

Factors associated with the quality of life of women undergoing radiotherapy

Fatores associados à qualidade de vida de mulheres submetidas à radioterapia

Factores asociados a la calidad de vida de mujeres en radioterapia



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ABSTRACT

Objective: To evaluate the skin characteristics and quality of life of patients with breast cancer undergoing radiotherapy.

Method: Cross-sectional study conducted with 60 women. The classification scales of skin changes resulting from exposure to ionizing radiation (RTOG) and the validated versions in Portuguese of those that classified skin types (Fitzpatrick), symptoms (RISRAS) and quality of life (DLQI) were applied. In the period between December 2021 and October 2022. For data analysis, Fisher's Exact Test, Chi-Square and Asymptotic General Independence Test were used.

Results: 100% of patients had skin irritation. As the treatment progressed and the radiodermatitis appeared or worsened, there was a tendency for the intensity of signs and symptoms to increase, such as: sensitivity, discomfort or pain, itching, burning and heat, dry and wet desquamation, which may have impacted the quality of life and reflected in other aspects, such as: shopping activities or outings ($p=0.0020$), social activities or leisure activities ($p=0.0420$).

Conclusion: Radiodermatitis is a common condition that affects women with breast cancer undergoing radiotherapy, skin characteristics and quality of life of patients affected during this treatment.

Descriptors: Breast neoplasms. Radiotherapy. Radiodermatitis. Quality of life.

RESUMO

Objetivo: Avaliar as características da pele e a qualidade de vida de pacientes com câncer de mama submetidas à radioterapia.

Método: Estudo transversal com 60 mulheres. Foram aplicadas as escalas de classificação das alterações cutâneas decorrentes da exposição à radiação ionizante (RTOG) e as versões validadas em português das que classificaram os tipos de pele (Fitzpatrick), os sintomas (RISRAS) e a qualidade de vida (DLQI), no período entre dezembro de 2021 e outubro de 2022. Para a análise de dados, foram utilizados os Testes Exato de Fisher, Qui-Quadrado e Teste de Independência Geral Assintótica.

Resultados: 100% das pacientes apresentaram irritação na pele. À medida que o tratamento avançou e que a radiodermatite surgiu ou se agravou, houve maior tendência de intensidade de sinais e sintomas, como: sensibilidade, desconforto ou dor, coceira, queimação e calor, descamação seca e úmida, o que pode ter impactado na qualidade de vida e refletido em outros aspectos, como: atividades de compras ou passeios ($p=0,0020$), programação social ou atividade de lazer ($p=0,0420$).

Conclusão: A radiodermatite é uma condição comum que afeta as mulheres com câncer de mama submetidas à radioterapia, as características da pele e a qualidade de vida das pacientes são afetadas durante esse tratamento.

Descritores: Neoplasias da mama. Radioterapia. Radiodermatite. Qualidade de vida.

RESUMEN

Objetivo: Evaluar las características de la piel y la calidad de vida de pacientes con cáncer de mama en tratamiento con radioterapia.

Método: Estudio transversal con 60 mujeres. Se aplicaron la escala de clasificación de alteraciones cutáneas por exposición a radiaciones ionizantes (RTOG) y las versiones validadas en portugués de las que clasificaban tipos de piel (Fitzpatrick), síntomas (RISRAS) y calidad de vida (DLQI) en el período comprendido entre diciembre 2021 y octubre de 2022. Para el análisis de los datos se utilizaron el Test Exacto de Fisher, Chi-Cuadrado y el Test de Independencia General Asintótica.

Resultados: El 100% de los pacientes evaluados sobre la piel. A medida que avanzaba el tratamiento y aparecía o empeoraba la radiodermatitis, hubo tendencia a aumentar la intensidad de los signos y síntomas, tales como: sensibilidad, malestar o dolor, visualización, ardor y calor, descamación seca y húmeda, que pudieron haber tenido un impacto en la calidad de vida y reflejado en otros aspectos, como: actividades de compra o salidas ($p=0,0020$), actividades sociales o de ocio ($p=0,0420$).

Conclusión: La radiodermatitis es una afección común que afecta a mujeres con cáncer de mama, sometidas a radioterapia, las características de la piel y la calidad de vida de las pacientes afectadas durante este tratamiento.

Descriptores: Neoplasias de la mama. Radioterapia. Radiodermatitis. Calidad de vida.

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INTRODUCTION

Cancer is a public health issue given the high rates of morbidity and mortality worldwide⁽¹⁾. In Brazil and worldwide, breast cancer, among the various types⁽²⁾, is the most common and the most frequent cause of death in women. 74 thousand new cases are predicted by 2025 in Brazil⁽³⁾.

When it comes to the pillars of cancer therapy, radiotherapy applies ionizing radiation to malignant cells⁽⁴⁾, and around 70% of patients will need it at some point during treatment⁽⁵⁾. However, radiodermatitis is an acute adverse event, common in this type of treatment for breast cancer⁽⁶⁾, and affects 95% of people undergoing treatment⁽⁵⁾. Some extrinsic and intrinsic factors favor its manifestation^(7,8).

As the radiation is cumulative during treatment, the cytotoxicity of radiodermatitis is manifested with hyperpigmentation, transient and generalized erythema, pruritus, dry scaling, moist scaling and pain⁽⁵⁾, being classified according to the grade of RTOG (Radiation Therapy Oncology Group), which is configured as a grading scale of these effects commonly developed during radiotherapy treatment⁽⁹⁾.

It is known that as treatment progresses and radiodermatitis arises or worsens, psychological well-being is also affected, which can cause a decline in Quality of Life (QoL)⁽¹⁰⁾. QoL considers subjectivity and satisfaction of basic needs present in the individual's context⁽¹¹⁾. Thus, routine activities can be impacted in different ways on patients, including adherence to treatment⁽⁷⁾.

The literature has pointed out the importance of classifying skin reactions and identifying their impacts through the application of assessment scales⁽¹²⁾. Previous research sought to identify the effects and best topical treatments for the management of radiodermatitis^(12,13). Aiming at evaluate in the professional routine these skin changes, nursing professionals use assessment scales⁽¹³⁾, however, the classification of radiodermatitis has different parameters, which depend on the subjectivity of the evaluator⁽¹⁴⁾. It is also worth highlighting that, in the main scales used in oncology, such as the RTOG⁽⁹⁾ and RISRAS⁽¹⁵⁾, in which symptoms are self-reported by patients and the skin assessment is made by the professional, the skin type is not considered during the assessment.

Studies focused on the relationship between skin characteristics and grades of radiodermatitis and QoL domains are relevant to not generalize the factors that impact the overall health status of patients undergoing radiotherapy, considering the peculiarities of women with cancer breast.

Furthermore, there is no consensus among researchers on the definition of the best scale to identify the risk factors for radiodermatitis nor the most appropriate scale to evaluate the characteristics of the skin, its tone and skin cytotoxicity resulting from radiotherapy that impact the QoL.

The identification of possible associations of variables of interest in the study can support nursing professionals in their clinical approach and assessment of radiodermatitis, determining the best methods to prevent this issue and avoid its complications.

Based on this assumption, this study aims to evaluate the skin characteristics and quality of life of breast cancer patients undergoing radiotherapy.

METHOD

This is a cross-sectional study, complied with the guidelines of Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)⁽¹⁶⁾.

The research setting was the Radiotherapy Service of a High Complexity Oncology Unit (UNACON) of a large university hospital in the north of Brazil, which is part of the Unified Health System (*Sistema Único de Saúde – SUS*).

Data collection took place between December 2021 and October 2022, and was conducted by the resident nurse of the institution's Oncology Program, with the support of three expert nurses in oncology who worked in the Radiotherapy Service. The data regarding the assessment of skin characteristics were reviewed by a stoma therapist nurse at the hospital.

The inclusion criteria were women over 18 years old, conscious, and oriented in time and space, in good clinical condition, with a histopathological diagnosis of breast cancer and starting radiotherapy at the institution. Women with a malignant vegetative lesion in the treatment region, with a previous history of radiotherapy and/or concomitant use of chemotherapy, in palliative care and/or without clinical conditions were excluded.

The study population consisted of women diagnosed with breast cancer, treated with radiotherapy at the institution. The sample calculation was performed using the Epi Info Program Version 7.2.2.16. Taking the year 2020 as a reference, initially a finite population of 75 women was considered, treated for 10 months, as, in that year, additionally to the pandemic, there was a need for maintenance and repair of the linear accelerator and the lack of specific supplies for the continuity of treatment, which made treatment in the

Radiotherapy Service impossible for two months, a situation that caused an abrupt drop in cases (fluctuation) treated, significantly impacting the average attendance.

Considering the factors mentioned, the period of 10 months was maintained as a reference, with a 95% confidence level and a 5% margin of error, but the number of patients reduced to 63 women. Limitations in the service, mainly related to the lack of inputs, persisted in 2021, reducing the number of patients served, impacting data collection. Due to the situation, the study was extended until October 2022. Because of this extension, of the 63 patients evaluated, 03 did not participate in the second moment of the evaluation, which took place in the last session, as their doses were reduced due to medical orientation and finished treatment earlier than expected, which is why they were removed from the study. Thus, the sample number resulted in 60 participants.

All participants were treated in a Linear Accelerator, from the manufacturer VARIAN®, model PRIMUS, using three-dimensional conformational planning (3D – CRT), with photon emission and number of fractions of 15 to 25 sessions and total dose of 4001 to 6000cgy.

The interviews were conducted in the nursing office of the Radiotherapy Service, and the average time for applying the instruments was 30 minutes. The approach was carried out individually and isolated, during the nursing consultation.

Patient follow-up took place on all days of treatment, five working days of the week. Data collection was conducted in the first and last radiotherapy session, with the application of instruments. The first was created by the author to collect sociodemographic data (age, origin, income, marital status, children, occupation, and education level), clinicopathological data (diabetes, hypertension, alcohol consumption and smoking). This was only applied when the participant was admitted to the hospital service.

The second instrument to be applied was a validated version in Portuguese⁽¹⁷⁾ of the Fitzpatrick scale, which assesses skin type. This scale allows you to evaluate and determine skin phototypes based on skin color, considering genetics, sensitivity and intentional exposure to UV radiation⁽¹⁸⁾. Based on these variables, a score of 0-4 is assigned, with increasing intensity: never, rarely, sometimes, frequently and always. The result scores according to skin type, in: (I) extremely white (0-6 pts), (II) white skin (7-13 pts), (III) light brown (14-20 pts), (IV) moderate brown (21-27 pts), (V) dark brown (28-34 pts) and (VI) dark to black (>35 pts)⁽¹⁹⁾.

In the second moment of collection (last radiotherapy session), three assessment instruments were applied:

Radiation-induced Skin Reaction Assessment Scale (RISRAS), Radiation Therapy Oncology Group (RTOG) and Dermatology Life Quality Index (DLQI). The last general skin assessment instrument was used due to the lack of a specific instrument for this skin toxicity.

Skin assessment scales are essential for monitoring changes resulting from treatment. The validated Portuguese version of the RISRAS scale⁽²⁰⁾, was used, which allows nurses to assess the skin and self-reported symptoms by patients regarding skin reactions.

Skin reactions assessed by the professional at RISRAS include: erythema: 0 = normal skin, 1.0 = dark pink, 2.0 = opaque red, 3.0 = bright red, 4.0 = intense purple-red; dry desquamation: 0 = normal skin, 1.0 = (<25%), 2.0 = (25-50%), 3.0 = (50-75%), 4.0 = (>75-100%); wet desquamation: 0 = normal skin, 1.5 = (<25%), 2.5 = (25-50%), 3.5 = (50-75%), 4.5 = (>75-100%); necrosis: 0 = normal skin, 2.0: (<25%); 3.0: (25-50%); 4.0: (50-75%); 5.0: (>75-100%). Each of these changes receives a score according to the percentage of affected area, considering the treatment quadrant⁽¹⁵⁾.

Self-reported complaints comprise variables, graded from 1-4, on sensitivity, discomfort, pain, itching, burning sensation in the treatment area and their impact on daily activities, which allows understanding the phenomenon, to plan the appropriate and individualized care⁽¹⁵⁾.

The instrument proposed by the Radiotherapy and Oncology Group – Radiation Therapy Oncology Group (RTOG) – is used extensively in the field of Oncology and is accepted and recognized by the medical communities⁽²¹⁾. It classifies the effects of radiotherapy as grade 0 (no reaction); 1 (mild erythema, dry desquamation, epilation, and decreased sweating); 2 (moderate, shiny erythema, wet desquamation or exudative plaque dermatitis and moderate edema); 3 (exudative dermatitis beyond the skin folds and intense edema) and 4 (ulceration, hemorrhage, and necrosis). This is used extensively and is recognized by the scientific community as most useful in the evaluation of radiodermatitis⁽⁹⁾.

The DLQI was validated for the Portuguese language⁽²²⁾. It presents 10 items arranged in 6 domains (symptoms and sensations, daily activities, leisure, work/school, interpersonal relationships, and treatment), that assess skin changes over the last week. For each question, the patient classifies the grade of skin impairment (“really a lot”, “a lot”, “a little”, “nothing” and/or “not relevant”). For each item, scores are obtained ranging from 0 (not relevant) to 3 (really a lot). In the end, the points for all items are summed, ranging from 0 (no loss to QoL) to 30 (maximum loss to QoL)⁽²²⁾.

The data obtained were digitized, by double checking the information to minimize error chances, in a Microsoft Excel spreadsheet and transferred to the Statistical Package for Social Science (SPSS) version 26.0. Sociodemographic data were subjected to descriptive analysis, in which categorical variables were calculated in absolute and relative frequencies.

Quality of life (DLQI scale) was considered as the dependent variable and skin classification (Fitzpatrick scale), self-reported symptoms (RISRAS scale) and grade of radiodermatitis (RTOG classification) as independent variables.

As a null hypothesis, it was suggested that there was no association between skin type data, self-reported complaints, and grade of radiodermatitis on quality of life. As an alternative hypothesis, this association occurred.

To respond to the suggested hypothesis, sociodemographic and clinicopathological variables were analyzed using univariate statistics, with simple (n) and relative frequencies (%). To verify the association between the variables of the DLQI (QoL) and RTOG scales, the Fisher's Exact and Chi-Square tests were used. To relate the variables of the DLQI (QOL), FITZPATRICK (skin assessment) and RTOG (grade of radiodermatitis) scales, the Asymptotic General Independence Test was performed. This test was used as similar to the Chi-Square test, but it was considered that the variables are ordinal and not nominal. The significance level assigned in all tests was 5%, expressed as $p \leq 0.05$.

All participants signed the Informed Consent Form (ICF). The study was approved by the Research Ethics Committee (REC) of the *Hospital Universitário João de Barros Barreto* (HUJBB) of the *Universidade Federal do Pará* (UFPA), under Opinion number 4,857,355 and complies with the precepts established by Resolution no. No. 466/2012, No. 510/2016 and No. 580/2018 of the National Health Council (CNS).

RESULTS

Table 1 presents the sociodemographic and clinicopathological characterization of the study participants. It was noticed that women had an average age of 55 years old (standard deviation: 13.66; 24 to 85 years), were residents

of other cities in the state of Pará (48.3%), married (48.3%), with at least had one child (81.7%), had a primary education level (48.33%), had diverse occupations (63.3%) and had low income (73.3%). Participants denied smoking and alcohol consumption (76.6%) and comorbidities (51.7%).

Regarding the comparison and similarity between the signs and symptoms of the RISRAS scale and the RTOG score, it was observed that there was a correlation between sensitivity, discomfort or pain ($p=0.0036$), itching ($p=0.0055$), burning sensation ($p=0.0004$) and if the area is hot ($p=0.0050$) (Table 2).

Regarding self-reported complaints on the RISRAS scale, sensitivity, discomfort or pain, significance was associated with the difference in proportionality between "a little" and "a lot". The most common grade of radiodermatitis for both was different, being 1 and 2, respectively. Among the answers to questions about whether the area itches, this difference was between "not at all" and "a lot". Most patients had RTOG grade 1. The report of burning skin highlighted the difference in proportionality in three variables: "not at all", "a little" and "a lot", whose RTOG grade 2 was more frequent only in "a lot".

Regarding the skin reactions identified in the professional's assessment, dry desquamation ($p < 0.001$) and wet desquamation ($p < 0.001$) were associated between proportionality and the grade of RTOG. It was found that participants classified as "normal skin" had a higher proportion in RTOG grade 1, while the proportion of patients (<25%) increased in RTOG grade 2 in wet desquamation.

Table 3 shows the number of patients for each skin type, without associating it with the grade of radiodermatitis ($p = 0.692$). The highest frequency was skin with a moderate brown tone (41.7%) in RTOG grade 1. Patients with extremely white skin tone, white skin and dark brown skin were not classified as black skin, according to the Fitzpatrick scale.

When analyzing the association of quality of life with the grade of radiodermatitis and the classification of skin color (Table 4), the impact of quality of life was noted on the questions addressed regarding signs and symptoms ($p=0.0016$), shopping activities or outings ($p=0.0020$), social activities or leisure activities ($p=0.0420$). Activities at home ($p=0.0132$) showed a correlation with the RTOG score only, without association with the Fitzpatrick classification.

Table 1 – Sociodemographic and clinicopathological characterization of women with breast cancer undergoing radiotherapy. Belém, Pará, Brazil, 2021-2022

Variables	n=60	%
Age group (years)		
15-25	1	1.6
26-35	2	3.3
36-45	12	20.0
46-55	13	21.7
56-65	16	26.7
66-75	13	21.7
76-85	3	5.0
Origin		
Belém	19	31.7
Other cities	29	48.3
Other state	12	20.0
Marital status		
Single	20	33.3
Married	29	48.3
Widowed	7	11.7
Divorced	4	6.7
Children		
Yes	49	81.7
No	11	18.3
Education level		
Elementary School	29	48.3
High School	22	36.6
Higher Education	9	15.0
Occupation		
Homemaker	22	36.7
Other occupations	38	63.3

Table 1 – Cont.

Variables	n=60	%
Income		
No income	16	26.7
≥ 1 salary*	44	73.3
Lifestyle habits		
None	46	76.6
Alcoholic	10	16.6
Smoker	2	3.3
Alcoholic and smoker	2	3.3
Comorbidity		
Diabetes mellitus	9	15.0
Systemic arterial hypertension	20	33.3
No comorbidity	31	51.7

Source: Database,2022.

*Self-employed, nurse, student, farmer, fisherwoman, teacher, businesswoman, general services, police officer.

**Minimum wage for 2021: R\$1,100.00

Table 2 – Association between the RISRAS scale variables and the grades of radiodermatitis. Belém, Pará, Brazil, 2021-2022

Symptoms	RISRAS	n=60	%	RTOG (%)		p-value*	**
				1	2		
Do you have any sensitivity, discomfort, or pain in the skin in the treatment area?							
Not at all		16	26.67	87.50	12.50	0.0036	ab
A little		33	55.00	90.91	9.09		a
A lot		10	16.67	40.00	60.00		b
Very much		1	1.67	100.00	0.00		ab
Does your skin in the treatment area itch?							
Not at all		15	25.00	100.00	0.00	0.0055	a
A little		29	48.33	86.21	13.79		ab
A lot		15	25.00	53.33	46.67		b
Very much		1	1.67	100.00	0.00		ab

Table 2 – Cont.

Symptoms	RISRAS		RTOG (%)		p-value*	**
	n=60	%	1	2		
Do you have a burning sensation in the skin in the treatment area?						
Not at all	13	21.67	100	0	0.0004	a
A little	31	51.67	90.32	9.68		a
A lot	14	23.33	42.86	57.14		b
Very much	2	3.33	100	0		ab
Is the skin in the treatment area hot?						
Not at all	11	18.33	100	0	0.0050	a
A little	33	55	87.88	12.12		ab
A lot	14	23.33	50	50		b
Very much	2	3.33	100	0		ab
To what extent have your skin reactions and symptoms affected your daily activities?						
Not at all	4	6.67	100.00	0.00	0.1090	
A little	15	25.00	100.00	0.00		
A lot	24	40.00	75.00	25.00		
Very much	16	26.67	68.75	31.25		
Signs						
Erythema						
Normal skin	2	3.33	100.00	0.00	0.0524	
Dusty pink	47	78.33	87.23	12.77		
Red	11	18.33	54.55	45.45		
Dry desquamation						
Normal skin	46	76.67	100.00	0.00	<0.001	
1 (<25%)	14	23.33	21.43	78.57		
Wet desquamation						
Normal skin	52	86.67	94.23	5.77	<0.001	
1 (<25%)	8	13.33	0.00	100.00		

Source: Database, 2022.

Legend: *Fisher's Exact Test. **Difference in significance between responses; a and b are random representations that indicate which variables showed statistical significance; c quadrant referring to the skin area treated according to the RISRAS scale.

Table 3 – Distribution of the number of patients according to skin tone and grade of radiodermatitis. Belém, Pará, Brazil, 2021-2022

Skin color	n=60	%	RTOG		p-value*
			1	2	
Light brown	14	23.3	12	2	0.692
Moderate brown	25	41.7	19	6	
Dark brown	21	35	18	3	

Source: Database, 2022.
Legend: *Fisher's Exact Test.

Table 4 – Association between the variables of the DLQI scale with the RTOG score and the Fitzpatrick classification. Belém, Pará, Brazil, 2021-2022

Variable	n	%	RTOG (%)		p-value*	Fitzpatrick (%)			**	p-value*
			1	2		Light brown	Moderate brown	Dark brown		
			1. How much has your skin been affected over the past week due to itching, inflammation, pain or burning?							
Nothing	8.00	13.33	100.00	0.00	0.0020	25.00	50.00	25.00	a	0.7228
A little	33.00	55.00	93.94	6.06		24.24	39.39	36.36	ab	
A lot	17.00	28.33	47.06	52.94		17.65	47.06	35.29	ab	
Really a lot	2.00	3.33	100.00	0.00		50.00	0.00	50.00	b	
2. How much embarrassment or other types of limitations were caused by your skin during the past week?										
Nothing	47.00	78.33	85.11	14.89	0.1969	25.53	40.43	34.04		0.4644
A little	7.00	11.67	71.43	28.57		14.29	57.14	28.57		
A lot	6.00	10.00	66.67	33.33		16.67	33.33	50.00		

Table 4 – Cont.

Variable	n	%	RTOG (%)		p-value*	Fitzpatrick (%)			**	p-value*
			1	2		Light brown	Moderate brown	Dark brown		
3. How much has your skin interfered with your shopping or outings, at home or in public places, during the last week?										
Nothing	18.00	30.00	100.00	0.00	0.0022	27.78	33.33	38.89	b	0.6515
A little	14.00	23.33	92.86	7.14		21.43	64.29	14.29	a	
A lot	25.00	41.67	64.00	36.00		20.00	36.00	44.00	ab	
Really a lot	3.00	5.00	66.67	33.33		33.33	33.33	33.33	ab	
4. To what extent has your skin interfered this past week with the clothes you wear?										
Nothing	5.00	8.33	100.00	0.00	0.1367	20.00	40.00	40.00		0.4920
A little	5.00	8.33	100.00	0.00		0.00	60.00	40.00		
A lot	46.00	76.67	78.26	21.74		26.09	39.13	34.78		
Really a lot	4.00	6.67	75.00	25.00		25.00	50.00	25.00		
5. During the last week, how much has your skin affected any social activities or leisure activities?										
Nothing	20.00	33.33	90.00	10.00	0.0740	20.00	50.00	30.00		0.6673
A little	16.00	26.67	87.50	12.50		25.00	50.00	25.00		
A lot	22.00	36.67	72.73	27.27		22.73	31.82	45.45		
Really a lot	2.00	3.33	50.00	50.00		50.00	0.00	50.00		

Table 4 – Cont.

Variable	n	%	RTOG (%)		p-value*	Fitzpatrick (%)			**	p-value*
			1	2		Light brown	Moderate brown	Dark brown		
6. During the past week, how much did your skin make it difficult to engage in sports?										
Nothing	44.00	73.33	84.09	15.91	0.1499	20.45	43.18	36.36		0.6329
A little	4.00	6.67	100.00	0.00		25.00	50.00	25.00		
A lot	11.00	18.33	72.73	27.27		36.36	36.36	27.27		
Really a lot	1.00	1.67	0.00	100.00		0.00	0.00	100.00		
7. During the past week, did your skin prevent you from working or studying?										
Nothing	42.00	70.00	83.33	16.67	0.6576	23.81	45.24	30.95		0.2910
A little	4.00	6.67	75.00	25.00		50.00	25.00	25.00		
A lot	14.00	23.33	78.57	21.43		14.29	35.71	50.00		
8. During the past week, how much did your skin create problems in your relationship with your partner, friends, or relatives?										
Nothing	56.00	93.33	82.14	17.86	0.2792	25.00	41.07	33.93		0.4682
A little	3.00	5.00	100.00	0.00		0.00	33.33	66.67		
A lot	1.00	1.67	0.00	100.00		0.00	100.00	0.00		

Table 4 – Cont.

Variable	n	%	RTOG (%)		p-value*	Fitzpatrick (%)			**	p-value*
			1	2		Light brown	Moderate brown	Dark brown		
9. During the past week, how much did your skin cause any sexual difficulties?										
Nothing	54.00	90.00	81.48	18.52	0.8082	22.22	42.59	35.19		0.7089
A little	3.00	5.00	100.00	0.00		33.33	33.33	33.33		
A lot	3.00	5.00	66.67	33.33		33.33	33.33	33.33		
10. During the last week, to what extent did your skin treatment cause any type of problem, for example, making your belongings or your home dirtier, messier, or taking up your time on a daily basis?										
Nothing	21.00	35.00	100.00	0.00	0.0092	23.81	38.10	38.10	b	0.9818
A little	18.00	30.00	77.78	22.22		27.78	38.89	33.33	a	
A lot	20.00	33.33	65.00	35.00		20.00	45.00	35.00	ab	
Really a lot	1.00	1.67	100.00	0.00		0.00	100.00	0.00	ab	

Source: Database, 2022.

Legend: *Fisher's Exact Test; **Difference in significance between responses; a and b are random representations that indicate which variables showed statistical significance.

DISCUSSION

This is the first study that evaluated the skin characteristics and quality of life of patients with breast cancer undergoing radiotherapy in the North of Brazil. The sociodemographic profile showed a predominance of women with an average age of 55 years old, married, with children, from the interior of the state of Pará and with a low socioeconomic level. They also did not have the habit of smoking or drinking alcoholic beverages. This result is similar to studies conducted with women in Argentina⁽⁵⁾ and South Korea⁽²³⁾.

Regarding the assessment of radiodermatitis, it was observed that grade 1 was the most common, followed by grade 2. There was an absence of cases referring to grades 3 and 4. A similar result was found in studies with Argentine⁽⁵⁾ and Brazilian women⁽²⁴⁾ who indicated similarities in profile and treatment modality. It is worth noting that the absence of more serious grades of radiodermatitis may indicate the safety of the equipment and devices used, as well as the quality of the professionals involved and the patients' self-care.

Regarding the analysis of the association between the grades of radiodermatitis and the variables studied, a significant association was obtained between: sensitivity, discomfort, pain, itching, burning, heat, dry and wet desquamation, shopping activities, outings and tasks at home, aligned with a study with Brazilian women in the Central-West, diagnosed with breast cancer undergoing radiotherapy treatment⁽²⁵⁾.

A study⁽²⁶⁾ with women in Japan analyzed changes in the skin of women who received ionizing radiation after conservative surgery. For this, they used the acute radiation dermatitis classification scale (RTOG) and biophysical measurements of the skin with the application of devices that evaluate transepidermal water loss, erythema index and melanin. As a result, they identified that the sequence of skin changes was cutaneous erythema, followed by dryness and pigmentation.

In this study, 78.33% of patients presented erythema during treatment. Stands out the importance of this early identification by nursing professionals, as it may indicate intervention to prevent skin cytotoxicity and its progression during and after treatment.

Regarding self-reported symptoms, in the data on the RISRAS scale, the answer "a little" was the most frequent, given by most of participants for questions related to sensitivity, discomfort, pain or burning. It is important to consider that all participants had radiodermatitis. The relationship between radiodermatitis and the symptoms presented by patients with breast cancer was studied⁽²⁷⁾. In this case, they used a screening tool for reported symptoms. Moderate to severe levels were commonly reported for fatigue, well-being and anxiety⁽²⁷⁾.

It was observed that, as treatment progressed and radiodermatitis appeared or worsened, psychological well-being was affected and could cause a decline in quality of life^(10,11). Regarding QoL and the grade of RTOG, the answers to measure the intensity that the treatment interfered with QoL varied between the questions. Questions that involved social interaction, such as shopping or outings, social activities, or leisure activities, as well as the definition of "clothes you wear" had the answer "a lot" as the most frequent. In the results of the study conducted in the USA⁽⁷⁾, all aspects of skin-related quality of life, except work and school, worsened significantly.

As a result of the above, it was understood that radiodermatitis was capable of negatively affecting the self-esteem and body image of patients, which may have led to the feelings reported in this and other studies^(7,10,28).

Nurses play a fundamental role in the emotional and psychological support of women with breast cancer. Therefore, this professional's in-depth knowledge of the direct and indirect effects of radiotherapy makes him/her capable of providing support and encouraging patients to face the physical and emotional challenges from radiotherapy.

Regarding daily life activity variables such as household tasks and trips, no specific studies were found for comparative purposes, this being the first to demonstrate such an association. Thus, nurses can offer support and encouragement to patients, helping them face the emotional challenges associated with radiotherapy.

Studies that sought to identify the factors associated with the emergence of radiodermatitis were not associated with skin color^(5,29,30). It is likely that we can infer that the scales used to assess the effects of radiation on the skin do not associate these effects with skin type. Instead, they focus on the involvement of skin layers caused by radiation, thus defining the grade of radiodermatitis.

In this study, when the phototype was compared with the grades of radiodermatitis and the variables on quality of life, no significant relationship was found. Therefore, it is important to highlight the limitations of the study, emphasizing the self-declaration of the phototype, the sample size, the use of the non-specific radiodermatitis questionnaire (QDLI), the frequency of follow-up of the participants, the probable loss of recording of signs and symptoms, and the impossibility of comparing responses between treatment weeks.

The results of this study may support and assist the nursing professional of the Radiotherapy Service to identify risk factors for radiodermatitis, defining the use of an instrument to evaluate the skin of these patients, in the implementation of indicators to monitor these risks.

Future studies are suggested for the construction and validation of specific instruments for the assessment of

radiodermatitis to improve understanding of the factors that predispose the development of radiodermatitis, considering the professional's analysis and the patients' point of view.

■ CONCLUSION

The skin characteristics and quality of life of patients are affected during radiotherapy treatment. Regarding the variables on skin characteristics, it was identified an association between grades 1 and 2 with the questions that involved: sensitivity, discomfort or pain, itching, burning and heat, dry and moist desquamation. Regarding quality of life variables, the association with grades of radiodermatitis was observed in shopping activities, outings, and household tasks.

It is necessary for healthcare professionals to dedicate themselves to studying the effects and impact on patients' quality of life, as well as their assessment tools, allowing the provision of holistic and effective care, aiming to promote physical and emotional well-being of patients, becoming essential in the multidisciplinary team that works in breast cancer treatment.

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