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ORIGINAL PAPER

Care dependency in radiation oncology patients and related factors – a descriptive study

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ABSTRACT

Introduction and aim. The incidence of cancer is increasing on a daily basis. One of the methods used for treatment is radiotherapy. Owing to interventions during the radiotherapy process, the patient may experience care dependency. In this study, the aim was to investigate care dependence and related factors in radiation oncology patients.

Material and methods. This was a descriptive and cross-sectional study. Data were collected between September 2020 and September 2021. In the collection of data, a sociodemographic information form and a Care Dependency Scale were used. The sample consisted of 52 people.

Results. Number of participants was 52, mean age was 60.25±11.715, mean care dependency score (initial) 66.19±18.966, mean care addiction score (final) 66.27±22.795.

Conclusion. The care dependency of patients hospitalized in the radiation oncology clinic is moderate. The care dependency of these patients decreased partially during their stay in the clinic. The patient's inability to walk, speak and the presence of a companion affected the patient's condition. By evaluating the care dependency levels of the patients, the awareness of the nurses about their patients can be increased. In addition, it may be appropriate to consider the care dependency levels of the patients for the nurse workforce planning to work in the oncology clinic.

Keywords. care, care dependency, nursing, radiation oncology

Introduction

Cancer is a leading cause of death worldwide, accounting for an estimated 9.6 million deaths, or one in six deaths in 2018.[1] More people in Turkey are diagnosed with, and die from cancer each year. In Turkey, the incidence of cancer is 223.1 per hundred thousand, and the number of newly diagnosed individuals is 180,288.[2] Cancer also causes dependence, workforce loss, care needs, and treatment costs. Many cancer patients depend on family and friends, lose their jobs, and require support for their fundamental care needs and treatment costs.[3]

The best way to beat cancer is not to have cancer. However, if one is diagnosed with cancer, one undergoes the best treatment (surgery, chemotherapy, or radiotherapy) according to clinical and radiological evaluations.[1] Radiotherapy is a cancer treatment that uses high doses of radiation to kill cancer cells.[4] However, it is pretty challenging for both patients and caregivers because patients have more care needs depending on the progression of the disease.[5]

Cancer patients have more care needs because they depend heavily on others. Care dependency is defined as a need for assistance in at least one care domain to make

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up for a self-care deficit. Care dependency is a critical component for patients, family members, and nurses.[6] The goal of care is to promote patient independence in self-care. Nurses are responsible for helping patients gain independence.[7] Studies have reported that patients have some needs and patients expect nurses to communicate accurately and provide effective care and treatment.[8-10] Oncology inpatients need more nursing care and support from caregivers.[5,11]

It is critical to identify and meet care needs. In order to identify care needs, we should evaluate patient independence in terms of "Activities of Daily Living," such as taking a bath, eating, getting dressed and undressed, getting in and out of bed, and deferring evacuation (continence).[12] Nursing is based on assistance and care, and therefore, nurses plan and deliver individualized care.[4] Nurses who evaluate care dependency are likely to provide patients with better care tailored to their needs.[13]

Nurses who implement the nursing process properly are more likely to provide high-quality care. The nursing process consists of five steps: (1) evaluating the patient, (2) identifying problems, (3) planning care, (4) providing care, and (5) assessing health outcomes.[14] Oncology patients expect nurses to have a sound grasp of key nursing concepts and communicate effectively. Therefore, nurses should know how to provide high-quality and individualized care, which depends on their number and awareness.[15-17] However, there is no research on care dependency in radiation oncology clinics.

Aim

In this study, it was aimed to investigate care dependence and related factors in radiation oncology patients.

Material and methods

Ethical approval

Ethics committee approval and application permission were obtained for the study (Bursa City Hospital Ethic Committee/13012450-514.10). Authorization was received via email from the author, who established the Turkish validity and reliability of the Care Dependency Scale. Patients were informed about the research purpose and procedure, and written consent was obtained from those who agreed to participate. Strobe rules and Helsinki Declaration were compiled with at all stages of the research.

Population and sample

This was a descriptive and cross-sectional study.

The study was conducted between September 1, 2020, and September 1, 2021, in the radiation oncology clinic of a Ministry of Health hospital. The sample size was determined based on the logistic regression conducted by Bilgin et al., who reported that hearing and walking problems had an odds ratio of 4.547 and 20.133, respectively.[18] The power analysis (G*power, v. 3.1) showed that a sample size of 48 would be large enough to detect significant differences (power =0.85, alpha margin of error=0.05, and effect size=0.85). The sample consisted of 52 oncology inpatients with a post hoc power of 0.88. The inclusion criteria were (1) being over 18 years of age, (2) being conscious (who can give accurate and meaningful answers to questions about himself/herself), and (3) being able to communicate (speaking, hearing, having no problem in verbal communication). Those who had difficulty expressing themselves were excluded. In the inclusion/exclusion criteria; detailing the type/location of the tumor and the type/location of radiotherapy of the participants.

Research questions

1. How care-dependent are radiation oncology inpatients?
2. Is there a difference in radiation oncology inpatients' care dependency levels between admission and discharge?
3. What factors affect radiation oncology inpatients' care dependency?

Data collection tools

Data were collected using a sociodemographic characteristics questionnaire (SCQ) and the Care Dependency Scale (CDS).

The questionnaire was based on a literature review.[6,7,12,13] It consisted of items on age, gender, marital status, education, economic status, living arrangement, using eyeglasses, prosthesis, a walking stick, hearing aids, and vision, hearing, speech, and walking problems.

The Care Dependency Scale (CDS) was developed by Dijkstra and revised by Dijkstra et al.[19,20] The scale was adapted to Turkish by Yönt et al. The instrument consists of 17 items scored on a five-point Likert-type scale ("1= completely care-dependent" to "5=almost independent"), with the total score ranging from 17 to 85. The instrument has no cut-off point or subscales. Higher scores indicate higher care dependency.[21] The original scale has a Cronbach's alpha of 0.96.[19,20] The Turkish version of the scale has a Cronbach's alpha of 0.91, which was 0.93 in the present study.[21]

Data collection

The researcher collected the data face-to-face through participant observation. Interviews were held in the patient's room. During the interview, the privacy of the patient was ensured, with the patient and the nurse alone in the room. Necessary protective measures have been taken. The person collecting the data was a clinical nurse. Data were collected between September 2020 and September 2021. She received informed consent from

all participants. Afterward, the participants filled out the SCQ and CDS. The research did not interfere with the routine treatment and follow-up. The patient received routine care in the clinic. Before discharge, the participants filled out the CDS again.

Statistical analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS, v. 22.0, IBM, Armonk, NY, USA). The Kolmogorov–Smirnov test was used for normality testing (n>30). The results showed that the data were nonnormally distributed (p<0.05). Mean, standard deviation, number, and percentage were used for descriptive data. The Mann-Whitney U test was used for data comparison between two groups. The Kruskal-Wallis H was used for data comparison between three or more independent groups. The Wilcoxon signed-rank test was used for pretest and posttest comparison within the groups. Spearman's rank correlation coefficient was used to determine the relationship between scale scores. A logistic regression analysis was performed to determine the factors affecting care dependency.

Results

Sociodemographic data of the participants; calculated as mean, standard deviation, number and percentage. Number of participants was 52, mean age was 60.25±11.715, mean care dependency score (initial) 66.19±18.966 (Median: 14.18), mean care addiction score (final) 66.27±22.795 (Median: 18.88). Most of the group was male (73.1%), married (85.5%), living with spouse/children (92.3%), not using glasses (82.7%), not using a cane (576.9), not using hearing aids (75.0%, no speech problem (58.3%), walking problem (61.5%), accompanying person (76.9%), diagnosed with lung cancer (59.6%). Half the participants had metastasis (50%).

The Mann-Whitney U and Kruskal Wallis tests were used to determine the effect of independent variables on participants' pretest and posttest CDS scores. According to the Kruskal Wallis test results, education, economic status, and cancer type did not affect participants' pretest and posttest CDS scores (p>0.05). According to the Mann-Whitney U test results, gender, age, marital status, living arrangement, wearing eyeglasses, using walking sticks and hearing aids, having chronic diseases, having metastasis, and radiotherapy duration had no effect on participants' pretest and posttest CDS scores (p>0.05). Those who had speech problems, walking problems, and had a companion had a higher level of care dependency (CDS score was lower) and the difference was significant (p<0.05) (Table 1).

The CDS score obtained when the participants came to the hospital was lower, but the difference was statistically insignificant (p>0.05) (Table 2).

Table 1. The distribution of CDS scores by variables (n=52)*

Variables		Mean	SD	Min- max			
Age		60.25	11.715	28–78			
CDS Pretest		66.19	18.966	19–85			
CDS Posttest		66.27	22.795	17–85			
		n	%	Pretest CDS		Posttest CDS	
				Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks
Gender	Female	14	26.9	28	392	27.14	380
	Male	38	73.1	25.95	986	26.26	998
				U=254		U=257	
				p=0.659		p=0.849	
Marital status	Married	45	86.5	27.74	1248.5	67.62±3.39	77
	Single	7	13.5	18.5	129.5	57.57±8.635	
				U=101.5		U=101.5	
				p=0.126		p=0.125	
Living arrangement	Alone	4	7.7	27.13	108.5	24.88	99.5
	With a spouse/child	48	92.3	26.45	1269.5	26.64	1278.5
				U=93.5		U=89.5	
				p=0.93		p=0.819	
Wearing eyeglasses	Yes	9	17.3	24.11	217	30.44	274
	No	43	82.7	27	1161	25.67	1104
				U=172		U=158	
				p=0.596		p=0.38	
Using a walking-stick	Yes	12	23.1	24.25	291	21.3	256.5
	No	40	76.9	27.18	1087	28.04	11211.5
				U=213		U=178.5	
				p=0.55		p=0.172	
Using hearing aids	Yes	13	25.0	24.54	293	23.35	303.5
	No	39	75.0	27.82	1085	27.55	1074.5
				U=202		U=212.5	
				p=0.268		p=0.376	
Speech problems	Yes	24	46.2	15.31	367.5	17.17	412
	No	28	53.8	36.09	1010.5	34.5	966
				U=67.5		U=112	
				p<0.001		p<0.001	
Walking problems	Yes	32	61.5	17.05	545.5	18.16	581
	No	20	38.5	41.63	832.5	39.85	797
				U=17.500		U=53	
				p<0.001		p<0.001	
A next of kin as a caregiver	Yes	40	76.9	24.21	968.5	24.23	969
	No	12	23.1	34.13	409.5	34.08	409
				U=148.500		U=149.000	
				p=0.043		p=0.043	
Diagnosis time (month)	1-12	45	86.5	28.32	1274.5	27.86	1253.5
	≥13	7	13.5	14.79	103.	17.79	124.5
				U=75.5		U=96.5	
				p=0.025		p=0.095	
Chronic diseases	Yes	31	59.6	25.76	798.5	25.29	784
	No	21	40.4	27.60	579.5	28.29	594
				U=302.50		U=288	
				p=0.662		p=0.475	
Metastasis	Yes	26	50.0	25.62	666	26.83	697.5
	No	26	50.0	27.38	712	26.17	680.5
				U=315		U=329.5	
				p=0.668		p=0.874	
				Mean Rank		Mean Rank	
Education (degree)	Primary school	34	65.4	27.18		25.96	
	Middle school	11	21.2	28.5		30.14	
	Bachelor's	7	13.5	20.07		23.43	
				KW=1.575		KW=1.008	
				p=0.455		p=0.604	
Economic status	Income<expense	7	13.5	17.86		18.64	
	Income= expense	24	46.2	30.4		29.52	
	Income> expense	21	40.4	24.93		25.67	
				KW=4.239		KW=3.03	
				p=0.12		p=0.22	
Diagnosis	Lung cancer	31	59.6	27.47		26.11	
	Cervical cancer	4	7.7	23.59		27.03	
	Others	17	32.7	24.25		21	
				KW=0.802		KW=0.553	
				p=0.67		p=0.759	

* Mann-Whitney U test *p<0.05

Table 2. Difference between pretest CDS and posttest DCS scores*

	Median	Min	Max	Test statistic	p
Pretest CDS	14.18	19	85	-0.421	0.673
Posttest CDS	18.88	17	85		

*Wilcoxon Signed Ranks Test

A Spearman's correlation coefficient was used to determine the relationship between age, and CDS scores. When the coefficient values are statistically significant, the magnitudes of the correlations are classified as follows: ≤0.25 very low; 0.26–0.49 low; 0.50–0.69 moderate; 0.7–0.89 high; 0.9–1 very high.[22,23] There is a positive and strong correlation between the Pretest CDS and posttest CDS. The correlation between age and both CDS scores is negative and weak ($p<0.05$) (Table 3).

Table 3. The correlation between pretest CDS, posttest CDS scores and age variables*

	Pretest CDS		Age	
	R	p	R	p
Posttest CDS	0.826	<0.0001	-0.324	0.018
Age	-0.245	<0.0001		

*Spearman's correlation coefficient

Discussion

In this study, the care dependency of individuals, whether there is a difference between the dependence levels on the first day of hospitalization and the day they are discharged, and the factors affecting care dependency are discussed in the light of the literature.

Being a cancer patient is a factor that increases care dependency.[24,25] Bilgin et al. reported that the CDS score of inpatients in the oncology clinic was 60.1±17.34, and 37.83±21.42 in another study.[18,26] In the study of Koyuncu, the CDS score was similar in patients who received chemotherapy treatment (68.98±15.89).[27] In general, it can be said that care dependence in patients in the radiation oncology clinic is at a moderate level. Radiation therapy shrinks some types of tumors.[28] Our participants had lower care dependency levels during discharge. It can be thought that radiotherapy treatment contributes to the regression of the disease.

There are many factors that affect care dependency in oncology patients. One of them is to be in the hospital and the other is to be in the terminal period.[25] Prolongation of hospitalized patients increases care dependency of patients.[25,26,29] Being older supports this situation.[25,30] In the study of Bilgin et al., it was stated that 60.2% of the group aged >65 years were care dependent.[18] Schuttengruber et al. reported that 72% of the participants were care dependent in their study in the geriatric age group.[25] This is supported by low education, living alone, and physical disabilities.[30] The difference in the study of Bilgin et al. and Schuttengruber et al. may be due to the different age groups. Similarly, in this study, age seems to negatively affect care dependency. It can be said that care dependency increases as age increases.

Another factor affecting care dependency is the presence of the individual's physical disability. According to the study of Güler et al., the mean BDI score of the physically disabled group is 56.53±14.46 and they need more care.[31] As the physical disability of the patient increases, the dependency on the caregiver increases.[32] 96.6% of individuals with speech problems and 91.5% of individuals with walking problems constitute the group with high care dependency.[18] Having a walking and speaking disability may be a factor that increases care dependency for the individual.

The care dependency of the patient with oncological diagnosis can decrease with the contribution of the treatment during the treatment process.[27] It has been stated that individuals who continue radiotherapy treatment need emotional support, physical care and education.[33] In this process, patients need the support of both health personnel and their relatives.[34] In patients diagnosed with cancer, the radiotherapy process increases their anxiety and individuals expect support from their environment.[34-36] During this period, patients can sometimes positively perceive being dependent on someone else. These individuals especially think that care has a healing effect on them.[37] It can be said that patients expect their companions to take care of them in this process.

Study limitations

The study had two limitations. First, it was conducted during the COVID-19 pandemic. Second, the sample included patients from only one hospital.

Recommendations

By evaluating the care dependency levels of the patients, the awareness of the nurses about their patients can be increased. In addition, it may be appropriate to consider the care dependency levels of the patients in the nurse workforce planning to work in the oncology clinic. New studies may be planned in which the relationship of patients' care addictions to the type of tumor and radiotherapy is evaluated.

Conclusion

The care dependency of patients hospitalized in the radiation oncology clinic is moderate. The care dependency of these patients decreased partially during their stay in the clinic. The patient's inability to walk, speak and the presence of a companion affect his or her condition.

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