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The Knowledge Level of Relatives of Cancer Patients About External Beam Radiotherapy

Kanser Hasta Yakınlarının Eksternal Radyoterapi Konusundaki Bilgileri

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ABSTRACT Objective: The aim of the study is to evaluate the knowledge level of relatives of cancer patients about external beam radiotherapy. **Material and Methods:** A cross sectional descriptive study was conducted in Radiotherapy Department of Erzurum Regional Training and Research Hospital. One hundred and thirteen patient relatives agreed to answer the questionnaire. A questionnaire containing demographic information and radiotherapy was prepared by the authors. Descriptive statistics and Chi-square test were used for statistical analysis and $p<0.05$ was considered to be statistically significant. **Results:** Of the participants, 73 (64.6%) were male and 40 (35.4%) were female (n=113; mean age: 50.46±13.97). No significant correlation was found between answers of the relatives and gender, marital status, employment status, educational level and income level ($p>0.05$). At the beginning of the survey, 33.6% of the participants said that they did not have any information about radiotherapy and 65% of the remaining participants stated that they received information about radiotherapy from the doctors. Only 20% of the relatives knew the definition of radiotherapy correctly. Nearly half of the participants (46.7%) stated that patients emits radiation after external radiotherapy. 45.3% of the participants did not hear x-ray before. Most of the participants considered radiotherapy very effective (74.7%). The ratio of the participants who think that the patient suffered during radiotherapy were 21.3%. There was a statistically significant difference between some answers and patient age and educational status ($p<0.05$). **Conclusion:** The results of this study show that general and technical knowledge of the patient relatives about external beam radiotherapy were limited.

Keywords: Radiotherapy; relatives' of cancer patients; knowledge

ÖZET Amaç: Çalışmanın amacı, kanser hastalarının yakınlarının eksternal radyoterapi konusundaki bilgilerini değerlendirmektir. **Gereç ve Yöntemler:** Çalışma Erzurum Bölge Eğitim ve Araştırma Hastanesi Radyoterapi Bölümü'nde kesitsel araştırma yöntemi kullanılarak yapılmıştır. Yüz on üç kanser hastası yakını çalışma sorularına cevap vermeyi kabul etmiştir. Demografik bilgiler ve radyoterapi ile ilgili sorular içeren anket, yazarlar tarafından hazırlanmıştır. İstatistiksel analiz için tanımlayıcı istatistikler ve Ki-kare testi kullanılmıştır. $p<0,05$ istatistiksel olarak anlamlı kabul edilmiştir. **Bulgular:** Araştırmaya katılanların 40 (%35,4)'ı kadın, 73 (%64,6)'ü erkekti (n=103; yaş ortalaması: 50,46±13,97). Katılımcıların sorulara verdikleri cevapları ile cinsiyet, medeni durum, çalışma durumu, hasta yakınlık düzeyi ve gelir düzeyleri arasında istatistiksel olarak anlamlı bir ilişki bulunamamıştır ($p>0,05$). Çalışma sorularının başlangıcında, 113 hasta yakınının %33,6'sı radyoterapi hakkında herhangi bir bilgiye sahip olmadığını söylemiştir. Kalan katılımcıların %65'i radyoterapi hakkında doktorlardan bilgi aldığını belirtmiştir. Radyoterapinin tanımını hasta yakınlarının sadece %20'si doğru olarak bilmiştir. Katılımcıların yaklaşık yarısı (%46,7) eksternal radyoterapi sonrası hastaların radyasyon yaydığını düşünmektedir. Hasta yakınlarının %45,3'ü daha önce x- ışınını hiç duymadığını belirtmiştir. Katılımcıların çoğu radyoterapiyi etkili bir tedavi yöntemi olarak görmektedir. (74,7%). Radyoterapi sırasında hastanın acı çektiğini düşünen katılımcı oranı %21,3 dir. Hasta yakınlarının verdikleri bazı cevaplar ile yaşları ve eğitim durumları arasında istatistiksel olarak anlamlı farklar olduğu tespit edilmiştir ($p<0,05$). **Sonuç:** Çalışmanın sonucunda hasta yakınlarının eksternal radyoterapi konusunda genel ve teknik bilgilerinin sınırlı olduğu görülmüştür.

Anahtar Kelimeler: Radyoterapi; kanser hastası yakınları; bilgi

Cancer disease is becoming widespread in recent years. It is estimated that there will be 188 million new cases of cancer in 2018 and 9.6 million people will die from various types of cancer. In both females and males, lung cancer is the most commonly diagnosed cancer (11.6%), closely followed by female breast cancer (11.6%), prostate cancer (7.1%), colorectal cancer (6.1%), stomach cancer (8.2%), and liver cancer (8.2%).[1] Surgery, radiotherapy (RT), chemotherapy, immunotherapy and targeted therapies are effective in the treatment of cancer.[2] Radiotherapy is a highly effective form of treatment of cancer patients.[3] Radiotherapy uses radiation to control or kill cancer cells.[4] Approximately 50% of all cancer patients will receive RT during their course of illness.[5,6] Irradiation can be used alone or in combination with surgical and systemic treatments (chemotherapy, hormonotherapy). Mainly, RT focuses on treating cancer in situ without removing organs and tissues, as with surgery, and without causing the systemic side effects of chemotherapy.[7] Ionizing radiation is used during RT. Since the ionized radiation is capable of ionizing, it accumulates its own energy into the cells of the tissues it passes and this accumulated energy can kill cancer cells or cause genetic changes.[6]

There has been an increase in new RT treatment methods with developing technology. The survival time of the patients is prolonged with new treatment methods. With development of external beam RT devices, patients take their radiation treatments in totally 30 to 40 fractions with 5 fractions per week.[8] Patients may have to stay in hospital during the long radiation treatment period. During this long treatment period, patients may need relatives to help. Relatives of the patients may accompany their patients in the RT unit and can stay in hospital room at night. However, care giving does not cease during hospitalization.[9] In the care and treatment of a cancer patient, the relatives of the patients have great obligations. All these factors increase the responsibility of the relatives of the patients against cancer patient.[10-12]

Cancer disease affects the patient himself, his family or even the close environment in many ways (emotional, physical, social, cognitive, spiritual and economic, etc.).[13,14] Depending on the individual characteristics of the cancer patient, the treatment method, efficacy and side effects should be explained to the patient relatives. If relatives of the cancer patients receive accurate information about RT, they may be more cooperative with the RT process. However, in this way, relatives of the patients may have the appropriate attitude and behavior towards their patients. In the literature search, it was observed that the patients and their relatives who have received RT have little information about RT and it is seen that they need to receive information and education.[15-18] This study was conducted to identify the knowledge of relatives of cancer patients about external beam RT (EB-RT).

MATERIAL AND METHODS

This study was conducted in Radiotherapy Department of Erzurum Regional Training and Research Hospital in Eastern Turkey between December 2016 and July 2017. Approximately 500 patients receive EB-RT treatment per year in this department. Prior to the RT, treatment acceptance form has been signed by the patients and their first degree relatives. Depending on the type and location of the disease, this form includes information about the type and duration of treatment, and possible side effects during and after treatment. A total of 180 participants were asked if they wanted to participate in the survey and 113 (62.7%) agreed to participate. The questionnaire was prepared by the authors. A pilot study was conducted on 10 relatives before deciding on the final survey. The questionnaire form consisted two parts; the first part included questions about the socio-demographic characteristics (gender, age, marital status, educational level, employment status, and income level) of the subjects and the second part included 8 questions about RT knowledge of the relatives. The questionnaires were applied with face-to-face interviews by the researcher in the first week of the treatment.

DATA ANALYSES

Statistical Package for Social Sciences for Windows 18.00 (SPSS Inc., Chicago, USA) was used for statistical analysis of data. Descriptive statistical analysis (numbers, percentages and mean values) was used to evaluate the data of relatives' of cancer patients. Chi-square test was used to determine the differences between the groups. A p-value of less than 0, 05 was considered as statistically significant.

ETHICAL STATEMENT

This study was approved by the Erzurum Regional Education and Research Hospital Ethics Committee of Clinical Trials (Erzurum BEAH KAEK 2015/15-131). Each participant volunteered to participate in the study. The study was conducted in accordance with the principles of the Helsinki Declaration.

RESULTS

Table 1 describes the basic demographic characteristics of the relatives of radiotherapy patients. The mean age of the participants was 50.46±13.97 (minimum: 19-maximum: 78) years. Of the participants, 73 (64.6%) were male and 40 (35.4%) were female. Most of them were married (78.8%). The majority of participants had low level of education (74.3%) and was largely unemployed (50.4%). The closeness to the patient was mostly composed of spouses and children (62.8%). The rate of people with high income levels was only 12.4%.

Frequency and percent results of the answers of relatives about RT are presented in Table 2. Of the participants, 33.6% did not have any information about RT and they did not answer the other

TABLE 1: Demographic characteristic of the relatives of cancer patient.

		Frequency (f)	Percentage (%)
Gender	Female	40	35.4
	Male	73	64.6
Age	18-30 years	9	8
	31-40 years	17	15
	41-50years	32	28.3
	51-60 years	24	21.2
	+60 years	31	27.4
Marital Status	Single	24	21.2
	Married	89	78.8
Educational Status	No schooling completed	32	28.3
	Primary School	52	46
	High School	25	22.1
	Bachelor Degree	4	3.5
	Master Degree	-	-
Employment Status	Full time employment	11	9.7
	Self-employment	24	21.2
	Unemployed	57	50.4
	Retired	21	18.6
Patients' Relatives (Closeness level)	Wife/husband	39	34.5
	Children	32	28.3
	Mother/Father	13	11.5
	Brother/Sister	18	15.9
	Other	11	9.7
Income Level	Low income level	53	46.9
	Middle income level	47	41.6
	High income level	13	11.5

TABLE 2: Answers to the questions about RT.

Questions	Frequency (f)	Percentage %
Do you think you have any information about external beamRT?		
Yes	75	66.4
No	38	33.6
How did you get the information about RT?		
From doctors	48	64
From mass media	10	13.3
From nurses	3	4
Other people	14	18.7
What is radiotherapy?		
Light therapy	47	62.7
A treatment method that destroys tumor cells	15	20
A form of physical therapy	13	11.3
Do you think patient emits radiation after external beam RT?		
Yes	35	46.7
No	40	53.3
Have you heard the X-ray before?		
Yes	41	54.7
No	34	45.3
What do you think of effectiveness of RT?		
Very effective	11	14.7
Effective	45	60
Ineffective	9	12
No idea	10	13.3
Do you know side effects of RT?		
Yes	38	50.7
No	37	49.3
Do you think your patient is suffering during treatment of external beam RT device?		
Yes	16	21.3
No	20	26.7
Undecided	39	52

questions of the study. The study continued with 75 subjects who were informed about RT. The majority of the relatives stated that they received the information about the RT from the doctors (65%). Of the 75 participants, 62.7% stated that RT was light therapy and 11. 3% stated that RT a was kind of physical therapy. The correct answer, which says that radiation is a treatment that destroys tumor cells, could only be given by 20% of the participants and 46.7% of the participants stated that patients emit radiation after RT. Of the participants, 45.3% stated that they have not heard anything about x-ray before. The ratio of the patient relatives who think that RT is very effective was 74.7%. The percentage of participants who stated that they knew the side effects of radiotherapy was 50.7%. Ratio of the patients who think that the patient suffered during RT was 26% and 54% of them did not have an opinion about the issue.

No significant correlation was found between the answers and gender, marital status, employment status, patient relatives' closeness level and income level ($p>0.05$). There was a statistically significant correlation between the participants who reported that they had knowledge about RT and their educational status ($p=0.014$). A total of 36 (92.3%) participants who had not completed any

school and graduates of primary school said they had no knowledge of EB-RT.

A significant statistical result was also obtained from the age of the participants who answered the question of 'Do you think patient radiates radiation after external beam RT?' (p=0.005). As the age of the participants increased, the number of "yes" respondents increased. Again in the same question, there was a statistically significant difference between the educational status and their answers (p=0.042). As the level of education decreased, the number of 'yes' answers increased.

Similarly, there was a significant difference between the answers to the question of "Have you heard the X-ray before?" and the level of education (p = 0.027) and 79.4% of the participants who responded "no" to the question had a low level of education.

DISCUSSION

In this study, it was aimed to reveal the knowledge of relatives of cancer patients about EB-RT. Cancer patients have a relatively longer survival, increased incidence, and a growing outpatient approach, leading to greater responsibility for their relatives.[12] During the long RT period, the relatives of the patients need continuous information. To be aware of what happens in the treatment process would relieve the relatives of the patient and will reflect this situation to the patients positively.[18,19]

In the present study ratio of the relatives who think they have information about EB- RT was 66,4 %. However, knowledge level of the the relatives was found to be limited. Similarly to the present study, it was also determined in other studies that the majority of the patients and their relatives say that they lack knowledge and need information about RT.[15,18,20,21] Information deficiencies can bring significant anxiety and fear in the RT process.[22-24]

In our study, the majority of the relatives (64%) reported that they mostly received information about RT from the doctors. Similar findings have been reported from a few studies.[18,20,24,25] As a further source of information for the participants, the mass media was expressed. But it is a low rate with a percentage of 13.3%. Similarly, Paul et al. reported that only 5% of the relatives of the patients provided information with the mass media.[25] In our study, ratio of the participants reporting that they received information from nurses was very low (4%). However, nurses can play a key role in this issue by giving information to the patients and they can reduce misconceptions.[20,23]

External beam radiotherapy causes biological effects on cancer cells during irradiation.[26] However, there is no radiation source in cancer patient tissue. But in our study the number of participants who think that the patient emits radiation after EB- RT was nearly half (46.7%).

Radiotherapy uses high-energy particles for treatment. Light therapy differs from EB-RT. In this study, the rate of patients who defined RT as light therapy was 62.7%. In addition, there were relatives who think that RT is a type of physical therapy (11.3%) and 45.3% of participants did not even heard of the x-ray.

Radiotherapy is a treatment that causes positive changes in both treatment and quality of life of cancer patients.[27] In our study, the ratio of relatives who considered RT as an effective treatment method was 74.7%. However Pauli et al. stated that only 29% of the relatives thought that cancer treatment is effective.[25]

Patients and their families, who have many problems due to side effects caused by RT and whose quality of life is negatively affected, may experience hopelessness in the control of side effects.[28] In our study, half of the relatives who reported that they had knowledge about RT stated that they knew the side effects of RT. During EB-RT treatment patients not see or feel anything. It is, however, difficult for patients to comprehend because radiation is not visible.[29] In the present study, some of the participants thought that the patients suffered during EB- RT.

Lack of knowledge about cancer treatments is a common problem in many societies.[30] Lack of knowledge on RT treatment is also common. Most of the studies focus on information needs about

RT.[15-21] In the literature review, no more studies have been found that evaluate the technical knowledge of the relatives of the patients about the EB-RT application.

In this study, it has been seen that there was a statistically significant difference between the level of education and the answers given to the questions about EB- RT ($p<0.05$). The results show that patients with higher education and younger age have more accurate information. Although there is an information about RT in the Treatment Admission Form in the clinic where the study is performed, it is considered that the information is not understood due to the low education level or advanced age of the relatives of the patients. It may be more appropriate to make verbal informations about EB-RT, according to the education levels and ages of the patients' relatives. In similar studies, it was stated that the radiotherapists should be directed to the patients and their relatives to give more information about RT before treatment.[31,32] It was emphasized in the study of Fleissig et al. that specialist nurses and consultants supported by doctors could be assigned to provide support and information.[33]

This study has several limitations. The sample of the study was limited to the Radiotherapy Department of Erzurum Regional Training and Research Hospital. The relatives of the patients had difficulty in responding to the questions because they accompanied their relatives for a long time. The number of questions used for the interview was small. So, this data can be a starting point for future inclusive studies.

CONCLUSION

The results of this study show that the relatives of the patients have knowledge deficiencies about EB-RT. It is thought that, relatives of the patients can develop their perspectives about RT by having general and technical knowledge about EB-RT. Radiotherapy personnel (radiation oncologists, nurses, radiotherapy technicians, counselors, etc.) can provide more information to the relatives of cancer patients in accordance with their age and educational level. In this way relatives of the patients can help cancer patients more professionally.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Sibel Karaca;* ***Design: Control/Supervision:*** *Sibel Karaca, Timur Koca;* ***Data Collection and/or Processing:*** *Sibel Karaca;* ***Analysis and/or Interpretation:*** *Sibel Karaca, Timur Koca;* ***Literature Review:*** *Sibel Karaca, Timur Koca;* ***Writing the Article:*** *Sibel Karaca, Timur Koca;* ***Critical Review:*** *Sibel Karaca, Timur Koca;* ***References and Fundings:*** *Sibel Karaca, Timur Koca;* ***Materials:*** *Sibel Karaca.*

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