83.3 (75–100)	0.90
	Satisfaction with waiting	25.0	100.0	67.1 (17.6)	70 (57.5–77.5)	0.73
	Satisfaction with nurse care	21.9	100.0	83.8 (14.7)	87.5 (75–93.8)	0.92
	Satisfaction with doctor care	53.6	100.0	90.1 (11.7)	96.4 (82.1–100)	0.90
	Satisfaction with general services	28.6	100.0	71.5 (16.9)	71.4 (60.7–83.3)	0.80
	Satisfaction with special elements	0.0	93.8	59.2 (13.6)	60 (50–69.4)	0.70
	Overall satisfaction	40.7	96.3	76.6 (12.3)	78.3 (70.3–84.5)	0.95

Note. Reliability indexes were not computed in subscales with only one item.

Table IV. Spearman correlation coefficients (rho) between QLQ-C30 and satisfaction scales.

	Satisfaction from reception	Satisfaction from waiting	Satisfaction from nurse care	Satisfaction from doctor care	Satisfaction from general services	Satisfaction from special elements	Overall satisfaction
Global health status	0.17	0.20*	0.25*	0.23*	0.08	0.15	0.25*
Physical functioning	0.16	0.01	0.14	0.09	-0.03	0.11	0.11
Role functioning	0.01	0.08	0.17	0.10	-0.06	0.09	0.07
Emotional functioning	-0.02	0.24*	0.05	0.11	0.07	0.14	0.11
Cognitive functioning	0.10	0.08	0.11	0.21*	0.03	0.08	0.10
Social functioning	0.21*	0.20*	0.25*	0.24*	0.07	0.12	0.25*
Fatigue	-0.14	-0.15	-0.23*	-0.23*	-0.01	-0.11	-0.18
Nausea and vomiting	-0.07	-0.11	-0.11	-0.06	-0.10	-0.10	-0.11
Pain	0.03	-0.06	0.05	-0.08	0.00	-0.12	-0.04
Dyspnea	-0.01	-0.09	-0.09	-0.03	0.00	0.01	-0.08
Insomnia	0.07	-0.09	0.00	-0.04	0.02	0.04	-0.04
Appetite loss	-0.01	-0.08	-0.20	-0.04	-0.04	0.01	-0.09
Constipation	-0.07	-0.14	-0.03	-0.11	-0.14	-0.07	-0.15
Diarrhea	0.01	0.01	-0.05	-0.03	0.19	0.08	0.02
Financial difficulties	0.02	0.07	0.12	0.12	0.08	0.05	0.09

*p<0.05

Greater satisfaction with medical care was significantly associated with better cognitive functioning ($\beta=0.422$; $p=0.031$) and with less fatigue symptoms ($\beta=-1.488$; $p=0.050$), while greater overall satisfaction was significantly associated with greater social functioning ($\beta=2.254$; $p=0.004$).

Discussion

The present study aimed to examine the factors of health care satisfaction that influence quality of life of 101 outpatient cancer patients in the day clinic of a Greek public oncology hospital.

Relationship between medical / nursing care and overall functioning

In the present study, we have found that greater satisfaction with medical care is associated with a significantly better overall health status/QoL of the patient and better cognitive and social functioning. Accordingly, greater satisfaction with nursing care is associated with significantly better overall health status/QoL and better social functioning. The above findings were confirmed by a study which shows that the more satisfied cancer patients are with medical and nursing care, the better their overall health status is [44]. Additionally, cognitive functioning correlates with satisfaction with both medical and nursing care [45] especially because of the communication skills and the relationship with the nursing staff [46]. In fact, patients with chronic neurological problems and terminal stage patients were found to have a quality of life improvement focused on their cognitive and organic functionality, as a result of increased satisfaction with medical and nursing care [47].

No correlation was found between comorbidities and satisfaction with nursing and medical care in the study. On the contrary, research literature argues that the general state of health/QoL of cancer patients with concomitant diseases is as low as their satisfaction with nursing care [48]. Other research documents that the existence of comorbidities is associated with great satisfaction with medical care in the sense that patients depend on their doctor, due to the severity of the disease [49].

Furthermore, good interpersonal communication with medical and nursing staff increases satisfaction with medical and nursing care, upgrading the overall health status of the oncology outpatient [50] and his overall satisfaction with care [20]. Indeed, academic references indicate that the general state of health and emotional functionality of cancer patients visiting day care unit augment, owing to the communicative interest and the growing satisfaction with medical and nursing care [20,45].

Considering social functionality, our study agrees with other findings that report that nurses' psychological support to breast cancer patients of day care unit [45] and end-stage breast cancer patients [47] induces high satisfaction with nursing care, thus ameliorating social functioning. Arraras et al. confirm the result, noticing that better social functioning is correlated with elevated cancer patients' satisfaction with day care unit [46].

Relationship between medical / nursing care and symptomatology

In our study, we have found that more fatigue is associated with less satisfaction with medical and nursing care. This finding is confirmed by a research reporting that fatigue is negatively associated with satisfaction with

medical and nursing care in oncology outpatients [46]. The result is explained by the fact that oncology patients of day clinic do not receive the expected therapeutic assistance from the nursing staff [51].

No association was revealed in the study between other symptoms than fatigue and medical and nursing care. However, research results verify that better quality of life correlates with less symptoms, better general health status/QoL and greater satisfaction with care [52]. The remission symptom is associated with a rise of cancer outpatients' satisfaction with care [53]. More specifically, managing symptoms such as fatigue, pain, neuropathy, oral cavity problems and emotional disturbances seem to evoke satisfaction with medical and nursing care [18,54]. Patel et al. prove that proper symptom management in day clinic patients with advanced solid tumor disease and hematological cancer [31], as well as giving pain control instructions to radiotherapy patients, maximizes their satisfaction with medical care [55]. Moreover, a significant relief of nausea and vomiting symptom was noticed after training cancer outpatients by nurses, which increased satisfaction with care [56].

Stress and depression had no correlation with medical and nursing care satisfaction in the study. Nevertheless, information from doctors show to alleviate psychological symptoms in women with breast cancer, upraising satisfaction with medical care [57,58].

Waiting conditions and time

Of particular interest is the statistically significant positive correlation between waiting satisfaction with better general health status/QoL, social and emotional functioning. This is consistent with findings of another study referring that promptly administered treatment is associated with better health outcomes and therefore better social functioning. At the same time, emotional functioning is improved, as feelings of insecurity and anxiety are reduced by the timely provision of care [59] and information to patients [54]. Similar studies indicate that waiting in the emergency department is highly stressful with an impact on patients' emotional, social functioning and general health status [60,61]. As a solution to time reduction, Agne et al. found that the establishment of special palliative care infrastructures and the reform of care procedures limited patients' waiting time for palliative care counselling. Subsequently, advantages were noticed such as patients' social and emotional improvement and effective cooperation with the nursing staff [62].

Relationship between total satisfaction and quality of life

Based on our findings, higher overall satisfaction was significantly positively associated with better overall health status. This finding is in accordance with another study which refers that deterioration of the general health status of oncology patients in day care unit is associated with reduced overall satisfaction. Obviously, the severity

of symptoms and the inability of patients and caregivers to cope with them, shapes a negative experience [63]. It is also supported that disease type, stage, chemotherapy side effects, symptom intensity and comorbidities burden general health status affecting overall satisfaction of cancer patients in day clinic [48,64]. Furthermore, a negative correlation is documented by a study between the symptoms of nausea, vomiting, fatigue and cancer patients' total satisfaction with day clinic services [46]. Correspondingly, researches demonstrate that comorbidities of day clinic oncology patients worsen their general health status causing overall dissatisfaction with care [52].

This hypothesis is consistent with a study inferring that health professionals' contribution in addressing symptoms and generally improving patient's health ameliorates cancer patients' overall satisfaction [65] and their quality of life [66]. Dönmez et al. (2022) identified that low overall satisfaction and quality of life is associated with unmet care needs [63]. That is derived from the fact that holistic care is inadequately provided by health personnel [67]. On the contrary, other studies have evidenced a low correlation between quality of life and overall satisfaction of oncology patients in day clinic [46,68]. This is caused by the fact that often the relief of organic symptoms is not considered as a predictor inpatient's satisfaction with care [58].

Greater overall satisfaction appeared to be significantly associated with better social functioning of the patient, in our study. In the same line, a research points out that overall satisfaction of oncology patients in day clinic is associated with better social functioning, but additionally with better physical, cognitive, and role functioning [51]. A study conducted by Hombrados-Mendieta et al. informs that healthcare provider's support on the patient's social rehabilitation increases overall patient satisfaction, amplifying both social and emotional functioning [69]. However, a research observed that greater overall satisfaction of day clinic patients with pancreatic cancer correlates with greater cognitive and emotional functioning [68], a result which is not revealed in this study.

No correlation was found between overall satisfaction with health services and emotional functioning. Obviously, the association between quality of life and emotional functioning with the overall satisfaction of the oncology patients in day care unit depends on their culture [57]. In Muslim countries, the total satisfaction of the oncology patient is high, as tolerance and low expectations of health services are related to the patient's religious beliefs and living standards [24,29].

In the present study, correlations between day clinic's patient's satisfaction and quality of life do not provide causative relationships but can be interpreted as feedback relationships. That is because quality of life, also, depends on other factors such as disease severity, treatment, and socioeconomic factors which may influence

positively or negatively cancer patient's satisfaction with the day care unit. Evidently, a thorough assessment of multidimensional factors should be evaluated so as to implement a personalized quality of care on day clinic cancer patients.

Limitations of this study is that the convenience method of sampling does not provide the ability of generalizing our results. The fact that the sample is originated from a single cancer day clinic narrows the ability to obtain an integrated view from different oncology ambulatory units. Therefore, of great interest would be the comparison of the findings between cancer patients of similar public day clinics with different healthcare management on aspects such as quality. That would give the opportunity to distinguish the best quality policy as well as the sectors needed to be improved in order to increase patient's satisfaction and his quality of life.

Conclusions

This analysis highlighted the importance of assessing patients' satisfaction from day care unit. Moreover, oncology patient's satisfaction with waiting time and quality of care provided by doctors and nurses in day clinic, as well as overall satisfaction, influence quality of life. Low quality of life caused by symptoms such as fatigue is perceived by patients as a result of ineffective medical and nursing care. Therefore, the results give feedback for service quality, offering the chance to redefine patients' needs and expectations. Consequently, reorientation of care planning aligning with patient's values and perceptions will lead to better health outcomes, patient's welfare and healthcare system reforming.

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