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Review Article

Early and guided physiotherapy in head and neck cancer: a narrative review of clinical interventions

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ABSTRACT

Head and neck cancer (HNC) patients frequently experience pain, fatigue, dysphagia, and psychological distress because of oncologic treatment. Physiotherapy has emerged as a key rehabilitative strategy to address these sequelae, particularly when initiated early and delivered through therapist-guided protocols. Objective: This narrative review aims to synthesize evidence from clinical trials and structured programs evaluating early and guided physiotherapy interventions in HNC, focusing on their impact on symptom management and functional recovery. A comprehensive literature search was conducted across five databases (PubMed, Scopus, Web of Science, Cochrane Library, and ScienceDirect) for studies published between 2010 and 2025. A total of 396 records were identified, with 304 screened by title and abstract. After full-text assessment of 141 articles, 13 studies met the inclusion criteria. Data were extracted on intervention type, timing, therapist involvement, and outcomes related to pain, fatigue, swallowing function, and quality of life. Early physiotherapy interventions, particularly those involving therapist supervision, demonstrated consistent improvements in fatigue, mobility, swallowing function, and emotional well-being. Multimodal approaches combining aerobic and resistance training were especially effective. Therapist-guided delivery enhanced adherence, safety, and individualized care. Early and guided physiotherapy offers significant benefits for HNC patients, supporting its integration into multidisciplinary cancer rehabilitation. Future research should focus on standardized protocols, long-term outcomes, and scalable delivery models.

Keywords: Head and neck cancer, Early physiotherapy intervention, Pain management, Guided physiotherapy, Dysphagia

INTRODUCTION

Head and neck cancer (HNC) is a heterogeneous cluster of malignant neoplasms of the oral cavity, the pharynx, larynx, the nasal passages, and salivary glands.[1-3] HNC is associated with more than 650, 000 new cases each year, and the rates of this condition have been increasing in low and middle-income countries because of tobacco consumption, alcohol use, and human papillomavirus (HPV) infection.[4-6] Although oncologic management, such as surgery, radiotherapy, chemotherapy, and immunotherapy, has made progress, individuals often go through long-lasting functional losses and symptom load that continue beyond the acute management of cancer.[7]

Most common and incapacitating consequences of HNC survivors are pain, fatigue, dysphagia, musculoskeletal dysfunction, and psychological distress.[8-10] These symptoms do not only hinder physical autonomy and nutritional condition, but also social isolation, emotional instability and low quality of life.[11-14] Notably, most of such impairments can be repaired through rehabilitation, but they are not adequately tackled in the normal oncology system.

Physiotherapy has become an important part of multidisciplinary cancer rehabilitation, providing specific interventions to restore function, manage symptoms and facilitate long-term recovery.[15]

Early onset physiotherapy, especially when carried out through therapist-led protocols, has shown encouraging results in mobility improvement, fatigue reduction, swallowing function improvement and reduction of distress.[16] Therapist involvement allows for individual assessment, accurate exercise prescription and dynamic adaptation to disease trajectory and patient tolerance.[17] Moreover, guided interventions promote adherence, safety and therapeutic alliance that are essential in populations with complex needs.[18]

While randomized controlled trials and systematic reviews have assessed the efficacy of specific physiotherapy modalities, there is a need to provide integrative synthesis to contextualize the findings within clinical practice. A narrative review enables exploring, thematically, timing of intervention, models of delivery, outcome measures, and therapist roles across different study designs. This review is aimed at critically analyzing extent and efficacy of early and guided physiotherapy interventions for patients with HNC. By synthesizing evidence from controlled trials and structured programs, we aim to present therapeutic potential of physiotherapy in managing burden of symptoms and functional decline and to inform future of models of integrative, patient-centered cancer rehabilitation.

LITERATURE REVIEW

This narrative review was conducted to synthesize evidence from clinical trials and structured rehabilitation programs, evaluating early and therapist-guided physiotherapy interventions in patients with HNC.

Review aimed to explore timing, delivery models, and therapeutic impact of physiotherapy on pain, fatigue, swallowing dysfunction, psychological distress, and overall functional recovery.

Comprehensive literature search performed across 5 electronic databases-PubMed, Scopus, Web of Science, Cochrane Library, and Science Direct-covering publications from January 2010-August 2025. Search strategy combines medical subject headings (MeSH) and free-text terms relevant to HNC, physiotherapy, symptom management, and therapist-guided care. Boolean operators were applied to refine scope, using following structure: ("head and neck cancer" OR "HNC" OR "oral cancer" OR "pharyngeal cancer") AND ("physiotherapy" OR "physical therapy" OR "rehabilitation") AND ("fatigue" OR "pain" OR "dysphagia" OR "swallowing dysfunction" OR "distress") AND ("early intervention" OR "therapist-guided" OR "supervised exercise" OR "structured program").

Filters were applied to restrict results to human studies published in English, with full-text availability and peer-reviewed status.

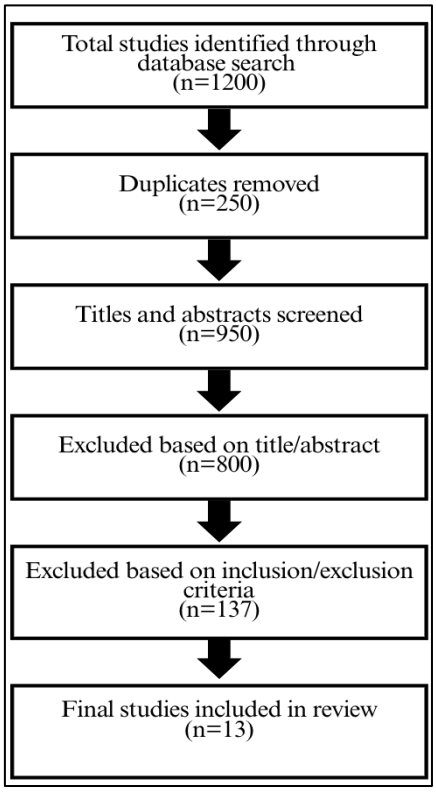

Figure 1: Flow of research methodology.

Studies were included if they met the following criteria: adult participants diagnosed with HNC; physiotherapy interventions initiated early (pre-, peri-, or post-treatment) and delivered with therapist guidance or supervision; outcomes related to pain, fatigue, swallowing function, mobility, psychological distress, or quality of life; and study designs comprising randomized controlled trials, pilot studies, feasibility studies, or systematic reviews. Exclusion criteria included studies involving non-HNC populations unless physiotherapy principles were directly transferable, interventions lacking therapist involvement, pharmacological-only or surgical-only approaches, case reports, editorials, conference abstracts, and non-peer-reviewed sources.

Thirteen studies published between 2010 and 2024 were included in the final synthesis. These comprised randomized controlled trials, systematic reviews, and interdisciplinary rehabilitation models. Data were extracted on author name, year of publication, sample size, intervention type, outcome measures, and key findings. A comparative summary table was constructed to facilitate thematic synthesis. Studies were grouped based on intervention modality, timing, and therapist involvement. Narrative synthesis was used to interpret findings across heterogeneous designs, emphasizing clinical relevance, therapist-guided precision, and implications for integrative cancer rehabilitation.

OBSERVATIONS

A total of 13 studies conducted between 2010 and 2024 demonstrated that early and therapist-directed physiotherapy were noted to be effective in reducing pain, fatigue, and swallowing, as well as enhancing the quality of life of HNC patients. The structured and supervised interventions like the exercise therapy, swallowing training, and mind-body interventions showed to be more effective about mobility, mood, and functional recovery than the unsupervised care. Nurse-led and multidisciplinary models also led to improved psychological health and treatment adherence, which indicates the essential role of early and guided rehabilitation in advanced cancer treatment.

Table 1: Summary of included studies.

Author(s)	Year	Sample size	Intervention	Outcome measures	Key findings
Patterson et al[30]	2018	30 (25 completed)	CBT-enhanced swallowing therapy (CB-EST), 10 sessions	MDADI, EORTC QLQ-C30/H&N35, Chalder Fatigue Scale, HADS, WASA	Significant improvement in swallowing QoL and fatigue; no change in anxiety/depression
Pyszora et al[14]	2017	60 (30 intervention, 30 control)	6-session physiotherapy: active exercises, myofascial release, PNF	Brief fatigue inventory, ESAS	Fatigue, pain, depression, anxiety, and drowsiness significantly reduced
Felser et al[15]	2020	12 (10 completed)	12-week supervised exercise: mobilization, resistance, coordination, relaxation	ROM, 6MWT, SPPB, POMS-F, EORTC QLQ-C30/HN35	Improved mobility, fatigue, and QoL; high feasibility and adherence
Satish et al[16]	2023	69 (35 intervention, 34 control)	12-week structured walking + TheraBand resistance during CRT	SAFE fatigue scale, 6MWT, VO_2max, handgrip strength, EORTC QLQ-C30/HN35, NCCN distress thermometer	Significant reduction in fatigue and distress; improved functional capacity and QoL
Avancini et al[17]	2023	9 RCTs (systematic review)	Aerobic, resistance, or combined exercise across HNC populations	Muscle mass, fatigue, QoL, cardiorespiratory fitness	Combined aerobic + resistance most effective; prehabilitation underexplored
Oh et al[18]	2010	162 (111 intervention, 51 control)	10-week Medical Qigong program: breathing, movement, meditation	FACT-G, HADS, VAS for pain, CRP, cortisol	Improved QoL, fatigue, anxiety, and depression; reduced CRP and cortisol
Bhadra et al[19]	2024	120 (60 intervention, 60 control)	Nurse-led supportive care during palliative radiotherapy	Symptom burden, psychological distress, QoL, health service utilization	Reduced symptom burden and distress; improved QoL and continuity of care
Singh et al[20]	2018	15 RCTs (systematic review)	Early physiotherapy rehabilitation in stroke patients	Barthel Index, FIM, Berg Balance Scale, QoL scores	Improved motor recovery, ADLs, and reduced complications

Continued.

Author(s)	Year	Sample size	Intervention	Outcome measures	Key findings
Ospina et al[21]	2018	15 RCTs (Cochrane review)	Early psychological and pharmacological interventions for PTSD prevention	PTSD incidence, symptom severity, functional recovery, adverse effects	Trauma-focused CBT showed modest benefits; pharmacological results mixed
Lee et al[22]	2018	1,200+ participants (cross-sectional)	Observational study on musculoskeletal pain and psychosocial factors	Pain location/intensity, psychological distress, work demands, lifestyle habits	Multisite pain linked to stress and poor ergonomics; psychosocial distress drives chronicity
Tuomi et al[23]	2022	40 (20 intervention, 20 control)	Shaker head-lift exercise post HNC treatment	Penetration-Aspiration Scale, FOIS, oral intake measures	Improved swallowing function and reduced aspiration risk
Rivara et al[24]	2017	531 children with TBI (longitudinal cohort)	Multidisciplinary rehabilitation post-traumatic brain injury	FIM, cognitive and motor recovery, discharge disposition	Early rehab linked to better functional outcomes and reduced disability
Banos et al[25]	2014	1,000+ participants (RCT)	Web-based mental health intervention (Healthy mind)	Mental well-being scores, psychological distress, engagement metrics	Improved well-being and reduced distress; higher engagement linked to better outcomes

DISCUSSION

This narrative review summarizes the evidence from thirteen studies published from 2010 to 2024 with the focus on early mobilization and therapist guided physiotherapy in managing pain, fatigue, swallowing dysfunction, and psychological distress of patients with HNC. The results highlight the therapeutic potential of structured physiotherapy interventions in improving patient-centered outcomes in different stages of cancer care.

A consistent theme running through the included studies is the benefit of early initiation of physiotherapy. Whether it is implemented during chemoradiotherapy (Satish et al) immediately post-treatment (Tuomi et al) or during survivorship phases (Felser et al).[15,16,23] early rehabilitation was related to improved functional capacity, decreased fatigue and increased quality of life. These outcomes are consistent with wider rehabilitation literature that highlight the importance of early intervention to prevent deconditioning, maintain mobility, and aid psychosocial adjustment.

The value of therapist-guided delivery models, which were central to the effectiveness of most interventions, is also highlighted in the review. Researches that used supervised exercise programs (Felser et al., 2020; Pyszora et al) or structured swallowing therapy (Patterson et al and Tuomi et al) showed superior adherence, safety and symptom relief compared with unsupervised or self-directed therapy.[1,14,15,23] Therapist involvement allowed for individual assessment, real-time correction of exercises, and dynamic progression of exercises, which are especially important in populations with complex anatomical and functional impairments.

The value of therapist-guided delivery models, which were central to the effectiveness of most interventions, is also highlighted in the review. Studies using supervised exercise programs such as that of Felser et al and Pyszora et al or structured swallowing therapy such as that of Patterson et al and Tuomi et al showed excellent adherence, safety, and symptom relief compared to those using unsupervised or self-directed methods.[1,14,15,23] Therapist involvement allowed for individual assessment, real-time correction of exercises, and dynamic progression of exercises, which are especially important in populations with complex anatomical and functional impairments.

Swallowing dysfunction, which is a frequent and under-treated complication following HNC treatment, was well targeted by physiotherapy-based interventions. Patterson et al and Tuomi et al both showed the beneficial effects of swallowing exercises with therapist guidance in areas such as improved oral intake and lower risk of aspiration.[1,23] These studies reinforce the need for early screening of dysphagia and systematic rehabilitation protocols-especially for patients who will receive radiation to the oropharyngeal region.

In addition to physical symptoms, several studies examined the issue of psychological distress and emotional well-being. Oh et al and Banos et al demonstrated that mind-body intervention and web-based mental health platforms, respectively, resulting in significant reductions in anxiety, depression, and body-wide inflammation.[18,25] These findings imply that

physiotherapy, as provided in the context of psychological support, and subject to provision through digital platforms, can play a meaningful role in holistic cancer care. The addition of nurse-led supportive models (Bhadra et al) further highlights the interdisciplinary possibility of rehabilitation in meeting the psychosocial needs.[19]

Interestingly, studies conducted outside of the HNC people, namely Singh et al looking at stroke rehabilitation, and Rivara et al looking at paediatric TBI, offered transferable knowledge regarding the wonders of when, how and involvement of therapists during recovery, respectively.[20,24] These studies support the wider use of the principles of early guided physiotherapy in neurological and oncological settings.

However, the review does have several gaps and limitations. Few studies focused on long-term outcomes beyond the immediate post-intervention period, and prehabilitation is a currently under investigated approach although its benefits on treatment receiving tolerance and recovery should be investigated. Additionally, variance in measures of outcome and intervention protocols prohibits direct study of comparison across these studies. Standardized frameworks for physiotherapy in HNC especially where fatigue, pain, and swallowing measures can be combined to inform clinical practice and future research is required.

CONCLUSION

Early and physiotherapy by a therapist play an important role in the management of pain, fatigue, swallowing dysfunction and psychological disturbances of head and neck cancer. Evidence obtained from recent trials has been used to justify its effectiveness in improving functional outcomes and quality of life, which is based on the results of structured programs. Integrated, individualized and timely interventions within the context of multidisciplinary care pathways can contribute to better recovery and survivorship. Future research should emphasize long-term impact, standardized protocols, and large-scale delivery models.

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