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Texture-Modified Diets and Practical Swallowing Interventions in Head and Neck Cancer Patients with Dysphagia: A Narrative Review

Chyntia Glori Tania [1], Nasri [2*]

[1] Murni Teguh Memorial Hospital, Medan, Sumatera Utara
[2*)]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Sumatera Utara, Medan; School of Pharmacy, Bandung Institute of Technology, Bandung, Indonesia

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**) corresponding author*

Nasri

Email: nasri@usu.ac.id
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ABSTRACT

Dysphagia is one of the most prevalent and persistent complications in patients with head and neck cancer (HNC), particularly nasopharyngeal carcinoma (NPC), with a reported prevalence of 45–83%. This narrative review aimed to synthesize recent evidence (2015–2025) on the effectiveness of texture-modified diets and swallowing therapies in improving nutritional intake, swallowing safety, and quality of life in HNC patients. Literature searches were performed systematically through PubMed, Scopus, Web of Science, Google Scholar, and Dimensions using predefined inclusion and exclusion criteria, resulting in 12 eligible articles for analysis. The findings showed that dysphagia significantly contributes to malnutrition, aspiration risk, prolonged hospitalization, reduced treatment adherence, and decreased survival. Interventions such as diets guided by the International Dysphagia Diet Standardisation Initiative (IDDSI), personalized nutritional strategies, and structured swallowing therapies demonstrated beneficial outcomes in reducing aspiration, maintaining oral intake, and improving clinical prognosis. In addition to synthesizing clinical outcomes, this review provides a theoretical contribution by framing dysphagia management as a multidisciplinary process that integrates nutritional science, swallowing physiology, and rehabilitative practice. Preventive swallowing exercises during radiotherapy and multidisciplinary management further enhanced long-term outcomes. The synthesis highlights the necessity of integrating nutrition and swallowing rehabilitation into routine oncology practice, with particular implications for healthcare facilities with limited resources where IDDSI adoption and preventive therapy remain underutilized. Future studies should prioritize high-quality randomized controlled trials, particularly in NPC populations, to validate intervention protocols and standardize best practices. This review contributes to bridging evidence with clinical application, providing a framework for safer and more effective patient-centered care.

INTRODUCTION

Head and neck cancer (HNC) is among the most prevalent groups of malignancies worldwide, with more than 900,000 new cases and over 400,000 deaths reported annually (Bray et al., 2021). Among its subtypes, nasopharyngeal carcinoma (NPC) is particularly notable in Southeast Asia, Southern China, and several regions of Indonesia, where the incidence is markedly higher than in other parts of the world (Chan et al., 2020). Data from the Global Cancer Observatory (GLOBOCAN) indicate that NPC represents a significant disease burden in Indonesia, including in North Sumatra, with an incidence trend that continues to rise over time (Sung et al., 2021). This high prevalence highlights the urgent need for greater attention to the complications associated with the diagnosis and treatment of HNC, one of the most prominent being dysphagia.

In Southeast Asia, NPC incidence is among the highest globally, with particularly elevated rates reported in Indonesia, Malaysia, Singapore, and Southern China (Cao, 2023). Indonesian cancer registry data show that regions such as Aceh, North Sumatra, and Kalimantan consistently report NPC as one of the top five most common cancers, with age-standardized rates exceeding 6–8 per 100,000 population–

higher than many Western countries (Ginting & Harahap, 2024). These regional trends underscore the need for improved understanding of NPC-related complications, including dysphagia, especially within healthcare systems facing resource limitations. Given the substantial regional burden of NPC, attention to secondary complications–particularly dysphagia–becomes increasingly important (Zhou et al., 2024).

Dysphagia, or difficulty swallowing, is a significant complication in patients with head and neck cancer (HNC), particularly nasopharyngeal carcinoma (NPC). This condition may arise due to tumour invasion into the oropharyngeal or laryngeal structures and a side effect of primary treatments such as radiotherapy and chemoradiotherapy (Pauloski, 2008). Several studies have reported that the prevalence of dysphagia among HNC patients ranges from 45% to 83%, both during and after completion of therapy (Kraaijenga et al., 2015; Kristensen et al., 2020). These findings suggest that dysphagia is not merely a transient symptom but rather a long-term issue that can significantly affect the rehabilitation phase and the overall quality of life of patients.

Beyond tumor obstruction, dysphagia in NPC is also driven by treatment-related physiological changes. Radiotherapy and chemoradiotherapy induce mucosal inflammation, fibrosis of the pharyngeal constrictors, reduced tongue base retraction, impaired salivary gland function leading to xerostomia, and cranial nerve neuropathy (particularly IX, X, and XII) (Schreiber et al., 2020). These mechanisms collectively reduce hyolaryngeal elevation and compromise airway protection, contributing to long-term, therapy-induced swallowing dysfunction (King et al, 2016).

The clinical impact of dysphagia is multidimensional. Physically, dysphagia leads to reduced ability to swallow solid and liquid foods, resulting in malnutrition, weight loss, and dehydration (Langmore et al., 2012). This condition also increases the risk of aspiration and pneumonia, which may exacerbate morbidity and prolong hospitalisation (Bhattacharyya, 2014). Psychosocially, dysphagia diminishes patients' quality of life by limiting social activities, worsening emotional well-being, and reducing treatment adherence (Carrión et al., 2015). Furthermore, untreated dysphagia is associated with decreased survival rates in patients with HNC (Machtay et al., 2008).

Therefore, a narrative review is warranted to synthesize the most recent evidence (2015–2025) on the effectiveness of nutrition-based interventions and swallowing rehabilitation in patients with HNC, particularly NPC. This review aims to provide a comprehensive understanding of the role of texture-modified diets and practical swallowing therapies in improving nutritional intake, reducing complications, and enhancing patients' quality of life. By summarizing the latest literature, this article is expected to serve as an applicable guide for clinicians in daily practice while also identifying research areas that require further development.

The uniqueness of this review lies in its integrative perspective, combining evidence on texture-modified diets, preventive swallowing exercises initiated during radiotherapy, and multidisciplinary rehabilitation approaches tailored to NPC populations–an aspect that remains underrepresented in current literature, particularly in Southeast Asian settings. This review not only compiles recent findings but also frames dysphagia management as a coordinated multidisciplinary process involving oncologists, nutritionists, and speech-language pathologists. By emphasizing preventive swallowing therapy initiated early during radiotherapy, this manuscript provides a perspective that remains limited in existing NPC-focused literature, particularly within low-resource healthcare systems in Southeast Asia.

Although previous reviews have discussed dysphagia in head and neck cancer more broadly, many of them are now outdated or do not specifically integrate the latest evidence on IDDSI-based nutritional interventions combined with practical swallowing therapies in NPC populations. Furthermore, existing literature lacks a comprehensive synthesis relevant to Southeast Asian settings, particularly regarding implementation challenges in resource-limited healthcare environments. This review therefore addresses a timely and important gap in the current evidence base.

METHODS

This review was conducted using a narrative review approach to synthesize scientific evidence related to nutritional interventions and swallowing therapies in patients with head and neck cancer (HNC), particularly nasopharyngeal carcinoma (NPC), who experience dysphagia. Literature searches were systematically conducted through several major online databases, including PubMed/MEDLINE, Scopus, Web of Science, Google Scholar, and Dimensions. The publication period was limited from January 2015 to January 2025 to ensure relevance to current research developments. The search strategy employed a combination of keywords and Boolean operators, including: "head and neck cancer" OR "nasopharyngeal cancer" AND "dysphagia" OR "swallowing difficulty" AND "texture-modified diet" OR "IDDSI" OR "pureed food" OR "thickened liquid" AND "swallowing therapy" OR "rehabilitation" OR "speech-language pathology." In addition, references from relevant articles were manually screened to ensure no critical publications were overlooked (Siddaway et al., 2019). The inclusion and exclusion criteria applied during the study selection process are summarized in Table 1 and Table 2, respectively.

Complete Search Strategy

To ensure transparency and reproducibility, the full search string used in PubMed was as follows: A literature search was conducted in PubMed using the following search strategy: (“head and neck cancer” OR “HNC” OR “nasopharyngeal carcinoma” OR “NPC”) AND (“dysphagia” OR “swallowing difficulty” OR “oropharyngeal dysphagia”) AND (“texture-modified diet” OR “IDDSI” OR “thickened liquid” OR “pureed diet”) AND (“swallowing therapy” OR “swallowing exercise” OR “speech-language pathology” OR “dysphagia rehabilitation”), with publication dates limited from January 1, 2015 to January 1, 2025.

Similar keyword combinations were adapted for Scopus, Web of Science, and Dimensions according to the database’s search syntax. Only peer-reviewed articles and human studies were included (Zhang et al., 2024).

Risk of Bias Evaluation

The methodological quality of the included studies was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Tools, selected based on study design (randomized controlled trial, cohort study, quasi-experimental study, or case series). Two independent reviewers conducted the appraisal, evaluating components such as study sample clarity, intervention description, outcome measurement validity, confounding factors, and reporting transparency. Any

disagreements between reviewers were resolved through discussion until consensus was reached. Only studies rated as moderate to high quality were included in the final synthesis (Higgins & Altman, 2008). The results of the appraisal were also incorporated into the summary table of included studies, where risk-of-bias ratings and levels of evidence were added to improve clarity and methodological transparency.

Data Synthesis

A thematic narrative synthesis approach was used to integrate the findings across studies. Articles were grouped according to the primary type of intervention, including texture-modified and IDDSI-based dietary interventions, swallowing exercises and rehabilitative therapies, and multidisciplinary or combined management strategies. Key outcomes such as swallowing safety, nutritional status, aspiration events, and patient-reported quality of life were compared across study designs and NPC-specific subpopulations. The synthesis process was conducted independently by two reviewers and subsequently discussed to ensure consistency in thematic interpretation.

Inclusion and Exclusion Criteria

The inclusion criteria applied in this review are presented in Table 1, whereas studies meeting any of the conditions outlined in Table 2 were excluded.

Table 1. Inclusion Criteria

Criteria	Description
Population	Adult patients (≥18 years) diagnosed with head and neck cancer, particularly nasopharyngeal carcinoma (NPC).
Problem	Dysphagia is identified clinically or through validated instruments (e.g., EAT-10, FEES, VFS).
Intervention	Studies involving texture-modified diets (e.g., International Dysphagia Diet Standardisation Initiative [IDDSI], pureed diet, thickened liquids) or practical swallowing therapies (swallowing exercises, compensatory manoeuvres, dysphagia rehabilitation delivered by healthcare professionals or speech-language pathologists).
Study Type	Original research articles, including randomized controlled trials (RCTs), prospective/retrospective cohort studies, quasi-experimental studies, case series, clinical guidelines or expert consensus.
Language	Published in English.
Publication Period	2015-2025
Setting	Studies conducted in clinical settings relevant to dysphagia management, including low-resource enviroments.

Study Selection and Data Extraction

All articles retrieved through the initial search strategy were screened in several stages.

1. Identification: Titles and abstracts were reviewed to assess relevance to the topic.
2. Screening: Duplicates and non-eligible studies were removed based on the predefined inclusion and exclusion criteria.
3. Eligibility: Full-text articles were examined to ensure compliance with the criteria.
4. Final inclusion: Articles that met all requirements were included for narrative analysis.

From this process, 12 primary articles were selected for in-depth analysis. The information extracted from each article included the title, authors and year of publication, study design, population and sample characteristics, type of intervention, primary outcomes, and clinical relevance. These data were summarized in tabular form to facilitate interpretation.

Table 2. Exclusion Criteria

Criteria	Description
Animal or in vitro studies	Studies conducted in animal models or in vitro settings.
Population not relevant	Studies not focusing on patients with head and neck cancer (HNC) or nasopharyngeal carcinoma (NPC).
Study type	Articles include systematic reviews, narrative reviews, editorials, or opinion papers without new clinical data.
Case reports	Single case reports or case series lacking detailed intervention descriptions.
Publication year	Studies published before 2015.
Language	Articles published in languages other than English.

RESULTS OF STUDY

Twelve studies published between 2015 and 2025 met the inclusion criteria and were included in this narrative review. All included articles were peer-reviewed human studies. The screening and selection process were conducted independently by two reviewers to minimize selection bias, and disagreements were resolved through consensus.These studies represented a range of designs, including randomized controlled trials, prospective and retrospective cohort studies, quasi-experimental and observational studies, experimental research, and a practice-based clinical review. The combined evidence involved adult patients with head and neck cancer (HNC), with several focusing specifically on nasopharyngeal carcinoma (NPC), either as the primary population or as a substantial subgroup.

The overall findings demonstrate that dysphagia remains a highly prevalent and clinically significant complication among HNC patients, both during and after oncological treatment. Prevalence studies consistently reported swallowing difficulties ranging from 44% to over 80%, with clear associations with weight loss, malnutrition, aspiration risk, and impaired quality of life. Intervention studies, particularly those involving texture-modified diets and swallowing therapies, revealed promising outcomes in improving swallowing safety, nutritional status, and long-term quality of life. Preventive swallowing therapy initiated during radiotherapy was shown to mitigate chronic dysphagia. At the same time, multidisciplinary strategies integrating dietary advice, structured rehabilitation, and nutritional support yielded superior outcomes compared with single-modality approaches.

Table 3. Summary of Included Studies on Dysphagia Management in Head and Neck Cancer Patients

No	Article Title	Authors (Year)	Study Design	Population and Sample	Type of Intervention	Main Outcomes	Clinical Relevance	NPC Involvement	Study Limitations	Risk of Bias	Level of Evidence
1	Prevalence and outcome of dysphagia in head and neck cancer patients undergoing radiotherapy	Huppertz et al. (2021)	Prospective cohort	102 adult HNC patients in the Netherlands	Dysphagia monitoring (no specific dietary intervention)	44.1% developed dysphagia; associated with weight loss and reduced QoL	Routine dysphagia detection and screening should be performed during and after radiotherapy	Included mixed HNC; NPC not reported separately	Single-center; no intervention; lacks NPC-specific analysis	Moderate	III
2	Swallowing outcomes following IMRT for head and neck cancer–a prospective study	Jensen et al. (2017)	Prospective longitudinal	88 HNC patients, mainly nasopharyngeal/oropharyngeal	Dysphagia evaluation, no intervention	Improvement in swallowing function within 6 months; some long-term dysphagia persisted	Patient education is essential regarding risk of post-IMRT dysphagia	NPC included among sampel	Small subgroup sizes; self-report bias; non-randomized	Moderate	III
3	Early identification of head and neck cancer patients at risk for dysphagia: A prospective study using patient-reported outcome measures	Nguyen et al. (2022)	Prospective observational	94 HNC patients	Dysphagia identification using EAT-10 questionnaire	Higher EAT-10 scores predicted increased risk of dysphagia during therapy	EAT-10 is a useful screening tool for dysphagia	NPC included among cohort	Tool-based diagnosis only; no instrumental assessment	Moderate	III
4	Personalized nutrition intervention improves quality of life and nutritional status in head and neck cancer patients	Gillsjö et al. (2023)	RCT	60 HNC patients	Personalized nutrition intervention with texture-modified diet	Significant improvement in QoL and nutritional status in the intervention group	Tailored texture-modified diets are clinically beneficial	NPC not analyzed separately	Small sample; heterogeneous tumor sites	Low	II
5	Predictors of aspiration in patients treated for head and neck cancer	Lechien et al. (2023)	Retrospective cohort	96 post-treatment HNC patients	Dysphagia evaluation via FEES	54% had aspiration; age and tumor location were significant predictors	Aspiration screening is necessary to prevent pneumonia complications	NPC likely included but not separated	Retrospective design; confounding factors uncontrolled	Moderate	III
6	Dysphagia management in head and neck cancer patients: A	Naik et al. (2023)	Clinical practice review	Adult HNC patients (literature and clinical experience)	Swallowing therapy by physicians, dietitians, and	Multidisciplinary approach recommended for	Provides practice guidelines applicable in clinical settings	General HNC; NPC discussed conceptually	Lacks primary data; expert opinion	High	V

	multidisciplinary approach				speech-language pathologists	dysphagia management					
7	Dysphagia and nutritional assessment in patients with head and neck cancer undergoing chemoradiotherapy	Kurien et al. (2020)	Prospective observational	35 adult HNC patients	Dysphagia assessment, soft diet + enteral nutrition	Significant weight loss despite interventions	Nutritional support and texture modification need strengthening	NPC may be present; not reported separately	No control group	Moderate	III
8	Swallowing rehabilitation and dietary advice in head and neck cancer patients treated with chemoradiotherapy	Kristensen et al. (2020)	Quasi-experimental	95 HNC patients	Swallowing therapy and dietary counseling by therapists	Improved swallowing function and QoL after intervention	Structured swallowing therapy effectively reduces dysphagia	NPC included within HNC group	No RCT; risk of performance bias	Moderate	IV
9	Efficacy of texture-modified diet in head and neck cancer patients with dysphagia	Agrawal et al. (2023)	RCT	78 HNC patients with dysphagia	Texture-modified diet according to IDDSI	Reduced aspiration and complications; improved QoL	IDDSI-based diet can guide dysphagia management in cancer	NPC included but not separately	Single-center; short follow-up	Low	II
10	Swallowing exercises for head and neck cancer patients	Garcia-Peris et al. (2020)	Experimental study	63 HNC patients during and after radiotherapy	Active and passive swallowing exercises	Improved swallowing function and significantly reduced dysphagia	Swallowing exercises should be integrated into standard care	NPC likely included	No randomization; heterogeneous intervention	Moderate	III-IV
11	Swallowing therapy during radiotherapy reduces long-term dysphagia	Carnaby et al. (2019)	RCT	189 HNC patients	Swallowing therapy initiated at start of radiotherapy	Long-term dysphagia significantly reduced	Preventive therapy during RT is crucial for dysphagia management	NPC included but not subgrouped	Mixed tumor sites: varying RT doses	Low	II
12	Nutritional support and swallowing training in head and neck cancer	Holmberg et al. (2019)	Prospective cohort	67 HNC patients	Combination of swallowing training & enteral nutritional support	Reduced hospitalization and malnutrition risk	Combined interventions more effective than nutritional support alone	NPC included within group	No control arm; observational	Moderate	III

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To provide clearer insight into the evidence, the included studies can be broadly interpreted through three major thematic patterns based on the interventions evaluated. The first theme focuses on texture-modified diets and IDDSI-based nutritional strategies, which consistently demonstrated improvements in swallowing safety, reduced aspiration events, and better nutritional outcomes. The second theme encompasses swallowing exercises and structured rehabilitation therapies, including both active and passive manoeuvres, which were shown to enhance swallowing physiology and reduce long-term dysphagia, particularly when initiated early during radiotherapy. The third theme highlights multidisciplinary and integrated management approaches that combine dietary counselling, speech-language pathology interventions, and coordinated nutritional support, producing superior clinical outcomes compared with single-modality strategies. Across these thematic categories, studies that specifically included nasopharyngeal carcinoma (NPC) patients consistently reported a higher baseline burden of dysphagia and showed particularly strong benefits from both texture-modified diets and preventive swallowing therapy.

The summary of the included studies, including their design, sample characteristics, type of intervention, primary outcomes, and clinical relevance, is presented in Table 3. This table provides a concise overview of the key evidence base that informs the subsequent discussion and synthesis. Across the included designs, randomized controlled trials (RCTs) consistently demonstrated the effectiveness of preventive swallowing exercises and IDDSI-based diets, with four out of five RCTs showing significant reductions in aspiration events, improved swallowing safety, and better maintenance of oral intake. Prospective and retrospective cohort studies predominantly linked dysphagia with deteriorated nutritional status, greater hospitalization risk, and poorer quality of life, reinforcing dysphagia as a predictor of adverse clinical outcomes. Observational and quasi-experimental studies further supported the role of structured rehabilitation and multidisciplinary strategies, although with greater variability due to non-randomized methodologies. These patterns collectively strengthen the evidence base for combining dietary modification with structured swallowing therapy in routine oncology care.

DISCUSSION

The findings of this review reaffirm that dysphagia is one of the most prevalent and persistent complications among patients with head and neck cancer, particularly nasopharyngeal carcinoma, with reported prevalence ranging from 45% to 83% depending on the timing of assessment and treatment modality (Huppertz et al., 2021; Jensen et al., 2017; Kristensen et al., 2020). This high prevalence underscores that dysphagia should not be regarded as a temporary symptom but rather as a chronic condition requiring long-term clinical attention. Compared with earlier studies that mainly emphasized tumour-related anatomical obstruction, recent evidence highlights treatment-induced toxicity from radiotherapy and chemoradiotherapy as equally essential determinants of swallowing dysfunction, aligning with growing recognition of survivorship challenges in oncology. This aligns with survivorship theory that chronic toxicities-such as fibrosis, neuropathy, and chronic xerostomia-represent long-term disabilities requiring proactive rehabilitation throughout the cancer care continuum (Taylor et al., 2021). In several studies, however, the magnitude of dysphagia varied, likely due to differences in radiotherapy protocols, timing of assessment, and patient-reported versus instrumental measurement tools–factors that may partly explain discrepancies across prevalence estimates.

The clinical impact of dysphagia is multidimensional, affecting not only nutritional intake but also morbidity, psychosocial well-being, and survival outcomes. Nutritionally, swallowing impairment reduces protein–energy intake and weight loss, even when patients receive basic soft diets or enteral nutrition (Kurien et al., 2020). Clinically, dysphagia increases the risk of aspiration and pneumonia, prolongs hospital stays, and worsens overall quality of life (Lechien et al., 2023). RCTs included in this review reinforce this burden: Carnaby et al. (2019) reported a 22–28% reduction in long-term feeding tube dependence with preventive swallowing therapy, while Agrawal et al. (2023) demonstrated a 35% reduction in aspiration rates with IDDSI-guided diets. Psychosocially, patients face limitations in social interaction and treatment adherence, aggravating emotional distress and leading to further deterioration in health outcomes. Notably, some cohort studies reported persistent dysphagia despite nutritional support (e.g., Kurien et al., 2020), whereas RCTs demonstrated more favorable outcomes–suggesting that structured, proactive interventions may outperform ad-hoc or reactive management approaches. Collectively, these findings highlight the need for integrated approaches to manage dysphagia as part of comprehensive cancer care.

Among nutritional interventions, texture-modified diets–particularly those standardized by the International Dysphagia Diet Standardisation Initiative (IDDSI)–have demonstrated significant benefits in improving swallowing safety, reducing aspiration, and maintaining oral intake (Agrawal et al., 2023; Steele et al., 2015). Personalized nutritional strategies have further improved quality of life and nutritional status during therapy (Gillsjö et al., 2023). For instance, Gillsjö et al. reported a clinically meaningful improvement of >10 points in EORTC-QLQ-H&N35 nutritional subscales following personalized diet modification, underscoring measurable quality-of-life benefits (Tristan Asensi et al., 2023). These findings strengthen earlier recommendations by providing empirical evidence in cancer populations. However, challenges such as poor compliance with thickened liquids and risks of dehydration, frequently observed across patient groups, remain barriers to optimal implementation, underscoring the importance of patient education and regular monitoring (Vinas et al., 2022). Moreover, theory from swallowing physiology explains why modified diet textures improve safety: increased viscosity slows bolus transit, enhances oral control, and reduces premature spillage–key mechanisms for reducing aspiration in radiation-induced dysphagia. Differences in the effectiveness of diet interventions across studies may reflect variations in IDDSI levels used, adherence levels, and whether dietitian-supervised adjustments were consistently implemented.

Swallowing therapy also plays a central role in the rehabilitation and prevention of dysphagia. Evidence suggests that active and passive swallowing exercises, including effortful and suprahyoid isometric training, significantly reduce swallowing impairment (Garcia-Peris et al., 2020). Quantitatively, Garcia-Peris et al. reported a 15–20% improvement in penetration–aspiration scores (PAS) after eight weeks of structured exercise therapy. Preventive therapy initiated early during radiotherapy has been shown to reduce long-term dysphagia and decrease reliance on

enteral feeding (Carnaby et al., 2019), representing a paradigm shift from reactive to proactive management. Furthermore, combining swallowing training with nutritional support reduces hospitalizations and malnutrition risk compared with dietary interventions alone (Holmberg et al., 2019). These results highlight the added value of multimodal rehabilitation strategies. The variability in therapeutic benefit across studies may relate to exercise dose, patient adherence, therapist supervision intensity, and whether exercises were performed during or after radiotherapy—a distinction that has been shown to significantly influence long-term outcomes. Such findings resonate with multimodal rehabilitation theory, which emphasizes synergy between muscular training, dietary optimization, and behaviour-based therapy for maximal functional restoration.

A multidisciplinary approach emerges as a key element in effective dysphagia management. Collaboration among oncologists, otolaryngologists, dietitians, nurses, and speech-language pathologists enables early screening, individualized diet modification, and structured rehabilitative programs (Naik et al., 2023). Studies have shown that coordinated nutritional interventions combined with swallowing therapy lead to better outcomes in nutritional status, complication rates, and patient-reported quality of life (Kristensen et al., 2020). Importantly, several studies also highlight the role of family members as crucial partners in dysphagia care, particularly in Asian cultural contexts where caregivers actively support meal preparation, diet consistency monitoring, and adherence to home-based exercises. Family involvement has been shown to improve compliance and facilitate early recognition of aspiration symptoms. Contrastively, settings with limited personnel or inconsistent multidisciplinary collaboration tend to report poorer adherence and less sustained improvement, suggesting that system-level capacity strongly influences intervention success. This evidence supports the need to embed multidisciplinary dysphagia management into routine oncology practice, particularly in centers where resources allow (Shune et al., 2022)..

Despite the promising evidence, several gaps remain. Most studies included in this review were limited by small sample sizes, single-centre designs, or observational methodologies, reducing the strength of generalizability. High-quality randomized controlled trials focusing specifically on nasopharyngeal carcinoma remain scarce, despite the disproportionate prevalence of NPC in Southeast Asia and other endemic regions. Additionally, heterogeneity in intervention protocols—including variation in exercise type, duration, intensity, and IDDSI levels—limits standardization and broader clinical application. Importantly, resource constraints in low- and middle-income countries, where NPC is most common, pose challenges to implementing structured dysphagia interventions, highlighting the need for context-sensitive strategies. Inherent limitations of narrative reviews must also be acknowledged: unlike systematic reviews, they are more susceptible to selection bias; the absence of meta-analysis limits quantitative interpretation of effect sizes; and publication bias may be present, as studies with negative or null findings are less likely to be published. These methodological constraints should be considered when interpreting the conclusions of this review.

In summary, the synthesis of recent evidence suggests that texture-modified diets and swallowing therapies are not only beneficial but essential in the management of dysphagia in head and neck cancer. These interventions provide tangible improvements in swallowing safety, nutritional outcomes, and quality of life, while preventive and multidisciplinary approaches maximize long-term benefits. Integrating physiological rehabilitation principles, survivorship frameworks, and caregiver engagement will be pivotal in optimizing dysphagia care for NPC patients. For clinical practice, findings from Carnaby et al. (2019) and Garcia-Peris et al. (2020) support implementing a preventive swallowing therapy protocol beginning in the first week of radiotherapy, incorporating daily effortful swallows, Shaker or suprahyoid exercises, and therapist-monitored weekly progression. For nutritional management, future clinical pathways may compare specific IDDSI levels—e.g., Level 4 versus Level 5—for NPC patients post-radiotherapy to optimize caloric intake while minimizing aspiration.

For future research, adequately powered RCTs focusing exclusively on NPC populations, head-to-head comparisons of IDDSI levels, and implementation studies in resource-limited Asian settings are urgently needed to generate context-relevant, evidence-based guidelines. Such advancements will be critical in developing robust, evidence-based clinical guidelines that can be universally applied while adaptable to local healthcare contexts.

CONCLUSIONS AND RECOMMENDATION

This narrative review highlights that dysphagia is a common and persistent complication in patients with head and neck cancer, particularly nasopharyngeal carcinoma, with significant consequences for nutritional status, quality of life, and survival. Synthesizing evidence from the past decade, the review underscores that texture-modified diets guided by the International Dysphagia Diet Standardisation Initiative and structured swallowing therapies represent effective strategies to improve swallowing safety, sustain oral intake, and enhance overall clinical outcomes. The key contribution of this review lies in integrating nutritional interventions and swallowing rehabilitation into a practical and clinically relevant framework that can inform oncology practice, while emphasizing the importance of multidisciplinary collaboration that remains underutilized in many low-resource settings. By presenting this integrative model, the review bridges scientific evidence with real-world clinical practice, offering clinicians a structured and applicable pathway for implementing dysphagia management across various levels of healthcare capacity.

To advance the field, future research must generate stronger evidence through adequately powered randomized controlled trials, particularly in nasopharyngeal cancer populations, to confirm the combined benefits of dietary modification and swallowing therapy and establish standardized protocols regarding intervention type, intensity, and timing. In addition, multicenter studies across Southeast Asia—where NPC prevalence is highest—are essential to strengthen regional applicability, while implementation research in resource-limited settings is needed to evaluate feasibility, cost-effectiveness, and long-term sustainability of these interventions.

At the practice level, clinicians are recommended to adopt early dysphagia screening, implement IDDSI-based dietary modifications, and initiate swallowing rehabilitation preventively and rehabilitatively within multidisciplinary teams, thereby bridging current gaps in care and promoting safer, more effective, and patient-centred oncology nutrition and rehabilitation.

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DECLARATION

Ethics approval and consent to participate

Not applicable. This study is a review article and did not involve human participants, animals, or clinical data requiring ethical approval.

Consent for publication

All authors have read and approved the final version of the manuscript and consent to its publication

Availability of data and materials

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Statement on the Use of Artificial Intelligence (AI)

Artificial intelligence tools were used to assist in grammar checking and language editing. All ideas, interpretations, and the original content of the manuscript remain solely those of the authors.

Authors' contributions

All authors contributed to the manuscript's conception, drafting, and critical revision. Both authors read and approved the final version.

ABOUT THE AUTHORS

dr. Chyntia Glori Tania is a general practitioner at Murni Teguh Memorial Hospital, Medan, Indonesia general practitioner. She is currently assigned to the oncology outpatient clinic, providing medical care for cancer patients and supporting multidisciplinary teams in oncology management. Her clinical background and frontline hospital experience contribute significantly to nutrition and patient care research in oncology settings.

apt. Nasri, S.Farm., M.Farm., A.BM., MBA. is a lecturer at the Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Sumatera Utara, Medan, Indonesia, and a doctoral student at the Department of Pharmacochemistry, School of Pharmacy, Bandung Institute of Technology, Bandung, Indonesia. His expertise includes pharmaceutical chemistry, pharmacochemistry, and the development of pharmaceutical technologies based on nanomaterials and natural products. He has actively researched drug formulation, in vitro and in silico activity evaluation, and has published several articles in reputable international journals. In addition to teaching, he is involved in collaborative research across institutions and supervises undergraduate and postgraduate students.

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Correspondence All inquiries and requests for additional materials should be directed to the Corresponding Author.
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