

REVIEW PAPER

UDK: 613.24:616.32-056.24

DOI: 10.5937/hralsh2601017B

The importance of proper nutrition in different patient populations with undifferentiated nasopharyngeal carcinoma (UCNT)

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Received 06. 04. 2026.

Revised 15. 05. 2026.

Accepted 18. 06. 2026.

ryngeal carcinoma, with special emphasis on UCNT, and to underline the role of nutritional therapy in improving treatment outcomes across different age groups.

Keywords: nutrition; nasopharyngeal carcinoma; UCNT; nutritional status.

Abstract

Nasopharyngeal carcinoma is a malignant disease frequently associated with significant nutritional disturbances during the course of the disease and oncological treatment. Histological types include keratinizing squamous cell carcinoma and non-keratinizing carcinoma (differentiated and undifferentiated types). Among these, undifferentiated carcinoma of nasopharyngeal type (UCNT) is the most common histological form and is characterized by specific etiological factors, including Epstein–Barr virus infection, genetic predisposition, and environmental factors. Patients with UCNT are at increased risk of developing malnutrition due to metabolic alterations caused by malignancy, as well as treatment-related adverse effects such as radiotherapy and chemotherapy. These effects include dysphagia, mucositis, xerostomia, and loss of appetite, leading to reduced food intake and weight loss. Numerous studies indicate that nutritional status significantly affects disease course, treatment tolerance, and quality of life. Timely nutritional assessment and individualized nutritional therapy can improve clinical outcomes and reduce complication rates during treatment. The aim of this paper is to highlight the importance of proper nutrition in patients with nasopharyngeal carcinoma, with special emphasis on UCNT, and to underline the role of nutritional therapy in improving treatment outcomes across different age groups.

INTRODUCTION

Proper nutrition is a fundamental prerequisite for maintaining health and optimal body function. Adequate intake of macro- and micronutrients ensures energy balance, immune system function, and tissue regeneration. In recent decades, increasing attention has been paid to the role of nutrition in the prevention and treatment of chronic non-communicable diseases, including malignancies.

Epidemiological studies indicate that nutritional factors play a significant role in the development and progression of many modern diseases [1,2]. In cancer patients, complex metabolic changes often lead to malnutrition and cachexia, negatively affecting dis-

ease progression, treatment tolerance, and overall survival [3].

Nasopharyngeal carcinoma has a specific epidemiological pattern, with an incidence of 1.5 per 100,000 population annually, occurring 2–3 times more frequently in men than in women, and most commonly diagnosed in middle-aged and older individuals, with a mean age of 50–60 years [4]. UCNT is the most common histological subtype and is associated with Epstein–Barr virus infection, genetic factors, and environmental influences [5].

Modern approaches to cancer treatment increasingly emphasize a multidisciplinary strategy, in which nutritional therapy plays a key role in optimizing treatment outcomes.

Epidemiology and Etiology of UCNT

UCNT shows marked geographic variation in incidence. The highest rates are observed in Southeast Asia, particularly southern China, whereas it is significantly less common in Europe [6]. This distribution highlights the importance of genetic and environmental factors in disease etiopathogenesis. UCNT demonstrates a strong association with Epstein–Barr virus (EBV) infection, detected in more than 95% of cases, with the virus present in tumor cells in a latent form. Dietary habits also play a significant role, particularly the consumption of nitrosamine-rich foods such as salted fermented fish, along with low intake of fresh fruits and vegetables [7,8].

Clinical Presentation and Diagnosis of UCNT

The clinical presentation of UCNT is often nonspecific and includes unilateral nasal obstruction, epistaxis, serous otitis media, painless cervical lymphadenopathy, and cranial nerve involvement. Diagnosis is based on endoscopic examination of the nasopharynx with biopsy, along with radiological evaluation (CT/MRI) to assess local tumor extension and staging [9,10].

Nutritional Status and Impact of Therapy

Patients with head and neck malignancies are at high risk of malnutrition due to combined effects of the tumor and treatment. Malnutrition is a multifactorial syndrome characterized by reduced food intake, increased energy demands, and systemic inflammatory response. Cancer cachexia involves progressive loss of body weight and muscle mass associated with increased production of pro-inflammatory cytokines [11]. Elevated cytokines (TNF- α , IL-6) contribute to anorexia, muscle breakdown, and negative energy balance.

Early nutritional intervention is therefore essential. Symptoms such as dysphagia, pain, and anorexia further reduce food intake. Nutritional status is considered a key prognostic factor, as poor nutritional status is associated with increased complications and worse prognosis [12,13]. Radiotherapy and chemotherapy are the main treatment modalities but often lead to adverse effects affecting nutrition, including oral mucositis, xerostomia, dysphagia, and taste alterations. These symptoms contribute to a vicious cycle of reduced intake and worsening malnutrition. According to ESPEN guidelines, early nutritional intervention improves treatment tolerance and clinical outcomes. Continuous monitoring should include body weight, weight loss, BMI, food intake, laboratory parameters, and functional status, along with mandatory nutritional risk screening. Nutritional therapy is indicated in patients with significant weight loss (>5%), reduced intake (<50–75% of requirements), or anticipated inadequate intake for more than 7 days.

The therapeutic approach is hierarchical, with oral nutrition as the first line intervention, followed by enteral nutrition administered via nasogastric tube for short-term support, or percutaneous endoscopic gastrostomy (PEG) for long-term support, and parenteral nutrition is when enteral feeding is insufficient or not feasible.

Guidelines also emphasize moderate physical activity, avoidance of restrictive diets, and no routine supplementation without clear indication, with individualized patient-centered care [14,15].

Nutritional Needs in Different Populations

Nutritional requirements vary by age. Pediatric patients require adequate intake for growth and development, whereas elderly patients often face sarcopenia and reduced appetite. Socioeconomic factors and lifestyle habits also significantly influence nutritional status [16,17]. Differences in nutritional requirements are particularly evident in sensitive and vulnerable groups, such as pregnant women, patients with chronic diseases, immunocompromised individuals, and socioeconomically disadvantaged populations.

Pregnant and lactating women have increased requirements for protein, iron, folic acid, and omega-3 fatty acids. Inadequate nutrition may result in intra-uterine growth restriction and preterm birth, and may affect long-term health of the child [18].

Socioeconomic status has a significant impact on diet quality. Socioeconomically disadvantaged populations often experience limited access to high-quality foods, increased consumption of inexpensive processed foods, and a higher risk of both malnutrition or obesity. This phenomenon is described as the “nutritional paradox,” where both energy deficiency and excess coexist [19].

Immunocompromised patients have increased protein requirements and benefit from importance of antioxidant intake, while strict adherence to food safety practices is essential. Nutritional therapy reduces infections and improves outcomes [20].

Patients with comorbidities, including diabetes, cardiovascular diseases, and endocrine disorders, complicate nutritional management and require careful balancing of therapeutic goals [21].

Nutritional therapy should provide an energy intake of approximately 25–30 kcal/kg, protein intake of 1.2–2.0 g/kg, while emphasizing soft, easily digestible foods, frequent small meals, and adequate hydration. In addition, oral nutritional supplements and enteral nutrition are key strategies for prevention and treatment of malnutrition [22].

Personalized Nutrition (Modern Approach)

Modern medicine emphasizes personalized nutrition based on nutritional status, individual needs, disease

stage, and therapy. This approach improves adherence, reduces complications, and enhances quality of life [23].

Role of Public Health Factors

Nutritional status depends not only on disease but also on broader lifestyle and socioeconomic factors. Studies highlight the link between health behaviors and chronic diseases, emphasizing the need for integrated approaches including public health measures [24].

CONCLUSION

Proper nutrition plays a crucial role in the management of patients with UCNT. These patients are particularly susceptible to malnutrition due to combined effects of tumor and treatment. Timely nutritional assessment and individualized care improve treatment outcomes, reduce complications, and enhance quality of life. Integration of nutritional therapy into standard oncological protocols, alongside public health measures, represents an important step toward improving modern patient care. Effective nutritional therapy requires collaboration among physicians, nutritionists, and nurses. A multidisciplinary approach enables early identification of malnutrition and appropriate intervention.

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Značaj pravilne ishrane kod različitih grupa pacijenata sa nediferenciranim nazofaringealnim karcinomom (UCNT)

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Kratak sadržaj

Nazofaringealni karcinom je maligna bolest koja je često povezana sa značajnim poremećajima nutritivnog statusa tokom toka bolesti i onkološkog lečenja. Histološki tipovi uključuju keratinozni skvamozni karcinom i nekeratinozni karcinom (diferencirani i nediferencirani tipovi). Među njima, nediferencirani karcinom nazofaringealnog tipa (UCNT) predstavlja najčešći histološki oblik i karakterišu ga specifični etiološki faktori, uključujući infekciju Epstein–Bar virusom, genetsku predispoziciju i faktore životne sredine. Pacijenti sa UCNT imaju povećan rizik od razvoja malnutricije usled metaboličkih promena izazvanih malignom bolešću, kao i neželjenih efekata povezanih sa terapijom, poput radioterapije i hemioterapije. Ovi efekti uključuju

disfagiju, mukozitis, kserostomiju i gubitak apetita, što dovodi do smanjenog unosa hrane i gubitka telesne mase. Brojne studije ukazuju na to da nutritivni status značajno utiče na tok bolesti, toleranciju terapije i kvalitet života pacijenata. Pravovremena procena nutritivnog statusa i individualizovana nutritivna terapija mogu poboljšati kliničke ishode i smanjiti učestalost komplikacija tokom lečenja. Cilj ovog rada je da ukaže na značaj pravilne ishrane kod pacijenata sa nazofaringealnim karcinomom, sa posebnim osvrtom na UCNT, kao i da naglasi ulogu nutritivne terapije u poboljšanju ishoda lečenja kod različitih starosnih grupa.

Ključne reči: ishrana; nazofaringealni karcinom; UCNT; nutritivni status.