

# A Study on the Impact of Multidisciplinary Nursing on Radiation-Induced Skin Damage in Patients Undergoing Radiotherapy for Nasopharyngeal Carcinoma

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**Abstract:** Nasopharyngeal carcinoma is one of the common malignant tumors in China. Due to its high sensitivity to nasopharyngeal carcinoma cells, radiotherapy has gradually become one of the preferred clinical treatment options. However, during radiotherapy, high-energy rays are highly likely to damage the normal skin tissue of patients, which not only aggravates patients' pain and reduces their medical service experience, but also exerts a certain impact on the medical process and treatment effect. Multidisciplinary nursing can break the limitations of traditional nursing, integrate high-quality multidisciplinary resources, provide patients with more systematic and comprehensive nursing services, and plays an important role in improving radiation-induced skin damage. In this regard, this paper conducts an in-depth study on the impact of multidisciplinary nursing on radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma, aiming to provide some references for improving nursing quality and promoting clinical nursing reform.

**Keywords:** Multidisciplinary nursing; Nasopharyngeal carcinoma; Radiotherapy; Radiation-induced skin damage

**Online publication:** May 31, 2026

## 1. Introduction

Nasopharyngeal carcinoma is a malignant tumor originating from the anterior wall of the nasopharyngeal apex and the pharyngeal recess, with a high incidence in southern China. Its main clinical manifestations include blood-stained nasal discharge, nasal obstruction, cervical lymph node enlargement and other symptoms <sup>[1]</sup>. Compared with other diseases, nasopharyngeal carcinoma has a relatively hidden onset location and insignificant symptoms, and some patients are already in the middle and advanced stages when diagnosed. Radiotherapy can effectively kill nasopharyngeal carcinoma cells, effectively control the lesion, and prolong the survival period of patients. However, during radiotherapy, high-energy rays will inevitably

damage the surrounding normal skin tissue, leading to dry skin, pigmentation, erythema, and even blisters, ulceration and other symptoms in patients, which seriously affects patients' treatment compliance and quality of life. At present, there are certain limitations in the clinical nursing of such skin damage, resulting in poor nursing effect. Multidisciplinary nursing is an innovative nursing model that integrates resources from multiple disciplines, which can effectively break the limitations of traditional nursing, better meet the nursing needs of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma, and provide them with scientific and effective nursing services. Based on this, based on the needs of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma, this paper deeply analyzes the significance and existing problems of multidisciplinary nursing, and puts forward effective nursing strategies, so as to provide a reference for promoting the development of clinical nursing.

## **2. Application significance of multidisciplinary nursing in the nursing of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma**

Relying on high-quality resources from multiple disciplines such as psychology, nutrition and rehabilitation, multidisciplinary nursing constructs an integrated nursing system of "prevention-nursing-rehabilitation" guided by patients' needs. Its application in the nursing of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma has important practical significance<sup>[2]</sup>.

### **2.1. From the perspective of patients**

Multidisciplinary nursing can effectively prevent and alleviate radiation-induced skin damage and improve patients' quality of life. Radiation-induced skin damage is directly related to patients' nutritional status, psychological state, skin condition and other factors. The traditional nursing model is relatively single and difficult to cover all influencing factors<sup>[3]</sup>. Multidisciplinary nursing can integrate multidisciplinary resources. Through the collaborative cooperation of nutritionists, rehabilitation therapists, psychologists and other professionals, it can not only provide targeted skin care for patients, but also enhance skin resistance through nutritional support; relieve patients' negative emotions such as anxiety and tension through psychological counseling, enable patients to better face the physical and mental changes during treatment, and improve their quality of life.

### **2.2. From the perspective of nursing work**

Multidisciplinary nursing can get rid of the dilemma of traditional nursing, construct a more complete and scientific nursing system, and provide patients with high-quality nursing services. Traditional nursing work is mainly the sole responsibility of nurses, with single and incomplete nursing content and limited nursing effect. Under the multidisciplinary nursing model, multidisciplinary resources can be integrated, the responsibilities of each discipline can be clarified, and a collaborative nursing mechanism can be constructed, which not only enriches nursing content and expands nursing models, but also makes up for the deficiencies of traditional nursing work and improves the effectiveness and professionalism of nursing work<sup>[4]</sup>.

### **2.3. From the clinical perspective**

Multidisciplinary nursing can guarantee the smooth progress of patients' radiotherapy. If radiation-induced

skin damage is not controlled in time, symptoms such as blisters and ulceration may occur, leading to the interruption of radiotherapy and further affecting the tumor treatment process. Under the multidisciplinary nursing model, the degree of radiation-induced skin damage can be effectively reduced through multidisciplinary collaborative cooperation, avoiding the interruption of the tumor treatment process. At the same time, by adjusting patients' nutritional supply and improving nursing effect, it lays a foundation for the smooth progress of subsequent radiotherapy, helps patients recover better and prolong their life cycle<sup>[5]</sup>.

### **3. Existing problems in the application of multidisciplinary nursing in the nursing of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma**

At present, the application of multidisciplinary nursing in the nursing of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma is still in the initial stage, with some problems as follows:

#### **3.1. Imperfect multidisciplinary collaboration mechanism**

The core of multidisciplinary nursing is multidisciplinary collaborative cooperation to improve nursing effectiveness through resource integration and collaboration. However, at present, the multidisciplinary collaboration mechanism in some medical institutions is not perfect, there is a lack of effective collaboration among various disciplines, and the phenomenon of "each sweeping the snow in front of one's door" is serious. There is a lack of effective communication channels among nursing, nutrition, rehabilitation, dermatology and other disciplines, and personalized nursing plans cannot be provided for patients, thus seriously affecting the nursing effect<sup>[6]</sup>.

#### **3.2. Backward nursing concept**

Some nurses still adopt the traditional nursing concept, focusing the nursing work on symptomatic nursing after skin damage, ignoring the pre-radiotherapy prevention work and post-radiotherapy rehabilitation work, resulting in poor overall nursing effect. At the same time, some nurses lack in-depth understanding of multidisciplinary nursing and insufficient collaborative awareness, making it difficult to give full play to the role of the multidisciplinary nursing model.

#### **3.3. Insufficient professional competence of nurses**

Multidisciplinary nursing puts forward higher requirements and standards for the professional competence of nurses. It requires nurses not only to master basic nursing knowledge and skills, but also to understand professional knowledge of related disciplines such as nutrition, rehabilitation and psychology, and possess interdisciplinary abilities. However, at present, some nurses have a weak professional knowledge system, single knowledge mastery and insufficient interdisciplinary abilities. Meanwhile, the training mechanism is not perfect, making it difficult to effectively cultivate the professional literacy of nurses<sup>[7]</sup>.

#### **3.4. Lack of personalized nursing plans**

Patients undergoing radiotherapy for nasopharyngeal carcinoma have certain differences in skin condition, eating habits, psychological quality, radiotherapy dose and so on, and their nursing needs are also different.

However, at present, the multidisciplinary nursing plans in some medical institutions lack personalization and innovation, mainly adopting a unified nursing model, and no differentiated nursing plans are formulated according to the actual situation of patients, making it difficult for nursing to meet the actual needs of patients, thus affecting the improvement of nursing effect <sup>[8]</sup>.

#### **4. Strategies for optimizing the application of multidisciplinary nursing in the nursing of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma**

In view of the above problems, feasible and achievable optimization strategies can be put forward from four aspects: collaboration mechanism, nursing concept, personnel literacy and nursing plan, so as to give full play to the role of multidisciplinary nursing in the nursing of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma.

##### **4.1. Construct a multidisciplinary collaboration mechanism and strengthen resource integration and sharing**

In the new era, it is necessary for hospitals to construct a multidisciplinary collaborative nursing mechanism, clarify the scope of responsibilities and division of labor of nutrition, rehabilitation, psychology and other disciplines, and lay a foundation for integrating high-quality medical resources. Meanwhile, a multidisciplinary nursing team should be established, a sound multidisciplinary communication mechanism and consultation mechanism should be built, regular consultation meetings should be held, all parties should share patients' condition information, and effective nursing plans should be jointly formulated through in-depth collaboration. In addition, a network platform can be used to build information communication channels to lay a foundation for information communication among various disciplines. In this way, the smooth development of multidisciplinary nursing work can be ensured, and higher-quality medical services can be provided for patients <sup>[9]</sup>.

##### **4.2. Timely transform nursing concepts and strengthen preventive nursing awareness**

Nurses are the core force to promote the implementation of multidisciplinary nursing. In this regard, nurses should be guided to timely transform the traditional nursing concept, establish the advanced concept of "prevention first, whole-course nursing", and implement it throughout the whole process of radiotherapy. Hospitals can regularly organize special training and case sharing meetings, invite dermatologists, radiotherapy experts and others to give systematic lectures to nurses, and help nurses deeply understand the importance of prevention by analyzing the occurrence mechanism of radiation-induced skin damage, skin change characteristics at different radiotherapy stages and key nodes of preventive nursing. For example, before the start of radiotherapy, nurses need to conduct a comprehensive assessment of patients' skin condition, including skin elasticity, pigmentation, past skin disease history, etc., and formulate personalized skin protection plans according to the assessment results, guiding patients to avoid using irritating skin care products, wear loose and soft cotton clothes, reduce skin friction in the radiotherapy area, etc. During radiotherapy, closely observe patients' skin reactions daily, and once early symptoms such as slight erythema or dryness are found, immediately take interventions such as cold compress and applying medical moisturizer to prevent further aggravation of damage. Meanwhile, strengthen health education for patients and their

families, and enable them to master the key points of home skin care through distributing graphic manuals, demonstrating operation videos and other ways, such as keeping the skin clean and dry, avoiding direct sunlight, reasonable diet to supplement vitamins and protein, etc., so as to extend the prevention awareness to patients' daily life and form a "medical-nursing-patient" three-party linked preventive nursing model <sup>[10]</sup>.

### **4.3. Strengthen nurse training and improve professional competence**

Medical institutions need to establish and improve a nurse training mechanism, and regularly organize nurses to carry out training activities related to multidisciplinary nursing, covering nutrition, psychological intervention, skin care and other fields. Special lectures can be given by experts from nutrition, rehabilitation, psychology and other disciplines to share typical cases with nurses, so as to broaden nurses' horizons and improve their professional literacy. Meanwhile, information technology can be relied on to adopt online training, requiring nurses to learn relevant courses and help them build a complete knowledge system. In addition, targeted training plans should be formulated. A variety of training plans should be provided for nurses with different working years and professional levels to better meet their actual needs, thereby improving the training effect.

### **4.4. Formulate personalized nursing plans and enhance nursing effectiveness**

When formulating personalized nursing plans, first of all, a comprehensive and detailed comprehensive assessment of patients should be carried out, including not only basic clinical data such as patients' age, gender, tumor stage, radiotherapy dose and irradiation site, but also in-depth understanding of patients' basic skin condition (such as whether there is eczema, allergy history, etc.), nutritional status (such as whether there is malnutrition), psychological state, living habits (such as whether smoking, drinking, spicy diet) and the cognitive degree and self-care ability of radiation-induced skin damage. Based on this assessment result, the multidisciplinary nursing team should participate together to formulate a "tailor-made" nursing plan for each patient. For example, for patients with poor nutritional status or poor skin condition, nutritionists should formulate targeted diet improvement plans according to their actual situation, such as providing high-protein and high-vitamin diet, and giving nutritional supplements if necessary to enhance skin repair ability; for patients with negative emotions such as anxiety and depression, psychologists need to intervene in a timely manner, and combine with the actual situation of patients to dredge negative emotions and relieve psychological pressure through cognitive behavioral therapy, mindfulness meditation, relaxation training and other ways, so that they can face radiotherapy with an optimistic attitude and actively cooperate with doctors. In terms of skin care, nursing measures should be dynamically adjusted according to the skin reaction grading of patients at different stages of radiotherapy (such as grade I erythema, grade II blisters, grade III ulcer, etc.). For patients with grade I reaction, focus on strengthening skin moisturizing and avoiding irritation, and guide them to use medical repair dressings containing ceramides, hyaluronic acid and other ingredients; for patients with grade II reaction with blisters, blister treatment should be carried out under strict aseptic operation, after extracting blister fluid, apply drugs to promote wound healing, and adopt exposure therapy or gently cover with sterile gauze; for patients with grade III ulcer, it is necessary to combine with wound specialist nurses for debridement and dressing change, and use growth factor drugs to promote granulation tissue growth if necessary. Meanwhile, the nursing frequency, observation points and effect evaluation criteria should be clearly defined in the plan, and the multidisciplinary team should regularly review and adjust according to

the actual reaction and recovery of patients, ensuring that the nursing plan always fits the individual needs of patients, so as to minimize the degree of radiation-induced skin damage, promote wound healing and improve patients' quality of life.

## 5. Conclusion

Radiotherapy is the preferred treatment for nasopharyngeal carcinoma. As a common acute complication of radiotherapy, radiation-induced skin damage seriously affects patients' physical and mental state, treatment compliance and quality of life, so it is of great clinical significance to do a good job in relevant nursing intervention. However, there are some problems in the application of multidisciplinary nursing at present, which seriously affect the improvement of nursing effect. In this regard, various methods and means should be adopted to solve the problems, improve nursing effect, and promote the standardized and effective application of multidisciplinary nursing in the nursing of radiation-induced skin damage in patients undergoing radiotherapy for nasopharyngeal carcinoma.

## Disclosure statement

The author declares no conflict of interest.

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