



Fatigue among Cancer Patients Receiving Radiation Therapy in a Selected Hospital, Mangalore

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Abstract

Introduction Cancer is a group of diseases characterized by the uncontrolled proliferation of aberrant cells. Radiation therapy is one of the cancer treatments options. It uses high-energy waves to attack tumor cells, as well as adjacent cells. The majority of cancer patients report feeling tired at the start of treatment or after a few weeks of radiation therapy. It is one of the most disabling and ongoing side effects of anticancer therapy among cancer patients. As a result, cancer-related fatigue can be a troubling symptom for most people getting anticancer treatment which is commonly underdiagnosed by the health care team. This research study aids us in assessing fatigue in cancer patients who receive radiation therapy as a treatment.

Materials and Methods A quantitative descriptive research design was used in this study to collect data from 138 cancer patients who were undergoing radiation therapy both inpatient and outpatient departments of the selected Medical College Hospital in Mangaluru. The samples for this study were chosen using a purposive sampling technique. Data were collected by administering baseline proforma and Fatigue Assessment Scale.

Results Majority of the patients were experiencing substantial fatigue, that is, 105 (76.08%) of patients were experiencing fatigue, 8 (5.79%) were experiencing extreme fatigue. and only 25 (18.11%) were experiencing no fatigue. Mean percentage shows that the majority, that is, 57%, of the patients with cancer experience physical fatigue and 50.25% experience mental fatigue. There is no significant association found between fatigue and selected demographic variables except for marital status ($p = 0.015$). Hence H₀ is accepted at 0.05 level of significance, except for one selected variable.

Conclusion The present study concluded that fatigue is one of the common symptoms and adverse effects experienced among cancer patients who receive radiation therapy. Health care professionals should consider the impact of fatigue on the individual and effective fatigue management to be provided to improve the quality of life

Keywords

- ▶ fatigue
- ▶ Fatigue Assessment Scale (FAS): IDL care foundation
- ▶ radiation therapy
- ▶ cancer

Introduction

Cancer is a deadly disease caused by abnormal growth of the cells. Cancer treatment can cause various side effects in which cancer-related fatigue is most prevalent and may be experienced during and after radiotherapy.^{1,2} It is a common ailment that may affect all the age group, gender, stages of disease, and treatment regimens, as well as is distinct from ordinary fatigue. Cancer-related fatigue causes disruption in all aspects of quality of life and might be a risk factor of reduced survival.³

Fatigue can affect various parts of a human's life. It can be very troublesome and too tiring that can decrease day-to-day life activities, social relationships, and communication. Fatigue in healthy people can be relieved by rest and sleep, whereas it is not relieved by rest and sleep in cancer patients. Over all about 50 to 90% of cancer patients experience fatigue those undergoing radiotherapy.⁴

Fatigue can be of many causes. People report fatigue in many ways. They complain of tiredness, weakness, exhaustion, worn-out feeling, and slowed down in activities. No diagnostic measures can show or make an impression of having fatigue. It is best explained by a patient having fatigue to the health care provider, though sometimes it is difficult to express fatigue. But early detection of fatigue can reduce the severe forms of fatigue in patients. It is often overwhelming, excessive, and not responsive to rest, and it seriously affects quality of life. Fatigue is the most commonly reported side effect in patients who receive chemotherapy and radiation therapy.⁵

Materials and Methods

Sample calculation formula:

$$\text{Sample size} = \frac{Z^2 \times (p) \times (1 - p)}{c^2}$$

Where:

Z = Z-value (e.g., 1.96 for 95% confidence level).

p = percentage picking a choice, expressed as decimal (0.90 used for sample size needed).

c = confidence interval, expressed as decimal (e.g., 0.05).

$$\text{Sample size} = \frac{(1.96 \times 1.96) \times (0.90) \times (1 - 0.90)}{(0.05 \times 0.05)^2} = 138$$

Methods

An evaluative approach with descriptive design was adopted for study. The study was conducted on patients visiting the radiation oncology OPD, as well as inpatient department, at a selected hospital in Mangalore. A total of 138 samples who met the inclusion criteria, who are between 20 and 65 years of age, diagnosed with any type of malignancy, and receiving only radiation therapy as a treatment were selected by purposive sampling

technique. The data were collected by administering baseline proforma and the Fatigue Assessment Scale (FAS). Content validity was done by giving the tool to six experts from nursing and medical related fields. The final tool had baseline proforma with a total of nine questions and had two parts: one part to be filled in by patients (1–5) and the other by the investigators (6–9) and the FAS (standardized scale; permission is obtained) was used to assess fatigue among cancer patients receiving radiation therapy which had 10 questions. The tool had a 5-point scale with responses as never, sometimes, regularly, often, and always. The score for positive questions was 1, 2, 3, 4, and 5. While scoring negative questions, the scores were vice versa. The scoring of FAS included no fatigue (10–21), substantial fatigue (22–50), with two subgroups, fatigue (22–34) and extreme fatigue (35–50). After a formal permission from the Institutional Review Committee, Ethics Committee, and the Hospital Authority, the purpose of the study was explained to the cancer patients. Care was taken for protecting the patients from potential risks including their confidentiality, security, and identity. The pilot study was conducted on 10 patients with cancer receiving radiation therapy. The analysis of the pilot study reveals that the study is feasible. The main study was conducted and patients took around 5 to 10 minutes to fill the tool. The data collection was terminated by thanking the patients for their participation and cooperation.

Analysis

The data were analyzed using SPSS version 16.

► **Table 1** depicts that out of 138 participants, the majority (49.3%) was in the age group of 50 to 65 years and 44.9% were 35 to 49 years of age. More than half (50.7%) patients were females and 49% were males. Majority patients, 75.4%, were married, nearly half of the participants (47.8%) had primary education, and 44.2% had cancer of head and neck. Most of the participants (85.5%) were suffering from stage-II cancer, whereas majority (79%) had no comorbidity and 46.4% were exposed for radiation more than 5 weeks (>5 weeks)

► **Table 2** and ► **Fig. 1** Show that the majority of the patients were experiencing substantial fatigue, that is, 105 (76.08%) of patients were experiencing fatigue, 8 (5.79%) were experiencing extreme fatigue, and only 25 (18.11%) were experiencing no fatigue.

► **Table 3** deals with the area wise distribution of fatigue among cancer patients receiving radiation therapy. Mean percentage shows that the majority 57% of the patients with cancer experience physical fatigue and 50.25% with mental fatigue.

► **Table 4** shows that there was no association found between fatigue with selected demographic variables except for one variable, that is, marital status ($p = 0.015$). Therefore, the null hypothesis is accepted for all the variables except for marital status.

Table 1 Distribution of baseline variables by frequency and percentage

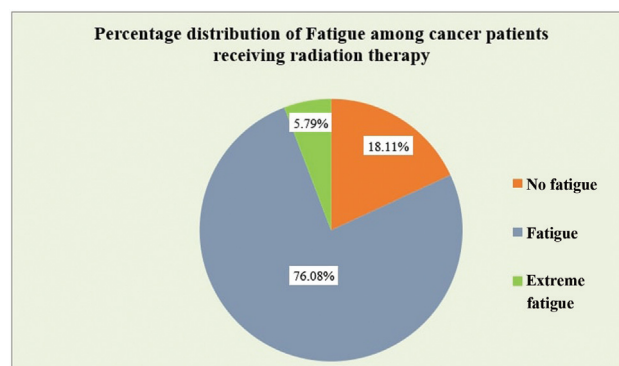
Sl. no.	Demographic proforma	f	%
<i>n</i> = 138			
1	Age (y)		
	20–34	8	5.8
	35–49	62	44.9
	50–65	68	49.3
2	Sex		
	Male	68	49.3
	Female	70	50.7
3	Marital status		
	Single/unmarried	34	24.6
	Married	104	75.4
4	Educational status		
	No formal education	26	18.8
	Primary	66	47.8
	Secondary	38	27.5
	Graduate and above	8	5.9
5	Occupation		
	Labor	34	24.6
	Skilled	12	8.7
	Homemaker	54	39.1
	Professional	6	4.3
	Farmer	32	23.3
6	Site of cancer		
	Reproductive system	50	36.2
	Gastrointestinal system	20	14.5
	Respiratory system	4	2.9
	Hematological	3	2.2
	Head and neck	61	44.2
7	Stage of cancer		
	Stage I	20	14.5
	Stage II	118	85.5
8	Comorbid illness		
	Yes	29	21.0
	No	109	79.0
9	Duration of exposure to radiation therapy (wk)		
	< 1	12	8.7
	2–3	23	16.7
	3–4	39	28.3
	> 5	64	46.3

Discussion

Fatigue is a multidimensional concept that generally involves the feeling of tiredness and weakness which cannot be

Table 2 Frequency and percentage distribution of fatigue among cancer patients receiving radiation therapy

Sl. no.	Level	Scoring	f	%
1	No fatigue	10–21	25	18.11
2	Substantial fatigue (22–50)			
	Fatigue	22–34	105	76.09
	Extreme fatigue	35–50	8	5.80

**Fig. 1** It shows the frequency and percentage distribution of fatigue among cancer patients receiving radiation therapy.

expressed clearly. It has been observed that 90% of the patients undergoing radiation therapy experience cancer-related fatigue.⁶ It is observed that it can induce early fatigue in about 80% of the patients. Here in the study, the majority of patients were experiencing fatigue receiving radiation therapy.

Assessing fatigue among cancer patients receiving radiation therapy would help the health care professionals to consider the impact of fatigue on the individual and effective fatigue management to improve the wellbeing of patients. Some important points of the study are mentioned below.

- Present study shows that of 138 participants, the majority (49.3%) was in the age group of 50 to 65 years and 44.9% were 35 to 49 years of age. More than half (50.7%) were females and 49% were males. Majority patients, 75.4%, were married, nearly half of the participants (47.8%) had primary education, and 44.2% had cancer of head and neck. A similar study conducted in tertiary care center in the Malwa region of Punjab in which the majority of the age group (57.1%) falling between 40 and 60 years of age, most of the sample patients (96.8%) were married and had their occupancy as the homemaker, that is, about 59.5%. It also shows that genitourinary cancer was the most common malignancy, accounting for 36.6% of all cases, followed by breast cancer (21.4%) and head and neck cancer (23.2 and 18.3%, respectively).⁷

Table 3 Area wise analysis of fatigue among cancer patients receiving radiation therapy using mean, standard deviation and mean percentage

Sl. no.	Area wise analysis	Mean	Standard deviation	Maximum	Minimum	Mean %
1	Physical fatigue	13.68	3.44	24.00	5.00	57
2	Mental fatigue	10.05	3.29	20.00	4.00	50.25

Table 4 Association between the fatigue among cancer patients receiving radiation therapy with selected baseline variables

Sl. no.	Baseline variables	Patients score on fatigue receiving radiation therapy			p-Value	
		No fatigue (10-21)	Fatigue (22-34)	Extreme fatigue (35-50)		
1	Age				1.170 (Fisher's exact)	0.879
	20-34	1	7	0		
	35-49	12	45	5		
	50-65	12	53	3		
2	Sex				0.933 (Fisher's exact)	0.639
	Male	14	51	3		
	Female	11	54	5		
3	Marital status				8.270	0.015*
	Single/unmarried	2	32	0		
	Married	23	73	8		
4	Educational status				6.398 (Fisher's exact)	0.320
	No formal education	2	21	3		
	Primary	11	52	3		
	Secondary	11	25	2		
	Graduate and above	1	7	0		
5	Occupation				8.174 (Fisher's exact)	0.345
	Labor	9	24	1		
	Skilled	0	12	0		
	Homemaker	10	41	3		
	Professional	0	6	0		
	Farmer	6	22	4		
6	Site of cancer				12.116 (Fisher's exact)	0.097
	Reproductive system	8	37	5		
	Gastrointestinal system	4	16	0		
	Respiratory system	0	3	1		
	Hematological disorder	1	1	1		
	Head and neck	12	48	1		
7	Stage of cancer				0.934 (Fisher's exact)	0.812
	Stage I	4	16	0		
	Stage II	21	89	8		
8	Comorbid illness				2.412	0.321
	Yes	8	20	1		

(Continued)

Table 4 (Continued)

Sl. no.	Baseline variables	Patients score on fatigue receiving radiation therapy			n = 138	p-Value
		No fatigue (10–21)	Fatigue (22–34)	Extreme fatigue (35–50)		
		No	17	85		
9	Duration of exposure to radiation therapy (wk)				10.494 (Fisher's exact)	0.070
	< 1	3	8	1		
	2–3	6	16	1		
	3–4	11	27	1		
	> 5	5	54	5		

- In this study, most of the participants (85.5%) were suffering from stage-II cancer, whereas the majority 79% had no comorbidity and 46.4% were exposed to radiation for more than 5 weeks (>5 weeks). In a similar study conducted in Tehran, Iran, showed that majority of patients, 67%, had stage-II breast cancer and 45% had completed their initial treatment.⁸
- Further findings show that the majority 76.08% of patients experience fatigue, approximately 5.79% of patients experience extreme fatigue, and only 18.11% reported with no fatigue due to radiation therapy. The results also depict that the two areas, that is, physical fatigue and mental fatigue. Majority 57% reported physical fatigue, whereas 50.25% reported mental fatigue. Current study findings were supported by the study conducted in Punjab, revealing that the majority (83.3%) of the sample experienced fatigue.⁷ Another study conducted by James P. Wilmot Cancer Centre (JPWCC) at the University of Rochester (Rochester, NY) shows that more than half (57%) of patients experienced fatigue at the start of treatment. The severity of fatigue started to increase as the treatment went on, that is., from 76% by third week and 78% by fifth week.⁶ Study findings also consistent with a prospective study that was conducted on magnitude of fatigue in cancer patients receiving radiotherapy and its short-term effect on quality of life shows that majority 57.8% experienced mild fatigue, 26.7% experienced moderate fatigue, and 3.3% experienced severe fatigue. Study concludes that radiotherapy causes transient increase in the fatigue.⁹
- Current study finding shows that there is no association found between the level of fatigue and selected baseline variable, except for marital status. Therefore, the null hypothesis is accepted for the marital status, whereas in other variables null hypothesis was rejected

Conclusion

Based on the findings, researchers concluded that fatigue is one of the common symptoms and adverse effects experi-

enced among the cancer patients who receive radiation therapy. It causes physical and mental exhaustion and affects the day-to-day activities of individuals. Health care professionals should consider the impact of fatigue on the individual and effective fatigue management to improve the well-being of patients.

Funding

It is a self-funded research study.

Conflict of Interest

There were no such conflicts and biases during the study. Denitha T. reported support for the present manuscript details as follows: Fatigue Assessment Scale (FAS): IDL care foundation (www.idlcare.nl), and the FAS.

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