

A Study to Evaluate Knowledge of Radiotherapy Side Effects Among Cancer Patients

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Abstract

Introduction: Ionizing radiation is used in radiotherapy, which is typically administered as part of cancer treatment to either kill or stop the development of cancerous cells. Radiation therapy is synergistic with chemotherapy and has been used before, during, and after chemotherapy in susceptible cancers. About 68% of patients received radiation therapy. Although radiation treatment (RT) is harmless in and of itself, there is a chance of iatrogenic adverse effects. A short-term pain flare-up may occur in the days after treatment because of edema compressing nerves in the treated location. Acute long-term side effects and cumulative negative effects can all occur during therapy, months, or years after treatment, depending on the dosage. **Materials and Methods:** A descriptive study approach was used to assess knowledge of radiation therapy side effects among cancer patients. 60 cancer patients on radiation therapy were selected by using convenience sampling during the year 2022 at Sri Guru Ram Das Rotary Cancer Hospital, Vallah, Amritsar. Data was collected by a validated structured questionnaire. **Results:** The majority of the study subjects belong to the age group of 41–50 years. According to gender distribution, 51.7% were male and 48.3% were female. Approximately 83.3% of the patients had benign tumors, whereas 16.7% had malignant tumors (cancer). The result showed that 60% cancer patients had average knowledge, and 40% have poor knowledge regarding the side effects of radiation therapy. **Discussion:** 40% of cancer patients have poor knowledge regarding the side effects of radiation therapy. We can enhance their knowledge score by placing awareness/knowledgeable boards in respective areas because this knowledge is essential for patient empowerment, enabling them to anticipate, recognize, and manage symptoms effectively.

Keywords: Knowledge, side effects, radiation therapy, cancer patients, descriptive study

INTRODUCTION

In radiotherapy, which is usually used to treat cancer, ionizing radiation is used to either kill or inhibit the growth of malignant cells. Radiation treatment (RT) has been utilized in tumors that are susceptible prior to, during, and following chemotherapy because it works in concert with it. Although RT is harmless, there is a chance of iatrogenic adverse effects [1]. In 2022, there were approximately 20

million new cases of cancer and 9.7 million cancer-related deaths. According to an Indian Council of Medical Research (ICMR) report, there were 1,461,427 new cancer cases in 2022, with a crude incidence rate of 11.4 per 1,00,000 individuals [2]. Available evidence indicates that external beam radiotherapy is required in 52% of cancer patients [3]. RT has several adverse consequences. It can be chronic or acute. Usually reversible, acute adverse effects disappear within the first three to six months after RT. Although they often appear months after the initiation of radiation therapy, chronic or delayed adverse effects are usually permanent [4].

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Acute reactions in the skin and mucosa include erythema, inflammation, and dry and wet desquamation, which manifest as mucositis, pruritus, discomfort, hypersensitivity, and mucosal ulcers [5]. Acute effects on the nervous system include headache, nausea, vomiting, exhaustion, lack of appetite, and certain neurological symptoms caused by the edema of the irradiated tumor and surrounding tissues. Cerebrovascular disease, exhaustion, memory loss and cognitive impairment, emotional and mood disorders, and secondary cancers are some of the long-term neurological symptoms [6]. Diarrhea, increased mucus output, and, in more chronic situations, rectal bleeding, increased stool frequency, fistula development, and discomfort are examples of acute gastrointestinal symptoms [7]. Erythema, ulceration, exudative alteration, and increased infection are examples of acute side effects in the genitalia. Vaginal stenosis and vaginismus are examples of late consequences [8].

Anxiety and sadness afflict approximately 20% and 10% of cancer patients, respectively, regardless of the stage of illness or the intention to get therapy [9]. According to reports, 80% of patients experience immediate adverse effects after radiation therapy, such as fatigue, and up to 30% of patients experience persistent exhaustion that lasts for months or years following treatment [10]. Taste alterations occur in more than 70% of patients [11]. Dysphasia is a commonly observed side effect in approximately 40% of patients [12]. Despite treatment advancements such as intensity-modulated radiotherapy, approximately 40% of patients still experience xerostomia, and approximately 36% experience moist desquamation [13]. Approximately 30–50% of patients experience radiation-induced diarrhea [14]. In up to 50% of patients, some side effects may occur due to radiation in the pelvic region, including diarrhea, bleeding from the rectum, and fecal incontinence [15]. Trismus is observed in approximately 65% and 25% of patients with head and neck cancer following radiotherapy at 6 and 12 months, respectively [16].

Both wealthy and developing nations continue to have low levels of public awareness. Inadequate knowledge might result in inadequate utilization of screening techniques, which could postpone the diagnosis. Therefore, to comprehend the lack of information regarding cancer and its treatment, it is necessary to analyze the knowledge of cancer patients. As healthcare providers, we can assist them in comprehending the significance of treatment, the adverse effects of radiation therapy, and how to properly manage these side effects.

MATERIALS AND METHODS

The present study used a descriptive research approach. Patients with cancer receiving radiotherapy at Sri Guru Ram Das Rotary Cancer Hospital, Sri Amritsar, were enrolled in the present study. This study was conducted after receiving approval from the Medical Superintendent/HOD of Sri Guru Ram Das Charitable Hospital, Sri Amritsar. The inclusion criteria included patients who provided consent for participation, were able to read, were more than 15 years of age, and were receiving radiotherapy treatment at the time of data collection. Patients undergoing palliative radiotherapy and those with psychological illnesses were excluded from the study. A convenience sampling technique was used. A self-structured, validated questionnaire was used for data collection. Sixty patients who fulfilled the inclusion criteria were interviewed during the study period. All the data collected from the case record forms were transferred to data processing software, Microsoft Excel, and analyzed using statistical software SPSS version 18 (Statistical Package for the Social Sciences). Quantitative data were expressed as means and standard deviations, and qualitative data as percentages and frequencies.

RESULTS

A total of 60 patients with cancer were interviewed and included in this study. The demographic variables are shown in Table 1.

Table 1 presents the frequency and percentage distribution of demographic variables. The maximum knowledge of the side effects of radiation therapy belonged to the age group of 41–50 years. In the case of gender, the majority of cancer patients were 51.7% male and 48.3% female.

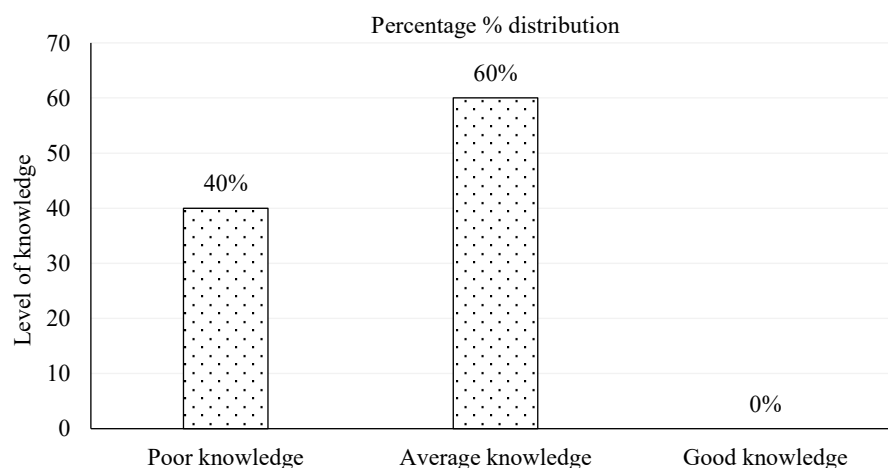
Table 1. Frequency and percentage distribution of demographic variables (N=60).

S.N.	Demographic variables	Frequency (f)	Percentage (%)
1	<i>Age in years</i>		
	a. 30–40 years	08	13.3
	b. 41–50 years	27	45.0
	c. 51–60 years	19	31.7
	d. > 60 years	06	10.0
2	<i>Gender</i>		
	a. Male	31	51.7
	b. Female	29	48.3
3	<i>Education</i>		
	a. Illiterate	35	58.3
	b. Primary education	18	30.0
	c. Secondary education	03	5.00
	d. Graduate and above	04	6.70
4	<i>Marital status</i>		
	a. Married	51	85.0
	b. Unmarried	01	1.70
	c. Widow	08	13.3
5	<i>Family income per month</i>		
	a. <20,000	32	53.4
	b. 20,000–40,000	23	38.3
	c. 40,000–60,000	05	8.3
	d. 60,000 and above	00	0.0
6	<i>Occupation</i>		
	a. Unemployed	27	45.0
	b. Self-employed	11	18.3
	c. Private employee	19	31.7
	d. Retired	3.0	5.0
7	<i>Type of cancer</i>		
	a. Benign tumor	50	83.3
	b. Malignant tumor (Cancer)	10	16.7
8	<i>Previous surgery done</i>		
	a. Yes	28	46.7
	b. No	32	53.3
9	<i>Dose of radiation therapy</i>		
	a. 30–40 Gray	24	56.6
	b. 41–50 Gray	22	36.7
	c. 51–60 Gray	04	6.7
10	<i>Type of radiation therapy</i>		
	a. Internal radiation therapy	45	75
	b. External radiation therapy	15	25
11	<i>Previous knowledge regarding side effects of radiotherapy</i>		

	a. Yes	36	60
	b. No	24	40
12	Personal history		
	a. Alcohol consumption	13	21.7
	b. Tobacco consumption	05	8.3
	c. Cigarette/smoking	19	31.7
	d. Drug abuse	23	38.3
13	Duration of radiation therapy		
	a. 5–10 days	5	8.3
	b. 11–15 days	8	13.3
	c. 16–20 days	27	45
	d. 21–25 days	20	33.4

Table 2. Level of knowledge regarding side effects of radiation therapy among cancer patients (N=60).

Level of knowledge	Frequency (f)	Percentage (%)	Score range	Median	Mean	SD
Poor knowledge	24	40	13–27	20	19.87	2.960
Average knowledge	36	60				
Good knowledge	00	00				

**Figure 1.** Level of knowledge regarding side effects of radiation therapy among cancer patients (N=60).

Regarding education status, the majority of patients, that is, 58.3%, had only primary education, and 30% had secondary education. With regards to occupation, the majority of patients, 45%, were unemployed, 18.3% were self-employed, and 31.7% were private employees. Approximately 83.3% of the cancer patients had benign tumor, and 16.7% had malignant tumor.

Table 2 and Figure 1 depict the level of knowledge regarding the side effects of radiation therapy among cancer patients. It shows that 36 patients had average knowledge, and 24 had poor knowledge of radiation therapy among cancer patients.

Table 3 depicts the association between the level of knowledge and demographic variables. All the sociodemographic variables, such as age, gender, family income, education, type of cancer, dose of radiation therapy, personal history, and duration of radiotherapy, were found to be non-significant with a p -value > 0.05 .

Table 3. Association between levels of knowledge regarding side effects of radiation therapy among cancer patients and their selected sociodemographic variables (N=60).

S.N.	Demographic variables	Level of knowledge		χ^2 value	df	p-value
		Average	Good			
1	Age in years			3.426	3	0.330 ^{NS}
	a. 30–40 years	03	05			
	b. 41–50 years	16	11			
	c. 51–60 years	14	05			
	d. > 60 years	03	03			
2	Gender			1.602	1	0.206 ^{NS}
	a. Male	21	10			
	b. Female	15	14			
3	Education			4.845	3	0.184 ^{NS}
	a. Illiterate	24	11			
	b. Primary education	07	11			
	c. Secondary education	02	01			
	d. Graduate and above	03	01			
4	Marital status			6.528	2	0.038*
	a. Married	34	17			
	b. Unmarried	00	01			
	c. Widow	02	06			
5	Family income per month			0.954	2	0.620 ^{NS}
	a. < 20,000	19	13			
	b. 20,000–40,000	13	10			
	c. 40,000–60,000	04	01			
6	Occupation			6.590	3	0.086 ^{NS}
	a. Unemployed	20	07			
	b. Self-employed	07	04			
	c. Private employee	07	12			
	d. Retired	02	01			
7	Type of cancer			2.001	1	0.157 ^{NS}
	a. Benign tumor	28	22			
	b. Malignant Tumor (Cancer)	08	02			
8	Previous surgery done			0.904	1	0.342 ^{NS}
	a. Yes	15	13			
	b. No	21	11			
9	Dose of radiation therapy			0.753	2	0.686 ^{NS}
	a. 30–40 Gy	22	12			
	b. 41–50 Gy	12	10			
	c. 51–60 Gy	02	02			
10	Type of radiation therapy			0.370	1	0.543 ^{NS}
	a. Internal radiation therapy	26	19			
	b. External radiation therapy	10	5			
11	Previous knowledge			3.345	1	0.067 ^{NS}
	a. Yes	25	11			
	b. No	11	13			

12	Personal history			6.577	3	0.087 ^{NS}
	a. Alcohol consumption	08	05			
	b. Tobacco consumption	02	03			
	c. Cigarette/smoking	08	11			
	d. Drug abuse	18	05			
13	Duration of radiation therapy			5.235	3	0.155 ^{NS}
	a. 5–10 days	04	01			
	b. 11–15 days	07	01			
	c. 16–20 days	16	11			
	d. 21–25 days	09	11			

*p-value < 0.05 level of significance; NS, non-significant

Discussion

The results revealed that 24 patients with cancer had poor knowledge, whereas 36 had average knowledge of the side effects of radiotherapy, which is similar to a study conducted by Murkute et al. Similar findings were also noted by Chetan Priya et al. that the majority of patients with oral cancer had inadequate knowledge (score less than 50%). This study included only one study setting, Sri Guru Ram Das Rotary Cancer Hospital, Sri Amritsar, on the knowledge of the side effects of radiotherapy among cancer patients [17, 18].

CONCLUSION

In this study, assessments regarding the side effects of radiotherapy, which are necessary for every cancer patient to cope with and manage, were compiled. The results showed that the majority of the patients had a poor level of knowledge regarding the above-cited subject. Nursing is a total care process that covers assessment, diagnosis, planning, implementation, and evaluation. Hence, nurses play a major role in educating cancer patients about the side effects of radiotherapy, managing these side effects, and improving their quality of life. However, this study was limited to a specific setup and population. Further studies with larger sample sizes and different populations are required to understand this knowledge and awareness better. The findings of this study can be applied to various areas of nursing education, practice, administration, and research.

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