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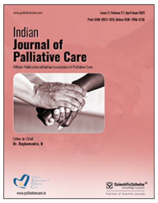

Review Article

Dentists Role in Psychological Screening and Management of Head-and-neck Cancer Patients Undergoing Radiotherapy – Narrative Review

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ABSTRACT

Objectives: Head-and-neck cancer management primarily involves surgery and chemoradiotherapy. Recurrent radiotherapy (RT) sessions are often linked to social, physical, and psychological burdens. Oral physicians are part of the palliative care team and play a pivotal role in decimating the physical side effects associated with disease and its treatment. There is a need to familiarise dentists with the psychological aspect of the treatment.

Material and Methods: Various libraries were searched from the year 2012 to 2022. A total of nine studies that had head-and-neck RT patients exclusively were included in the study.

Results: Anxiety and depression are patients' most prevalent psychological problems during and after the RT regimen. A few most used psychological screening tools were identified.

Conclusion: Dental professionals are uneducated about the holistic approach to managing RT patients. The current narrative review details the various psychological screening tools and care measures that can be incorporated into the dental setup to help these patients.

Keywords: Psychological distress, Radiotherapy, Palliative care, Dentists' role, Anxiety and depression

INTRODUCTION

Head-and-neck cancer (H&NC) is an umbrella term used to describe malignancies encompassing the upper aerodigestive tract, paranasal sinuses, salivary glands, and nasal cavities.[1] It is the seventh most common cancer worldwide, with more than 40% of the cases occurring in South Asia.[2,3] H&NCs are multifactorial in origin.[2,4] They are primarily treated by surgery and radiotherapy (RT), with or without concurrent chemotherapy.[5] Although less radical, managing cancer through radiation therapy further elevates physical and emotional and has a catastrophic effect on a patient's emotional and mental health.[6] The psycho-oncological domain in cancer pathogenesis and treatment is slowly gaining momentum. However, oral health physicians (OHP) remain unaware of the importance of the psychosocial aspect of H&NC treatment. The current review aims to:

1. Create awareness among OHP about the psychological effects of RT and its clinical implications
2. Familiarise oral physicians with the current screening tools and management approach being used in RT patients through a literature search
3. Recommend other measures that can be adopted to improve the dentist's role in the psychological assessment of RT patients.

METHODS

The review has been written following the recommendations provided in the SANRA (quality assessment scale for narrative reviews).[7]

Information source and search strategies

A literature search of studies (full free texts) utilising various psychological distress tools in patients undergoing RT (exclusively) was performed. Medline, CINTHL, Google

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Scholar, Cochrane, and WOS databases were searched with the keywords ‘psychological distress’, ‘head-and-neck cancer’, ‘oral cancer’, ‘anxiety and depression’ and ‘radiotherapy’. A scoping search of the literature was done from the period of 2012–2022. First, the abstract and title were screened, followed by screening the complete text (from the selected articles). Furthermore, the reference articles pertaining to our area were included in the study [Table 1].

Inclusion and exclusion criteria

Inclusion criteria

The following criteria were included in the study:

- Adult H&N cancer patients who were treated with RT exclusively
- Prospective studies with follow-up
- Free complete texts in the English language.

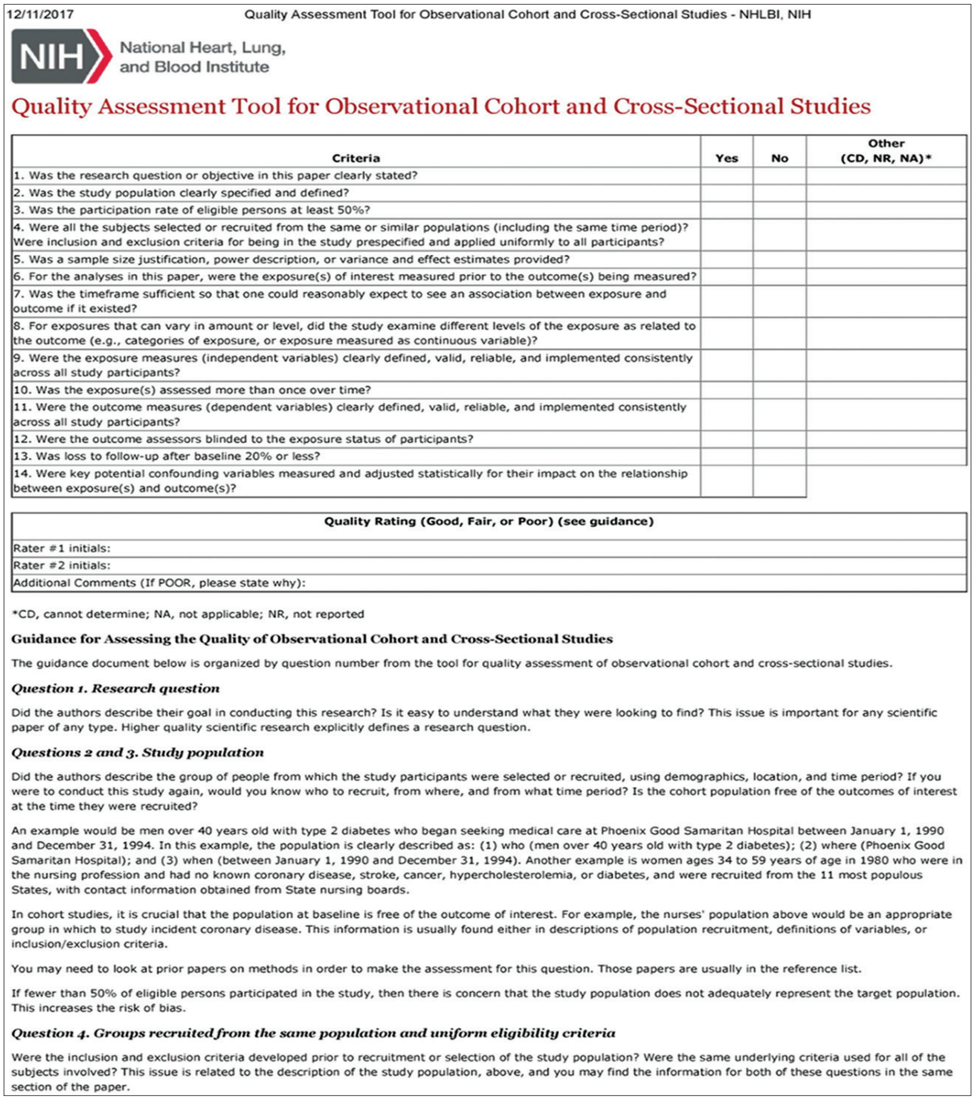
Exclusion criteria

The following criteria were excluded from the study:

- Studies performed before the period
- Review articles, cross-sectional studies, conference proceedings, grey literature, and books
- Non-English and abstract-only papers
- Patients suffering from carcinoma other than H&NC
- Patients undergoing other treatment modalities
- Low-quality papers. The quality of the studies was determined by the quality assessment tool for cohort studies by National Heart, Lung and Blood Institute 2013 [Figure 1].

DISCUSSION

Anxiety and depression are more prevalent among RT patients. This psychological stress ultimately affected their treatment outcome, nutrition status, and quality of life (QoL)



12/11/2017 Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies - NHLBI, NIH

NIH National Heart, Lung, and Blood Institute

Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

Criteria	Yes	No	Other (CD, NR, NA)*
1. Was the research question or objective in this paper clearly stated?			
2. Was the study population clearly specified and defined?			
3. Was the participation rate of eligible persons at least 50%?			
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?			
5. Was a sample size justification, power description, or variance and effect estimates provided?			
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?			
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?			
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?			
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
10. Was the exposure(s) assessed more than once over time?			
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?			
12. Were the outcome assessors blinded to the exposure status of participants?			
13. Was loss to follow-up after baseline 20% or less?			
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?			

Quality Rating (Good, Fair, or Poor) (see guidance)
Rater #1 initials:
Rater #2 initials:
Additional Comments (If POOR, please state why):

*CD, cannot determine; NA, not applicable; NR, not reported

Guidance for Assessing the Quality of Observational Cohort and Cross-Sectional Studies

The guidance document below is organized by question number from the tool for quality assessment of observational cohort and cross-sectional studies.

Question 1. Research question

Did the authors describe their goal in conducting this research? Is it easy to understand what they were looking to find? This issue is important for any scientific paper of any type. Higher quality scientific research explicitly defines a research question.

Questions 2 and 3. Study population

Did the authors describe the group of people from which the study participants were selected or recruited, using demographics, location, and time period? If you were to conduct this study again, would you know who to recruit, from where, and from what time period? Is the cohort population free of the outcomes of interest at the time they were recruited?

An example would be men over 40 years old with type 2 diabetes who began seeking medical care at Phoenix Good Samaritan Hospital between January 1, 1990 and December 31, 1994. In this example, the population is clearly described as: (1) who (men over 40 years old with type 2 diabetes); (2) where (Phoenix Good Samaritan Hospital); and (3) when (between January 1, 1990 and December 31, 1994). Another example is women ages 34 to 59 years of age in 1980 who were in the nursing profession and had no known coronary disease, stroke, cancer, hypercholesterolemia, or diabetes, and were recruited from the 11 most populous States, with contact information obtained from State nursing boards.

In cohort studies, it is crucial that the population at baseline is free of the outcome of interest. For example, the nurses' population above would be an appropriate group in which to study incident coronary disease. This information is usually found either in descriptions of population recruitment, definitions of variables, or inclusion/exclusion criteria.

You may need to look at prior papers on methods in order to make the assessment for this question. Those papers are usually in the reference list.

If fewer than 50% of eligible persons participated in the study, then there is concern that the study population does not adequately represent the target population. This increases the risk of bias.

Question 4. Groups recruited from the same population and uniform eligibility criteria

Were the inclusion and exclusion criteria developed prior to recruitment or selection of the study population? Were the same underlying criteria used for all of the subjects involved? This issue is related to the description of the study population, above, and you may find the information for both of these questions in the same section of the paper.

Figure 1: Quality assessment tool for observational cohort and cross-sectional studies. (Available from: https://www.nhlbi.nih.gov/health-topics/studyquality-assessment-tools).[8]

Table 1: Literature review of the studies screening psychological distress.

S. No.	Article	Country of origin	Sample size	Type of study	Tools used	Result
1.	Paula *et al*. (2012)[31]	Brazil	41	Explorative and quantitative	Beck's Depression Inventory	Rise in depression symptoms during treatment.
2.	Badr *et al*. (2017)[32]	U.S.A	93	Cross sectional	PROMIS (short form)	Depression increased in survivors of RT patients.
3.	Nikoloudi *et al*. (2020)[33]	Greece	55	Prospective	Greek-HADS	Distress symptoms worsen during the treatment and return to pre-treatment level after 3 months.
4.	Schaller *et al*. (2017)[34]	Sweden	54	Cross sectional	HADS	Patients suffered minor anxiety and depression symptoms with worsening QoL.
5.	Ninu (2015)[35]	Italy	86	Cross sectional	Distress thermometer	Depressive symptoms were present, which accelerated in tracheostomy patients.
6.	Britton *et al*. (2012)[36]	Australia	58	Prospective	HADS	Patients with baseline depression suffered from malnutrition during RT.
7.	Neilson *et al*. (2013)[37]	Australia	101	Prospective	HADS	Depressive symptoms are proportional to physical symptoms. Anxiety increases during treatment and returns to pre-treatment level after 1 year.
8.	Astrup *et al*. (2015)[38]	Norway	37	Longitudinal	CES-D	Depression increased during RT treatment and waned post- treatment with time.
9.	Siafaka *et al*. (2021)[39]	Greece	50	Longitudinal	HADS	Known anxiety and depression before RT lead to impaired quality of life.

PROMIS: Patient-reported outcome measurement information system, HADS: Hospital anxiety and depression scale, CES-D: Centre for epidemiologic studies depression scale, RT: Radiotherapy

Table 2: Frequently used psychological screening tools.

S. No.	Screening tool	Description
1.	HADS (Zingmond and Snaith, 1983)[40]	It is the most widely used 14-item scale for measuring anxiety and depression without measuring the somatic factors, especially in medically ill patients. Patients with a score more than or equal to 8 are considered to be suffering from distress.
2.	CES-D (Radloff, 1977)[41]	It was initially developed as a 20-item scale to measure psychological and somatic factors along with interpersonal relations, etc., in a large epidemiological sample. However, a shorter form with 10 items was developed in 1999 by Andersen *et al*. It had good reliability with a cutoff score of 10.
3.	BDI (Ward, 1961)[42]	It is the widely used subscale to measure depression in older adults quantitatively. The earlier scale was a 20-item questionnaire. Several modified subscale versions have been identified, with the shortest being the BDI-FS (Fast Screening for Medical Patients).
4.	PROMIS[43]	The United States National Institute of Health came about with PROMIS to measure patients' state-of-the-art HRQoL. There are more than 100 HRQoL to measure various domains, with items on each scale ranging from 29 to 59. In addition, shorter forms evaluating the seven core domains in patients have been developed with 4, 6 and 8 items.
5.	DT-PL[44]	It is an 11-item thermometer used to determine psychological distress, with the lowest and the highest range being 0 and 10, respectively. Patients with high distress are also given a problem list. It consists of around forty questions comprising of various problems such as physical, family and emotional, with the primary purpose of the rating scale to acknowledge distress as the sixth sign of cancer care.
6.	PHQ-9[45]	PHQ is a self-administered questionnaire used in primary health-care settings to assess depression severity and other mental disorders. It can be used for the diagnosis of depression and to assess its severity.

HADS: Hospital anxiety and depression scale, CES-D: Centre for epidemiologic studies depression scale, BDI: Beck depression inventory, PROMIS: Patient-reported outcome measurement information system, PHQ-9: Patient health questionnaire 9, HRQoL: Health-related quality of life, DT-PL: Distress thermometer and problem list

Effects of RT and its clinical implications

RT helps reduce a patient's toxicity profile and locoregional spread. However, the practice of reirradiation, pain, financial burden, physical, cognitive, and functional adverse effects, apart from the multiple visits, puts the patient into an emotional and psychological tumult.[7,9]

Table 3: European head-and-neck society guidelines for emotional screening of cancer patients.

S. No.	Stages	Evaluation of emotional screening	Steps to manage emotional stress
1.	Before diagnosis	Patients are in a happy and content state. Patients are mostly unaware of cancer.	Provide awareness to the patient about the disease and its screening. Help enhance coping strategies.
2.	At diagnosis	Patient suffers with varied emotional behaviour ranging from shock, anxiety, depression, fear, uncertainty and hopelessness.	Be empathetic towards the patient and discuss their problems openly. Screening of psychological distress should be performed.
3.	During treatment	Patients suffer from a sense of loss, isolation, anxiety and fear.	Screen patients for anxiety and depression, and monitor for any maladaptive coping strategies.
4.	Post treatment	Patients are vulnerable and feel depressed. They suffer from constant fear of relapse and have low self-esteem.	Help patient cope with maladaptive strategies. Propose treatments to manage sequalae and social rehabilitation.

Table 4: The UK head-and-neck association recommendations for multidisciplinary management of cancer patients.

S. No.	Recommendations
1.	Discuss treatment options and outcomes along with adverse effects with patients and their caregivers.
2.	Hospital staff should be taught to be sensitive to the patients and handle their patients with empathy.
3.	Flexibility should be followed while managing patients with terminal illnesses depending on the circumstances.
4.	Multidisciplinary teams should operate to ensure proper and timely information and support to the patient and the caregiver.
5.	Mental health interventions should be part of the multiple treatments imparted to the patients.
6.	Health-care professionals should be continuously educated to improve their communication skills while consulting difficult patients.

According to National Comprehensive Cancer Network (NCCN), psychological distress ranges from ‘a feeling of vulnerability to problems that can become disabling, such as depression, anxiety, panic, social isolation, and existential and spiritual crisis’.[10] H&NC patients are more vulnerable to psychological distress due to its unresolved physical signs and symptoms, aesthetic flaws, treatment side effects, emotional and functional disturbances, fear of recurrence and eminent death, premorbid factors, the prognosis of the disease, pre-existent psychological condition, social stigma or isolation.[11-14]

However, psychological morbidity often remains undiagnosed due to normalising emotional distress and its social stigma.[15,16] The inability of health-care professionals to give importance to the psychosocial component of a disease further adds to the problem.[17]

The high psychological burden severely hampers a patient’s personality and QoL, resulting in patient attrition.[13] Depressed patients require extended hospital stays and have poor survival outcomes even after complete remission of the disease.[18]

Dentists’ and H&NC patients

Dentists and oral physicians play a key role in diagnosing malignant oral lesions.[19] They form an integral part of the palliative care team.[20] Oral surgeons are not only part of the surgical team; they also play a crucial role throughout the RT sessions (fabrication of patient fixation models) and in managing the complications of RT (xerostomia, mucositis, dental caries, etc.).[3,21] However, there needs to be more knowledge about the importance of the psychological assessment of RT patients among dentists. Definitive diagnosis and management of oral complications and associated psychological effects were considered imperative.[22]

Dentists’ role in RT patients can be divided into three stages

- Pre-RT – In this stage, the patient’s overall oral health is evaluated and stabilisation of the oral disease is initiated several weeks before RT to prevent complications
- During RT – During this phase, the dentist works with the radiation oncologists to alleviate and provide relief from the acute complications of RT
- Post RT - Dentists treat late complications of RT due to its adverse effects on the musculature and salivary glands, hard and soft tissues of the oral cavity.[23]

Dentists’ Role in psychological assessment of RT Patients

General recommendations for oral health professionals while screening RT patients include:

Psychological screening of cancer patients

Dentists should screen all cancer patients throughout their course and even during their follow-up with validated screening tools should be encouraged. Psychological screening tools help ascertain a cancer patient’s psychological well-being at every step of the disease progression.[14] Andrea Vodermaier *et al.* categorised the tools into long (21–50), short (5–20), and ultrashort tools (1–5).[24] It also helps manage the patient’s distress and improve their QoL.[25] The most frequently used psychological screening tool was the hospital anxiety and depression scale [Table 2]. They can refer patients with early signs of psychological distress for further management to a specialist.

The dental staff should be trained and empowered with communication skills essential to speak with empathy and address the emotional concerns of patients and caregivers from the initial stage of the diagnosis and even post-treatment survivors.

1. Awareness about distress management guidelines – Dentists should know the various distress management guidelines outlined in the literature. It was first given by NCCN in 1997.[18] Besides the NCCN guidelines, countries such as Canada, Australia, the UK, and the USA have separate clinical guidelines.[25-28] European Head and Neck Society and the UK's Head and Neck Association have given distress management guidelines specific to H&N cancer patients[27,28] [Tables 3 and 4].
2. Collaboration with the psychologists – After the initial evaluation of the patient for distress, dentists should work with psychologists and refer these patients for counselling. These therapies include:
    - Psychological education
    - Family and couples therapy
    - Pharmacologic mediations
    - Complementary therapy
    - Counselling
    - Spiritual guidance
    - Telehealth aids
    - Group discussions and counselling
    - Dyadic coping strategies and pre-treatment psychoeducation in H&N cancer patients undergoing RT have also shown positive and better survival outcomes in these patients[29,30]
    - Psychological and social interventions
    - Cognitive behavioural therapy
    - Adjuvant psychological therapy.
3. Dentistry – A bridge between RT and palliative care – Dentists' role in psychological assessment and other treatments in various institutions providing palliative care for cancer patients should be invigorated.[21] Dentists can be paramount in bridging the gap between actual cancer treatment and palliative care. Frequent dental visits by the patient can help alleviate patients' fear and encourage them to seek help for their mental health issues.

Strengths and limitations

The current review gives a comprehensive and detailed insight into the psychological distress screening tools and management guidelines. It also discusses the initiatives that can be adopted in the dental setup for improving psychological screening. The few limitations of the study include its narrative style of writing. The study included patients treated with RT exclusively and inclusion of only English studies.

Future scope

Further prospective studies evaluating the psychological status of patients reporting to a dentist should be conducted. Dentists should be encouraged to have psychological screening of cancer patients as a routine procedure from the initial stage of diagnosis.

CONCLUSION

The world is recognising the need not only to eradicate cancer but also to improve the QoL in the survivors. Oral health-care professionals can be crucial in screening patients for their psychological problems. Availing the oral physician's aid in psychological screening will help alleviate patients' apprehensions to seek mental health intervention and is of paramount importance in the future.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The author(s) confirms that there was no use of Artificial Intelligence (AI)-Assisted Technology for assisting in the writing or editing of the manuscript and no images were manipulated using the AI.

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