

# Performance of Nurses in Radiotherapy Services

ORIGINAL

Nauã Rodrigues de Souza<sup>1</sup>, Isabel Cristina Ramos Vieira Santos<sup>2</sup>, Magaly Bushatsky<sup>2</sup>, Daniela de Aquino Freire<sup>1</sup>, Jessica Thamires da Silva Melo<sup>3</sup>, Eudanusia Guilherme de Figueiredo<sup>4</sup>, Marcos Antônio de Oliveira Souza<sup>5</sup>, Carmina Silva dos Santos<sup>6</sup>

## Abstract

**Background:** Because it is a complex disease, cancer requires a comprehensive approach in treatment, since tumor cells tend to be very aggressive and uncontrollable. In order to obtain cure or improvement in the standard of living of the cancer patient, different therapeutic modalities are available, among them, radiotherapy, which has improved the prognosis of many neoplasms.

**Objective:** This study aimed to know the performance of nurses in radiotherapy services.

**Methods and Results:** It is a cross-sectional, descriptive and exploratory study with a quantitative approach, developed from June to July 2015. The study sample was composed of eight nurses. The data were collected through a structured questionnaire, analyzed through descriptive statistics. It was verified that nurses are not only restricted to care, but they work in the supervision of the nursing team, monitor the work process, elaborate the action plan, select materials and equipment, schedule the consultations. In addition, it was possible to observe the importance of the nursing consultation for the individualization of the care and effectiveness of the treatment for the patient.

**Conclusion:** It is observed that for a good progress of the radiotherapy service, there is a need for a trained nursing team with conditions to deal with the complexity and requirements that this modality of treatment demands.

- 1 Nurse. Master's student of the Postgraduate Associated Program in Nursing of the Pernambuco State University/Paraíba State University. Recife/PE, Brazil.
- 2 Nurse. Doctor in Nursing. Professor of the Nossa Senhora das Graças School of Nursing/Pernambuco State University. Recife/PE, Brazil.
- 3 Nurse. Traumatology and Orthopedics Resident at the Getúlio Vargas Hospital. Recife/PE, Brazil.
- 4 Nurse. Specialist in Oncology at the Oswaldo Cruz University Hospital/Pernambuco State University. Recife/PE, Brazil.
- 5 Nurse. Doctoral student of the Postgraduate Associated Program in Nursing of the Pernambuco State University/Paraíba State University. Recife/PE, Brazil.
- 6 Nurse. Doctor in Nursing. Professor of the Pernambuco School of Health. Recife/PE, Brazil.

## Contact information:

**Nauã Rodrigues de Souza.**

**Address:** Universidade de Pernambuco, UPE. R. Arnóbio Marquês, 310. Programa Associado de Pós-Graduação em Enfermagem da Universidade de Pernambuco/Universidade Estadual da Paraíba. Bairro Santo Amaro. Recife, Pernambuco, Brazil. CEP: 50100-130.  
**Tel:** +55-81-3423-6433.

 [nauan\\_1@hotmail.com](mailto:nauan_1@hotmail.com)

## Keywords

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## Introduction

According to estimates, more than 12 million cases of cancer are diagnosed annually worldwide, causing more than seven million deaths. The World Health Organization (WHO) points out that, 27 million incident cases and about 17 million deaths from this disease are expected in the year 2030 [1]. It is a major cause of mortality, being a major public health problem. In Brazil, estimates for 2016/2017 point to the occurrence of 600 thousand new cases of cancer [2].

Because it is a complex disease, cancer requires a comprehensive approach in treatment, since tumor cells tend to be very aggressive and uncontrollable [3]. In order to obtain cure or improvement in the standard of living of the cancer patient, different therapeutic modalities are available, among them, radiotherapy, which has improved the prognosis of many neoplasms. It uses electromagnetic or corpuscular ionizing energy, generating interaction in neoplastic cells. According to data, it is believed that about 50% of individuals with cancer may at some point use radiotherapy at some stage of treatment [4, 5].

Radiation therapy is defined as a treatment modality that employs a beam of ionizing radiation appropriate to destroy tumor cells by acting on its deoxyribonucleic acid (DNA), with the least acceptable change to surrounding normal cells. Used as a local therapeutic method for cancer, it is indicated exclusively or associated with other types of treatment, such as chemotherapy and surgery; it can be curative, prophylactic, palliative or ablative [5, 6].

Although it fits as an effective treatment, radiotherapy brings certain acute and chronic clinical manifestations, known as adverse effects, which can be noticed during and after its application, especially in the skin, since it is an organ that has cells with fast-cycle division, a respectable factor of radiosensitivity and radiocurability, being the first tissue to reveal adverse reactions to ionizing radiation [3].

The reactions caused by this therapeutic modality are seen as an inevitable part of this treatment, and the nurse is the professional who must assist the patient in order to mitigate the adverse signs and symptoms of the skin, as well as other alterations that may arise. This makes the nursing team indispensable in educational, preventive actions and thus able to work in the intervention in order to minimize the toxicities of radiation [3, 6].

The Federal Nursing Council, through Resolution COFEN-211/1998, establishes the role of the nursing professional in radiotherapy, and affirms that the nurse must be broadly involved in care, administration, and education. In the case of radiotherapy, it is up to this professional to plan, organize, supervise, perform and evaluate all nursing activities in clients submitted to ionizing radiation; to fully assist patients and their families, based on the Code of Ethics of Nursing professionals and the current legislation, since it involves high complexity [7].

Through this practice, care professionals must promote a relationship of trust by offering quality and humane assistance in order to reduce the effects caused during treatment. Therefore, it is necessary for nurses to obtain knowledge of all the stages of radiotherapy treatment, conducting their activities safely, through critical reasoning and the best analysis of patient care [8].

Based on the premise of the challenges of working with radiotherapeutic patients and their families, and considering the scarcity of studies related to the actions of nurses in radiotherapy services, this study aimed to know the performance of nurses working in services in that are reference in radiotherapy of two hospitals in the city of Recife.

## Methods

This is a descriptive, cross-sectional and exploratory study with a quantitative approach, carried out in reference hospitals in Pernambuco.

The state of Pernambuco has 11 reference hospitals in oncology, but only five of these offer ra-

radiotherapy services and only two of them have nurse's services [9]. Therefore, these two hospitals were chosen as the site for this study. The institutions were named as 1 and 2 in this research, in which hospital 1 is a philanthropic entity and 2 is a private and charitable entity, both located in the city of Recife.

Participants were eight nurses who had worked in the radiotherapy services for at least six months in the selected institutions and who agreed to participate in the study participated in the study, by signing the Informed Consent Form (ICF).

The data collection instrument was a structured questionnaire, elaborated according to the National Cancer Institute (INCA) treatment handbook and from the observation of nurses' practice in radiotherapy services, formulated with 40 closed questions and divided into four sections: the first one addressed characteristics of the sociodemographic and professional/academic profile of the nurses (gender, age, graduation, number of jobs, working day and time of work in radiotherapy); the second, third and fourth sections included specific actions, respectively: supervision, consultation and nursing interventions. For data collection, held between June and July 2015, the date and time for the presentation of the research objectives were scheduled according to the availability of the professionals and after agreement by signing the ICF, a new date for interview was later scheduled.

Data were tabulated and analyzed through descriptive statistics, by using simple and absolute frequency, using MS-Excel software version 2010, and later interpreted and compared with the literature.

The research is in accordance with Resolution 466/12 of the National Health Council/Ministry of Health (CNS/MS) and approved by the Research Ethics Committee of the Oswaldo Cruz University Hospital/Pernambuco Cardiological Emergency Room, CAAE no. 45920115.4. 0000.5192.

## Results and discussion

Data analysis was initially structured from the characterization of nurses' profile in radiotherapy services:

### Characterization of nurses' profile in radiotherapy services

The analysis of the sociodemographic information pointed to the totality of female participants. This fact is justified by the predominance of the historical attribute of nursing, an office practiced almost only by women since its initial practices [10]. All nurses were less than 40 years old; of these, 5 (62.5%) were between 20-29 years old and 3 (37.5%) between 30-39 years.

It is observed a total of 100% of professionals trained in private institutions, which is corroborated by another study [11] and justified by the expansion of higher education in Brazil that occurred especially in private institutions, a factor that clarifies the market provision of higher education. The improvement of the studies showed that 4 (50%) of the participants reported having completed a specialization in the area of oncology and 4 (50%) said they were still in progress. No specialization was mentioned at masters or doctoral level.

A positive fact is the finding of the interest in qualification at the graduation level, in the modality of specialization, since the national curricular guidelines in the higher education institutions advocate the training of the generalist nurse, not specifically addressing the teaching of oncology. This is a specialized field, in which the training offered by the undergraduate course for the practice of nurses is often insufficient [12].

Regarding the number of jobs, the results showed that 6 (75%) nurses had one job and 2 (25%) of them had two jobs. However, it was observed that all of them performed professional functions with a workload of 40 hours per week, which is not in line the demands regarding the workload advocated by the category, which is 30 hours per week for

nurses. The health of these workers can be impaired due to the excessive workload, and the distance from the social and family life, making them vulnerable to stress [13].

As indicators to characterize nurses as to their experience on the subject studied here, it was observed that only 3 (37.5%) had more than two years of experience in radiotherapy services. The working time may be indicative of the nurse's time of experience and the relative maturity, as it reflects the knowledge and aptitude in a given period. Thus, clinical nursing experience is fundamental to the quality of care [14].

### Nurses' performance in nursing supervision of radiotherapy services

The understanding of nurses' performance in the different areas allows the elucidation of the role of this professional in the care and their importance for the quality of the service. In the context of health activities, the nurse performs functions related to caring, educating, coordinating, collaborating and supervising. These are performed in most cases in an integrated and simultaneous manner [15].

According to the Federal Nursing Council, Law No. 7,498/86, of June 25, 1986, planning, organizing, coordinating, executing and evaluating nursing care services are functions of nurses, exclusively. This causes the nursing supervisor to have a managerial and supervisory role, coordinating the work unit by grouping the members of the nursing team and organizing the available resources to provide qualified and satisfactory care to patients, families and staff [16].

**Table 1** presents the main actions performed by nurses in relation to supervision in the radiotherapy sectors of the two hospitals surveyed.

Within the competence of the nurse in radiotherapy, as established by the Resolution COFEn nº 211/98, the following functions are highlighted: registering information and statistical data pertinent to Nursing care [17]. It can be seen in **Table 1** that 8

**Table 1.** Main actions performed by nurses in relation to supervision of radiotherapy sectors in two reference hospitals in the city of Recife, Pernambuco, Brazil.

Main nursing actions in relation to supervision	Yes	%	No	%
Making annotation in medical records and keeping in touch with other areas of the hospital	8	100	0	0
Analyzing medical records, making sure of its complete fulfillment and proposing actions for the analyzed irregularities	8	100	0	0
Monitoring the work process, selecting materials and equipment	6	75	2	25
Preparing the action plan for the nursing team	6	75	2	25
Developing and ensuring the analysis of care indicators relevant to the respective unit	6	75	2	25
Raising needs and problems in order to identify risk areas	5	62.5	3	37.5
Elaboration and monitoring of the daily work schedule	4	50	4	50
Developing continuing education programs, standardizing nursing norms and procedures	4	50	4	50

**Source:** The author.

(100%) of the interviewees complied with the COFEn criteria, whose main activities were: carrying out annotations in medical records, analyzing and ensuring their complete fulfillment; proposing actions for irregularities analyzed in medical records; and maintaining contact with the other areas of the hospital, guaranteeing the quality of the services, in a sectorized and global way.

Also in this scope, nurses evaluate the use of available resources and technologies by analyzing the mechanisms of safety, effectiveness, benefit and social impact, taking into consideration the ethical aspects in the various situations, with the purpose of making decisions that primarily benefit the patient, the professionals and the work environment

[17]. Thus, 7 (87.5%) of the interviewees affirmed that they monitor the work process of the nursing staff and select materials and equipment so as to reach the efficiency of the treatment.

It was verified, in the two analyzed institutions, that all interviewees have as one of the functions scheduling the patients in treatment, a relevant activity in the administrative scope of the nurses' performance. The coordination of the scheduling of the patients under treatment is a dynamic action, with emphasis on the active search in order to understand the individual needs of the clients [18].

An important practice carried out by 6 (75%) nurses is the development and assurance of the analysis of care indicators pertinent to the respective unit, as well as the investigation of the needs and problems with the aim of identifying areas at risk. The survey of performance indicators and the search for improvements through scientific technical updating and the use of radioprotection technologies and devices allow this professional to work with quality in various routine and/or emergency circumstances, situations that could cause any physical or material harm to the patient, as well as to the hospital unit [7].

It is noticed that 6 (75%) of the nurses prepare a plan of action for the nursing team and 4 (50%) of these have as their exercise to develop continuing education programs to standardize nursing norms and procedures and to elaborate and monitor the daily schedule of nursing. For this purpose, the training is of utmost importance in the methodology of work and in the results achieved by the nursing team. The actions developed by the nurses corroborate what has been emphasized in the literature [19].

### Nursing consultation for patients undergoing radiotherapy

Nursing consultation is a private activity of the nurse, which aims to identify health problems by means of components of the scientific method, to intervene and to put into practice nursing actions

that contribute to the promotion, prevention and protection of diseases, recovery of the individual, family and community. Thus, the nurse must participate in therapeutic protocols, develop, increase and transmit preventive and curative health measures through instruction to patients and families [7, 20].

In this sense, the guidelines made by nurses in the nursing consultation of the study sample are presented in **Table 2**.

As observed in **Table 2**, one of the main goals expressed by all nurses (100%) in the nursing con-

**Table 2.** Main guidelines that are given by nurses in the nursing consultation to the patient undergoing radiotherapy treatment in two reference hospitals of the city of Recife, Pernambuco, Brazil.

Main guidelines that are given in the nursing consultation	Yes	%	No	%
Purpose of radiotherapy, its goal and treatment schedule	8	100	0	0
Explaining possible side effects	7	87.5	1	12.5
Guiding the patient to observe and report changes in the irradiated region that may arise	7	87.5	1	12.5
Informing that, at the end of the treatment, the patient may present reactions in irradiated tissues	7	87.5	1	12.5
Guiding the patient to wear loose cotton or linen clothes	7	87.5	1	12.5
Guiding on skin hydration and oral hygiene	7		1	
Guiding patients to avoid using alcohol-based products in the irradiated area, as well as avoid sun exposure in the treated area so as not to intensify the radiation effect	6	75	2	25
Guiding the patient regarding treatment assiduity and the routine of the service	6	75	2	25
Guiding the patient not to rub the irradiated site with sponges or other products	5	62.5	3	37.5
Reinforcing the importance of proper food habits	5	62.5	3	37.5

Source: The author.

sultation is to explain to the patient the purpose and objective of the treatment, as well as the entire schedule of the proposed radiotherapy treatment, and 6 (75%) of them stated as an important guidance instructing the patient regarding assiduity to the treatment and about the routine of the service.

With emphasis for the competence of the nurse who works in the radiotherapy service, the nursing consultation is the most practiced and peculiar practice performed by these professionals. For the effective exercise of this activity, it is necessary to evaluate the history of each patient, the impact of the disease and the treatment for the patient and for all involved. The planning of interventions needs to take into consideration, in addition to other factors, the social reality of individuals in this condition, so that information is passed on in a clear and comprehensible way [5].

It was observed that 7 (87.5%) of the nurses, during the consultation, clarified the possible side effects, advised on the importance of observing and communicating alterations that may arise in the irradiated region and informed that at the end of the treatment, patients could possibly identify the occurrence of reactions in irradiated tissues. Faced with this fact, the nurse provides the care guided by the specific conditions of each patient as well as offer health education to these patients [20].

One of the clinical manifestations present in patients submitted to radiotherapy is the presence of reactions in the skin caused by the treatment with radiation, denominated radiodermatitis. In order to minimize radiotoxicity, the nurse acts in accordance with the institutional protocol and encourages preventive measures [3].

According to data from **Table 2**, 7 (87.5%) of the nurses indicated the use of moisturizing cream based on Aloe Vera or Essential Fatty Acids (EFA), as well as the application of water and compresses of chamomile tea in order to prevent the appearance of injuries. However, there was divergence in the indication of the product in the two institutions

surveyed. In hospital 1, it is offered the EFA, while in hospital 2, the Aloe Vera moisturizer, both used after the sessions of radiotherapy. The chamomile compress was indicated in the two institutions.

Care protocols are designed to prevent the appearance or increase of the degree of radiodermatitis and to decrease the patient's discomfort. The researched institutions recommend topical approaches through the chamomile tea compress, Aloe Vera or EFA moisturizers that can slow down radiation reactions on the skin. However, these behaviors still lack clinical research that provides scientific evidence [21].

Chamomile tea is used to minimize skin damage and has good results due to its topical anti-inflammatory effect, among others. A study shows that the use of this phytotherapeutic substance is expressive and may be due to the cost-benefit relationship, the efficacy of this method or even due to beliefs [22].

Regarding the consultation, 7 (87.5%) of the nurses encourage the patient under treatment to ingest two liters of fluids per day, since 1,250 to 3,000 ml/day of water are required for the adult, according to age, sex, body surface and tissue mass. Thus, it is necessary to encourage fluid intake for good hydration and for the efficacy and attenuation of toxic effects during treatment [23]. In addition, they also guide on oral hygiene and reinforce the importance of proper eating habits.

In addition to the emphasis given to care with the irradiated region, guidance is also provided on what should be avoided during treatment: the use of alcohol-based products in the irradiated area, sun exposure so that the radiation effect is not intensified and regarding clothing; cotton-based clothing or loose linen are essential to have satisfactory results in therapy. This information is passed on by 6 (75%) of the nurses. The patient seeks in the nursing consultation to obtain the maximum information about self-care practices and strategies so that coping is easier. In this way, it is verified that

the nursing consultation in the radiotherapy sector personalizes the care [6,24].

### Nursing interventions performed in radiotherapy services

The systematization of nursing care (SNC) is a private practice and of fundamental importance for the work of the nurse. It is divided into stages to plan, execute and evaluate the needs arising during the treatment provided to the patient. An important step of the SNC is the Nursing Intervention, through the care plan that will be provided by the team and that will also serve as a support for the evaluation of care, which is characterized as the last stage of this process [25].

**Table 3** presents the results regarding the main nursing interventions performed in the radiotherapies according to the study sample.

**Table 3.** Main nursing interventions performed in radiotherapies in two reference hospitals in the city of Recife, Pernambuco, Brazil.

Main nursing interventions in radiotherapy	Yes	%	No	%
Performing physical examination and recording the patient's weight	7	87.5	1	12.5
Assessing the area and the toxicity present and prescribing appropriate products	7	87.5	1	12.5
Treating skin lesions with specific dressings	6	75	2	25
Monitoring vital signs	5	62.5	3	37.5
Providing care to prevent complications and trauma	4	50	4	50
Providing care related to self-care activities	4	50	4	50
Correct positioning of the patient	4	50	4	50
Emotional support	3	37.5	5	62.5
Urinary catheterization	1	12.5	7	87.5

**Source:** The author.

It is known that the impact of radiation therapy can cause harm to cancer patients, and that complaints and clinical findings must be addressed

during consultations with due value for effective treatment [4]. A quality physical examination allows the extraction of concrete information and appears as the first intervention provided by the nursing team, reported by 7 (87.5%) of the respondents. This is preceded by weight mass verification, an important data to be verified before planning the treatment, in order to minimize adverse effects [25].

It is required that the nurse integrating these services has knowledge of the region of the body to be irradiated, takes into account the patient's description, so that they can improve in the planning of the actions to the identified needs [3].

In view of this fact, **Table 3** shows that 7 (87.5%) of these professionals evaluated the irradiated area and the toxicity presented, as well as 6 (75%) of them treated skin lesions presented with specific coverages. According to a study on the same theme, the intensity of the reaction may vary from mild erythema and pruritus to dry or moist desquamation, which may lead to tissue necrosis [3].

The other interventions observed were about general guidelines and general care, during and after the radiotherapy treatment session: 6 (75%) nurses monitor vital signs and 4 (50%) have as care activity the provision of care to prevent complications and traumas, as well as the correct positioning of the patient before the procedure.

Regarding the practice of self-care, 5 of them (62.5%) stated that providing care guidance related to these activities is extremely important for the patient at all stages of treatment. In addition, 4 (50%) of these professionals offer emotional support to the patient, demonstrating their availability and, thus, the importance of comprehensive care. This attitude allows us to go beyond the biological aspect, because health care also means recognizing clients and their families as unique human beings experiencing a difficult moment in their lives [22, 25].

Self-care mentioned by Dorothea Orem was defined as the planning of learning activities that aim

to increase individual and collective knowledge and abilities in the face of perceived needs. It is the result of the guidance of clients and family members and aims to provide correct and concrete information regarding treatment [26]. This action is exclusive to the nurse; it requires time, specific knowledge in the area and communication skills.

## Conclusion

Care to the cancer patient is complex, since it involves the consideration of multiple aspects, such as: physical, psychological, social, cultural, spiritual and economic. In radiotherapy services, it is essential to have a nursing team able to deal with the demands of the treatment and the individuality of each patient.

In this study, it was possible to verify that the nurse is not restricted to care, performs administrative actions in the work process of the nursing staff, in the selection of materials and equipment, scheduling of consultations and planning of the systematized nursing care. This professional also has a fundamental role due to the practice of the nursing consultation that promotes the individualization of the care and the effectiveness of the treatment for each patient.

It is emphasized that, despite the inherent limitation of the small quantitative of the studied population, the results contrast with the current situation in relation to the increase in the survival and need for radiotherapy and the small number of hospitals that have a body of nurses for this activity, in view of the importance of the actions provided by this professional. Besides, it demonstrates the need for complementary studies that involve this theme due to the lack of studies on the performance of the nurses in the radiotherapy services, since the nursing consultation has been more discussed and researched.

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