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Breast cancer patient's knowledge about radiotherapy and physical side effects in Awat radiation oncology center

Azzadin Kamal Mahmood, Ali Taher Mohammedameen, Yousif Bakr Omar

Adult Nursing Department, College of Nursing, Hawler Medical University, Iraq

ABSTRACT

Background: Radiation therapy remains the mainstay of cancer treatment and is used in about 50% of patients. The accuracy of the dose of radiation is rapidly improving. The aim is to explore the knowledge of breast cancer patients regarding radiotherapy and its physical side effects within the context.

Methods: A descriptive (Retrospective) study was conducted with 90 patients who received radiotherapy for breast cancer from December 2022 to April 2023 at Awat Radiation Oncology Center in Erbil City Iraq. Participants were asked about medical data about breast cancer, patients' knowledge about radiotherapy, and physical side effects after receiving radiotherapy.

Results: A total of 90 patients were aged between 31 years to 60 years old (76.7%), the majority of the breast cancer were at stage II (58.9%), most patients received 6-11 cycles of chemotherapy (72.2%), most of the patients (78.9%) had the disease less than a year, The radiation dose received by patients varied, with most patients (76.7%) receiving a dose of 4000, The majority of patients (93.3%) received 11-20 sessions, The continuity of radiation was predominantly continuous (98.9%), most patients (78.9%) receiving 15-10 fractions, Almost all patients undergoing mastectomy (partial 35.65% and complete 60%), and (76.7%) did not use bolus in radiotherapy. (66.67%) of total study participants had fair knowledge, regarding physical side effects (72.2%) having pain in the breast or chest areas was reported, At the end of the study, there was a statistically significant association between level of knowledge with location of living (p-value is 0.025), level of education (p-value is <0.001), and mastectomy (p-value is <0.001), While statistically non-significant association with other variables of the study.

Conclusions: Most of the patients had a fair knowledge of radiotherapy, and most of the breast cancer patients experience multiple symptoms associated with pain in the breast or chest area after radiotherapy. The majority of patients wanted to increase their knowledge of radiation and reduce the physical side effects after receiving radiotherapy.

Keywords: breast cancer, chemotherapy, radiotherapy, side effects, patient knowledge

Address for correspondence:

Azzadin Kamal Mahmood,

Lecturer, Adult Nursing Department, College of Nursing, Hawler Medical University, Iraq

E-mail: ezaddinbotany@yahoo.com

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INTRODUCTION

Breast cancer is the most common malignant tumor and is emerging as a significant threat to the overall health of the global population, especially women [1]. Breast cancer is a complex and potentially fatal neoplastic condition that arises from the epithelial cells of the breast. It is distinguished by the unregulated proliferation of anomalous cellular entities capable of infiltrating the adjacent breast tissue and, in certain instances, disseminating to remote organs [2].

On a global scale, the most frequently diagnosed cancer type is breast cancer [3]. According to the worldwide statistical report on breast cancer for 2020, the number of new cases is 2.2 million and the number of deaths is 685000, establishing breast cancer as the foremost malignancy globally [3]. Breast cancer in Iraq has the highest incidence rate (19.7%) and the second-highest mortality rate (11.64%) among all types of cancer. Recently stated that the average annual percent change in Iraq from 2000 to 2019 by +7.943% [4, 5].

Radiotherapy is a standard of care for most breast cancer patients. It is especially important for patients who have breast-conserving surgery (97.3%) than after mastectomy (26.1%), as it helps to reduce the risk of the cancer coming back [6]. The available data shows that radiation therapy has a significant impact on survival, disease control, and treatment-related mortality in breast cancer patients [7]. Studies demonstrated that physical side effects are a greater increase in fatigue, skin irritation, and moist desquamation [7, 8].

Patients face difficulties in correctly and accurately comprehending medical information in the absence of guidance from healthcare professionals. Despite patients having the opportunity to exchange their experiences related to cancer via conventional media, social media platforms, and supportive community programs [9]. The healthcare provider needs to be open and supportive of their patients' desire to learn more about their health and their treatment options [10]. Searching for health information can be both helpful and harmful, which leads to increased anxiety and then affects patients' understanding of treatment, eventually negatively affecting decision-making and health-related patient relationships treatment continuity may be declined [11-13]. In a notable trend, less than half of breast cancer patients, specifically 45%, sought information from sources other than healthcare providers. Strikingly, a substantial 79% of these patients reported

having no to minimal knowledge about radiotherapy [14].

To achieve patient-centered care and navigate the treatment decision-making process, healthcare providers should ensure they are properly informed. We need to use proven methods to help patients feel less anxious and more prepared before they receive treatment. And having a limited timeframe to uncover and respond to patient concerns, typically during the initial consultation. A study indicates that patients might not express their treatment-related concerns unless specifically questioned [15]. Hence, understanding the extent of breast cancer patients' knowledge about radiotherapy and its associated physical side effects is essential for providing holistic cancer care and may help the patient address their feelings and reduce their concerns about radiotherapy as a treatment option eventually leading to adherence to it. This study was conducted to explore the knowledge of breast cancer patients regarding radiotherapy and its physical side effects within the context of Awat Radiation Oncology Center.

PATIENTS AND METHODS

A descriptive (Retrospective) study design was conducted with 90 patients at Awat Radiation Oncology Center from December 2022 to April 2023. The selection of study participants was carried out by using a probability convenience sampling technique to collect the patients attended at the time of data collection. This study enrolled adult female patients (aged 18 years and older) who have been diagnosed with either stage I, stage II, or stage III breast cancer and received radiotherapy as a method of treatment. But excluded either male or female patients, who received radiotherapy for other types of cancer and advanced stage of cancer.

Data was collected via direct interviews by using a specialized questionnaire designed for this purpose.

The questionnaire comprises four parts:

- Part I socio-demographic data (age, marital status, residence, occupation, and level of education, religion, and nationality).
- Part II Medical data about breast cancer.
- Part III patients' knowledge about radiotherapy (no means the patient doesn't know about radiotherapy which got a 0 score and yes means the patient knows about radiotherapy which got a 1 score). For assessing the level of knowledge by the sum of total answers (minimum was equal to zero and maximum was equal to 10). For poor knowledge, the participant got from 0 to 4, 5 to 7 for fair, and 8 to 10 for good knowledge.
- Part IV Patients report physical side effects after receiving radiotherapy (yes means the patient experienced these physical side effects). Ethical approval was obtained from the Ethics Committee at the College of Nursing, Hawler Medical University. Verbal consent was acquired from each patient before collecting data from them. The data will be analyzed by using the Statistical Package for Social Sciences (SPSS, Version 23).

RESULT

According to the results, regarding socio-demographic data of the patients which is shown in the following table 1, the majority of patients were aged between 31 years to 60 years old (76.7%), married (87.8%), lived in the cities (67.8%), and housewife (74.4%). Regarding their educational background, approximately one-third of the study sample (31.1%) is illiterate. The study samples also reveal that most of the participants are Muslim (95.6%) and Kurdish (80%) patients.

Tab. 1. Distribution of the socio-demographic characteristics of the study samples (n=90)

Variables	Subgroups	F	%
Age /in years old	18 year-30 year	1	1.1
	31 year-60 year	69	76.7
	61 year-90 year	20	22.2
Marital status	Single	10	11.1
	Married	79	87.8
	Widow	1	1.1
Residency	Urban	61	67.8
	Rural	29	32.2
Occupation	Housewife	67	74.4
	Worker	4	4.4
	Employee	19	21.2
Level of education	Illiterate	28	31.1
	Primary school	19	21.1
	Secondary school	17	18.9
	University	26	28.9
Religion	Muslim	86	95.6
	Christian	3	3.3
	Other	1	1.1

Nationality	Kurdish	72	80
	Arabic	10	11.1
	Other	8	8.9

Note: F=frequency, %=Percentage

Table 2, shows the medical data related to breast cancer patients. The data shows that the majority of the breast cancer sample patients at Awat Radiation Center were at stage II (58.9%), followed by stage III (33.3%) and stage I (7.8%). In terms of chemotherapy, most patients received 6 cycles-11 cycles (72.2%), while only two patients haven't received any cycles. More than three-fourths of the patients (78.9%) had the disease less than a year, with only slightly above one-fifth of patients (21.1%) having the disease more than a year. The radiation dose received by patients varied, with most patients (76.7%) receiving a dose of 4000, and only about one-third of study samples receiving other doses such as 2000-2600 and 5000-5250. The majority of patients (93.3%) received 11-20 sessions, followed by 1-10 sessions (4.4%) and 21-30 sessions (2.2%). The continuity of radiation was predominantly continuous (98.9%), with only one patient receiving intermittent radiation. The fraction of radiation received varied as well, with most patients (78.9%) receiving 15-10 fractions, while a few patients received 16-21 fractions or 22-30 fractions. Almost all patients undergoing mastectomy (partial 35.65% and complete 60%). Only 15.6% of patients had lumpectomy. Moreover, 37.8% of patients had, while 62.2% had no family history of breast cancer. Finally, only 23.3% of patients used bolus, while more than three-fourths (76.7%) did not use bolus in radiotherapy.

Tab. 2. Medical data of the study samples (n=90)

Variables	Subgroups	F	%
Stage of Cancer	Stage I	7	7.8
	Stage II	53	58.9
	Stage III	30	33.3
Received of Chemotherapy	No	2	2.2
	1-5 Cycles	6	6.7
	6-11 Cycles	65	72.2
	12-17 Cycles	15	16.7
	18-22 Cycles	2	2.2
Duration of Breast Cancer	<1 year	71	78.9
	≥ 1 year	19	21.1
Radiation Dose	2000-2600	3	3.3
	4000	69	76.7
	5000-5250	18	20
Continuity on Radiation	Continuous	89	98.9
	Intermittent	1	1.1
Number of Sessions	01-10	4	4.4
	11-20	84	93.4
	21-30	2	2.2
Fraction	01-09	2	2.2
	10-15	71	78.9
	16-21	15	16.7
	22-30	2	2.2
Mastectomy	No	4	4.4
	Partial	32	35.6
	Complete	54	60
Lumpectomy	No	76	84.4
	Yes	14	15.6
Family history of Breast Cancer	No	56	62.2
	Yes	34	37.8
Use of Bolus	No	69	76.7
	Yes	21	23.3

Note: F=frequency, %=Percentage

Table 3, shows the patients level of knowledge regarding radiotherapy. More than two-thirds (66.67%) of total study participants had fair knowledge, about one-fourth (24.44%) was poor, while a small minority (8.89%) had good knowledge about radiotherapy.

Tab. 3. Patients' knowledge of radiotherapy (n=90)

Level of Knowledge	F	%
Poor knowledge	22	24.44
Fair knowledge	60	66.67
Good knowledge	8	8.89
Total	90	100

Note: F=frequency, %=Percentage

Table 4, asks the commonest physical side effects questions that may appear after radiotherapy. The data shows that nausea and vomiting were reported by 22.2% of the respondents, whereas 77.8% did not experience it. Skin reactions, such as redness, dryness or itching were reported by 41.1% of the respondents, while 58.9% did not experience it. Swelling of the breast, which can cause discomfort, was reported by more than one-third (38.9%) of the respondents, whereas about two-thirds (61.1%) did not experience it. For most of the respondents (72.2%) having pain in the breast or chest areas was reported, making it the most frequently reported side effect among all of them. In general, the most common side effect of chemotherapy is her loss, which was reported by one-third (32.2%) of the respondents. Sore throat, another possible side effect, was reported by around half (48.9%) of the respondents. Lymphedema, which is swelling in the arm, was reported by only 16.7% of the respondents. Changes in breast size and shape were reported by a quarter (24.4%) of the respondents. Extreme tiredness, which was the second most common side effect of cancer treatments, was reported by 68.9% of the respondents. Changes in breast skin color were reported by 41.1% of the respondents. More than half (52.2%) of the patients had tenderness over the ribs.

Tab. 4. Patients report physical side effects after receiving radiotherapy (n=90)

Variables	No		Yes	
	F	%	F	%
Nausea and vomiting	70	77.8	20	22.2
Skin reaction after radiotherapy	53	58.9	37	41.1
Swelling of breast after radiotherapy	55	61.1	35	38.9
Pain on the breast or chest area after radiotherapy	25	27.8	65	72.2
Hair loss after radiotherapy	61	67.8	29	32.2
Sore throat after radiotherapy	46	51.1	44	48.9
Lymphoedema after radiotherapy	75	83.3	15	16.7
Change in breast size and shape after radiotherapy	68	75.6	22	24.4
Extreme tiredness	28	31.1	62	68.9
Change in breast color after radiotherapy	53	58.9	37	41.1
Tenderness over the ribs	43	47.8	47	52.2

Note: F=frequency, %=Percentage

Table 5 shows the statistically significant association between the level of knowledge with the location of living (p-value is 0.025), level of education (p-value is <0.001), and mastectomy (p-value is <0.001), While statistically non-significant association with age group, occupation, stage of cancer, who have family history of breast cancer, duration of having breast cancer, radiation, dose, fraction, use of bolus, and numbers of reported physical side effects after receiving radiotherapy.

Tab. 5. Association between socio-demographical and medical data variables with the level of knowledge regarding radiotherapy

		Knowledge Level						p-Value
		Poor		Fair Knowledge		Good		
		F	%	F	%	F	%	
Age	10 year-30 year	1	1.1	0	0	0	0	0.837
	31 year-60 year	14	15.6	50	55.6	5	5.6	
	61 year-90 year	7	7.8	10	11.1	3	3.3	
Residence	Rural	3	3.3	25	27.8	1	1.1	0.025
	Urban	19	21.1	35	38.9	7	7.8	
Occupation	House Wife	19	21.1	45	50	3	3.3	0.095
	Worker	1	1.1	2	2.2	1	1.1	
	Employee	2	2.2	13	14.4	4	4.4	
	Student	0	0	0	0	0	0	

Level of Education	Illiterate	11	12.2	17	18.9	0	0	<0.001
	Primary	7	7.8	11	12.2	1	1.1	
	Secondary	1	1.1	13	14.4	3	3.3	
	University	3	3.3	19	21.1	4	4.4	
Stage of Cancer	Stage I	3	3.3	4	4.4	0	0	0.527
	Stage II	10	11.1	36	40	7	7.8	
	Stage III	9	10	20	22.2	1	1.1	
Mastectomy	No	3	3.3	1	1.1	0	0	<0.001
	Partial	15	16.7	15	16.7	2	2.2	
	Complete	4	4.4	44	48.9	6	6.7	
Lumpectomy	No	14	15.6	54	60	8	8.9	0.006
	Yes	8	8.9	6	6.7	0	0	
Family history of Breast Cancer	No	15	16.7	39	43.3	2	2.2	0.073
	Yes	7	7.8	21	23.3	6	6.7	
Duration of Breast Cancer	11 month-11month	16	17.8	48	53.3	7	7.8	0.349
	1 Years-5 Years	6	6.7	12	13.3	1	1.1	
Radiation Dose	2000-2600	2	2.2	1	1.1	0	0	0.587
	4000	12	13.3	52	57.8	5	5.6	
	5000-5250	8	8.9	7	7.8	3	3.3	
Dose	20	1	1.1	1	1.1	0	0	0.328
	40	13	14.4	53	58.9	5	5.6	
	50	8	8.9	6	6.7	3	3.3	
Fraction	1-15	1	1.1	1	1.1	0	0	0.934
	10-15	15	16.7	51	56.7	5	5.6	
	16-21	5	5.6	7	7.8	3	3.3	
	22-30	1	1.1	1	1.1	0	0	
Use of Bolus	No	19	21.1	45	50	5	5.6	0.342
	Yes	3	3.3	15	16.7	3	3.3	
Numbers of reported physical side effects after receiving radio-therapy	01-03	10	11.1	14	15.6	3	3.3	0.226
	04-06	10	11.1	37	41.1	4	4.4	
	07-09	2	2.2	9	10	1	1.1	

DISCUSSION

In this study, the age of the samples was 31 years -60 years, and the highest percentage of the patients were married, In regards to the residence the result of this study revealed that the majority of the samples had lived in urban, which also showed that majority of the study samples were housewife, the majority of the study sample was Illiterate, In regards to the nationality of patients, the result revealed that the majority of the sample had Kurdish, finally the result of the present study shows that the highest percentage of the samples were Muslims, the present finding supported by the Halkett, et al. (2018) in their study on a radiation therapist-delivered intervention reduces psychological distress in women with breast cancer referred for radiotherapy which displayed that most of the patients aged between 55 years -59 years [16].

Concerning the medical data of the sample, the present finding supported by Zhou, et al. (2019) under the title Effects of postoperative radiotherapy in early breast cancer patients older than 75 years, has reported that (64.14 %) of stage II cancer, (15.7%) had to do the Lumpectomy, and (84.3 %) had donned the mastectomy [17]. Also, this finding agreed with Lee, et al. (2017) in their study about the patient-reported symptoms of radiation dermatitis during breast cancer radiotherapy which revealed that the (15%-33%) had donned the number of fraction (or dose), and (64.9%) had to don the lumpectomy [18].

In regards to patie 'knowledge about radiotherapy, this finding disagrees with Pembroke, et al. (2020) in their study entitled Breast Cancer Survivors' Unmet Needs after completion of radiation therapy treatment, which showed that the majority of the sample was given the information or educated by Paper or written documents, this related to most of the patients had Illiterate [19]. Our culture is different because we are less familiar with reading the books. Radiotherapy itself is a new procedure used in the last decades in this hospital for that reason our sample had less information about radiotherapy.

The final part of the current study agrees with the study done by Hussein and Al-Rawaq (2016) on 60 patients treated in the oncology teaching hospital of Medical City in Baghdad showed that the most prevalent toxicities were radiation dermatitis, fatigue, pain, sore throat, nausea, dysphagia, and arm edema, under titled Assessment of early side effects of radiotherapy in breast cancer

patients [20]. Barazzuol, et al. (2020) did a study under the title prevention and treatment of radiotherapy-induced side effects, the results showed clearly that radiotherapy affects normal tissue, especially the skin [21].

The final part of this study displayed that there was a non-significant association between ages, residence, and occupation with the level of knowledge regarding radiotherapy because the p-value is above 0.005. The only factor that had a highly significant association was the level of education in the sociodemographic data p-value (<0.001), this result was supported by Halkett et al. (2018) in their study found that there was no significant association between the Sociodemographic data with their knowledge about radiotherapy regarding the association between medical data with their knowledge of the radiotherapy also there were non-significant association only the mastectomy had the highly significant association between them p-value (<0.001), Zhou et al. (2009) demonstrated that the highly significant association between the surgery which include the mastectomy with their radiotherapy effect.

The limitation of the study was the lack of research, which is why we could not discuss our topic extensively, on the other hand, some of the items or side effects it is new or abundant in our culture, but they can be easily overcome in another culture [22].

CONCLUSIONS

The significance of this study is in understanding the knowledge of patients and their physical effects after completing radiation therapy for breast cancer. This study shows that most of the patients had fair knowledge regarding radiation, and most of the participants had a physical effect on the body after radiation of the breast especially pain on the breast or chest area after radiotherapy and extreme tiredness.

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