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Oral hygiene care and the management of oral symptoms in patients with cancer in palliative care: a mixed methods systematic review protocol

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ABSTRACT

Objective: The objective of this review is to examine the effectiveness of oral hygiene care in the management of oral symptoms in patients with cancer under specialist palliative care and the patients' experience of such symptoms and care.

Introduction: Oral symptoms, such as xerostomia, mouth pain, or dysgeusia, are highly prevalent in patients with cancer under specialist palliative care. These symptoms have a negative effect on patients' quality of life. Oral hygiene care can manage oral symptoms and could be improved with a more systematized approach, adequate guidelines, and training to properly integrate oral hygiene into the care provided in specialist palliative care.

Inclusion criteria: This review will consider quantitative, qualitative, and mixed methods studies on the effectiveness and experience of oral hygiene care intended to manage oral symptoms in patients with cancer aged 18 years or older, diagnosed with any type of cancer, under specialist palliative care.

Methods: The search will be conducted in MEDLINE (PubMed), CINAHL (EBSCOhost), Cochrane Central Register of Controlled Trials, Dentistry and Oral Sciences Source (EBSCOhost), and MedicLatina (EBSCOhost). Sources of unpublished studies and gray literature to be searched will include Networked Digital Library of Theses and Dissertations and Repositórios Científicos de Acesso Aberto de Portugal. Studies in English, Portuguese, and Spanish published from 2000 to the present will be considered. Methodological quality of included studies will be assessed and data will be extracted. Synthesis and integration will follow the JBI segregated approach for mixed methods reviews.

Review registration: PROSPERO CRD42023400554

Keywords: cancer; hospice and palliative care nursing; oral hygiene; palliative care; signs and symptoms

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Introduction

The Worldwide Hospice Palliative Care Alliance estimates that 28% of adults in need of palliative care worldwide have a cancer diagnosis.[1] According to the World Health Organization, "Palliative care is an approach that improves the quality of life of patients (adults and children) and their families who are facing problems associated with life-threatening illness. It prevents and relieves suffering through the early identification, correct assessment and treatment of pain and other problems, whether physical, psychosocial or spiritual."[2(para.9)] Specialist palliative care is one component of palliative care service delivery,[2] and it is provided by a specialist multiprofessional team for patients with complex problems that are not adequately covered by other treatment options; patients with progressive and incurable diseases; or

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patients in need of proactive treatment to manage their symptoms.[3] Some of the physical symptoms common in these patients include pain, anorexia, asthenia, constipation, dyspnea, intestinal obstruction,[4] and oral symptoms.[5] Oral symptoms can occur isolated or as a cluster of symptoms,[6] and include xerostomia, taste disturbance, mouth pain, halitosis, or dysphagia.[6] Xerostomia may arise as a side effect of implemented pharmacological prescriptions.[7] Other symptoms can be a direct result of mucositis caused by lesions and the changes it causes to the oral mucosa, such as tissue fibrosis, ulcerations, salivary dysfunction, cavities, and infections, all which are considered risk factors for the occurrence of oral symptoms.[8] Oral candidiasis, oral mucositis, and oral symptoms may be inter-related, can decrease oral functional capacity, and contribute to changes in nutrition and hydration in end-of-life cancer patients.[9] Oral symptoms affect patients' social activities,[9] and may worsen physical, social, and psychological well-being,[10] thus resulting in a lower quality of life.[9,11]

The illness trajectory of patients with cancer is characterized by, among other things, a progressive decrease in self-care capacity,[12] including the capacity to provide oral hygiene self-care, and as the disease progresses, the oral symptoms become more frequent.[13] When the disease affects the whole person, the ability to act as a self-care agent can be severely compromised temporarily or permanently.[14] Self-care is defined as "the practice of activities that maturing and mature persons initiate and perform, within time frames, on their own behalf in the interest of maintaining life, healthful functioning, continuing personal development, and well-being, through meeting known requisites for functional and developmental regulations."[14(p.521)] The complexity and duration of the situation determine the type of care that the patient needs, including the need for professional care.[14]

Some evidence supports that the oral hygiene and oral health of patients with cancer receiving palliative care are precarious and that they need professional support for it.[11] According to a concept analysis by Coker *et al.*,[15] the operational definition of oral hygiene care "… involves individualized approaches to assessing the oral cavity, disrupting plaque, reducing salivary micro-organisms, and cleansing and moisturizing tissues in an effort to prevent plaque-associated diseases and improve well-being."[(p.2367)] Assessing the patient and the patient's oral cavity helps to determine oral hygiene care needs, including the need for referral to a dental care professional or the need for a physician-prescribed product. Cleansing the oral mucosa and using antimicrobial rinses reduce plaque, oral microorganisms, and gingival inflammation.[15] Oral hygiene care can also reduce xerostomia[15] and is essential to effectively manage oral symptoms.[16] It can thus be considered a symptom management strategy, which comprises measures to delay, minimize, or avoid a symptom.[17] Components of a symptom management strategy include the specifications of the nature of the strategy; ie, when, where, why, how much, to whom, and how to deliver such an intervention.[17] The symptom management strategy can be a self-care strategy or care provided by others.[17] All patients need daily oral hygiene care; dependent patients need appropriate support for this care,[18] and nurses are the health care professionals who usually deliver oral hygiene care to hospitalized patients.[15] In specialist palliative care services, oral symptoms can be managed by nurses and physicians with appropriate training and dental/oral medicine professionals.[6]

Symptom experience comprises the simultaneous perception, evaluation, and response to a change in how the person feels, which changes with the frequency, intensity, or distress related to a symptom.[17] Symptom research must be grounded in the subjective symptom experience; the meaning of symptoms; and how patients perceive, express, live, and handle those symptoms.[19] Thus, symptom research should focus on the effectiveness of the symptom management strategy and the symptom experience. A mixed methods review is therefore required to synthesize evidence on effectiveness and experience.

A preliminary search of PROSPERO, CINAHL, the Cochrane Database of Systematic Reviews, and *JBI Evidence Synthesis* identified other reviews on the phenomenon of interest. These reviews either did not follow a systematic approach[11,20] or included studies of patients still in curative therapies and not just under specialist palliative care,[21] studies focused only on patients with xerostomia,[7] or studies of patients who were over 15 years old.[22] There is a gap in the research on oral symptom management of patients with cancer under specialist palliative care.

Oral hygiene care provided to patients with cancer under specialist palliative care could be improved with a more systematic approach, adequate guidelines, and training.[23] Clinical protocols and quality standards on the assessment and management of

oral symptoms could be developed, given the burden caused by such symptoms.[9]

Our review will differ from previous reviews, as it will focus on patients with cancer under specialist palliative care, with a focus on the effectiveness of oral hygiene care in the management of oral symptoms and the experiences related to oral symptoms and oral hygiene care.

The goal of this review is to examine the effectiveness of the oral hygiene care that assists in managing the oral symptoms of patients with cancer under specialist palliative care and patients' experience of such symptoms and care.

Review questions

1. What oral symptoms do patients with cancer experience in specialist palliative care?
2. What is the effectiveness of oral hygiene care in the management of oral symptoms of patients with cancer in specialist palliative care?
3. What are these patients' experiences of oral hygiene care in specialist palliative care?

Inclusion criteria

Participants

The review will consider studies that include adult patients aged 18 years or older, diagnosed with any type of cancer, who are under specialist palliative care, and present at least one oral symptom, such as xerostomia, mouth pain, or dysgeusia. Studies whose populations include patients with non-cancer diagnoses, where it is not possible to distinguish the evidence referring to patients with cancer, will be excluded.

Intervention

The quantitative component of the review will consider studies that investigate the effect of oral hygiene care, as defined in the introduction, with no limitations on the frequency, duration, or intensity of such care, in the management of oral symptoms of patients with cancer under specialist palliative care. The intervention can be delivered by nurses, physicians, dental care professionals, or a multidisciplinary team.

Comparator

The quantitative component of the review will consider studies that compare the intervention with standard care, as defined by the authors of the included studies; another form of experimental care; or studies in which no comparison is made.

Outcomes

The quantitative component of this review will consider studies that include oral symptoms or oral conditions, and report on the severity, frequency, or distress caused by the symptom (xerostomia, halitosis, dysgeusia, mouth pain, or others) in patients with cancer under specialist palliative care, measured with any valid method, including observation, validated scales, self-report, or health system data.

Phenomenon of interest

The qualitative component of this review will consider studies that investigate the experience of oral symptoms and oral hygiene care of patients with cancer under specialist palliative care. The oral hygiene care can be delivered by nurses, physicians, dental care professionals, or a multidisciplinary team.

Context

The qualitative component of this review will consider primary studies whose participants are adult patients with cancer under specialist palliative care, whether they are at home, hospital, hospice, or any other setting. There will be no geographic restrictions as to where the research took place.

Types of studies

This review will consider quantitative, qualitative, and mixed methods studies. Quantitative studies will include experimental, quasi-experimental, and observational studies. Qualitative studies will include, but will not be limited to, phenomenological, ethnographic, exploratory, descriptive, and case studies. Mixed methods studies will be considered only if information from their quantitative and qualitative components can be clearly extracted.

Methods

The proposed systematic review will be conducted in accordance with the JBI methodology for mixed methods systematic reviews for a convergent segregated approach.[24] This protocol has been registered in PROSPERO (CRD42023400554).

Search strategy

The search strategy will aim to locate both published and unpublished studies. An initial limited search of CINAHL (EBSCOhost) and MEDLINE (EBSCOhost) was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy for CINAHL via EBSCOhost (Appendix I). The search strategy, including all keywords and index terms, will be adapted for each included information source. The reference lists of all studies selected for critical appraisal will be screened for additional studies.

Studies published in English, Portuguese, or Spanish (languages in which the reviewers are proficient) between January 2000 and the present will be considered. The worldwide expansion of palliative care took place in the late 1990s and early 2000s,[25] and with it a development in palliative care research, making the year 2000 an appropriate date limit to capture the most relevant research.

The databases to be searched will include MEDLINE (PubMed), CINAHL (EBSCOhost), Cochrane Central Register of Controlled Trials, Dentistry and Oral Sciences Source (EBSCOhost) and MedicLatina (EBSCOhost). Sources of unpublished studies and gray literature to be searched will include Networked Digital Library of Theses and Dissertations and Repositórios Científicos de Acesso Aberto de Portugal.

Study selection

Following the search, all identified citations will be uploaded into Rayyan (Qatar Computing Research Institute, Doha, Qatar) and duplicates removed. Following a pilot test, titles and abstracts will be screened by 2 independent reviewers for assessment against the inclusion criteria. Potentially relevant studies will be retrieved in full and their details imported into JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia).

The full text of selected citations will be assessed in detail against the inclusion criteria by 2 independent reviewers. Reasons for exclusion of full-text studies that do not meet the inclusion criteria will be recorded and reported in the systematic review. Any disagreements that arise between the reviewers at each stage of the study selection process will be resolved through discussion or with a third reviewer. The results of the search will be reported in full in the final review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.[26]

Assessment of methodological quality

Quantitative studies (and the quantitative component of mixed methods papers) and qualitative papers (and the qualitative component of mixed methods papers) selected for retrieval will be assessed by 2 independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments in JBI SUMARI.[27]

Authors of papers will be contacted once to request missing or additional data for clarification, where required. Any disagreements that arise between the reviewers will be resolved through discussion or with a third reviewer. The results of critical appraisal will be reported in narrative format and in a table.

Following the critical appraisal, all studies that do not obtain a critical evaluation equal to or greater than 75% of affirmative responses will be excluded. This is the cutoff point deemed appropriate by the reviewers to guarantee a low risk of bias and to ensure inclusion of studies with high methodological quality to best inform evidence-based practice.

Data extraction

For the quantitative component, data will be extracted from quantitative and mixed methods (quantitative component only) studies included in the review by 2 independent reviewers using the standardized JBI data extraction tool in JBI SUMARI.[28] The data extracted will include specific details about the populations, study methods, interventions, and outcomes of significance to the review question.

For the qualitative component, data will be extracted from qualitative and mixed methods (qualitative component only) studies included in the review by 2 independent reviewers using the standardized JBI data extraction tool in JBI SUMARI.[29] The data extracted will include specific details about the population, context, culture, geographical location, study methods, and the phenomenon of interest relevant to the review question. Findings and their illustrations will be extracted verbatim and assigned a level of credibility.

Any disagreements that arise between the reviewers will be resolved through discussion or with a third

reviewer. Authors of papers will be contacted once to request missing or additional data, where required.

Data synthesis and integration

This review will follow a convergent segregated approach to synthesis and integration according to the JBI methodology for mixed methods systematic reviews.[24] This will involve separate quantitative and qualitative synthesis followed by integration of the resultant quantitative evidence and qualitative evidence.

Quantitative synthesis

Studies will, where possible, be pooled with statistical meta-analysis using JBI SUMARI. Effect sizes will be expressed as either odds ratios (for dichotomous data) or weighted (or standardized) final post-intervention mean differences (for continuous data) and their 95% CI will be calculated for analysis. Heterogeneity will be assessed statistically using the standard χ^2 and I^2 tests. Statistical analyses will be performed using random or fixed effects, guided by Tufanaru *et al.*[30] Subgroup analyses will be conducted where there are sufficient data to investigate, depending on the number and heterogeneity of studies included. If appropriate, studies will be grouped by the oral symptom being managed. Sensitivity analyses will be conducted to test decisions made regarding study inclusion. Where statistical pooling is not possible, the findings will be presented in narrative format as well as tables and figures to aid in data presentation, where appropriate. A funnel plot will be generated to assess publication bias if there are 10 or more studies included in a meta-analysis. Statistical tests for funnel plot asymmetry (Egger test, Begg test, Harbord test) will be performed, where appropriate.

Qualitative synthesis

Qualitative research findings will, where possible, be pooled using JBI SUMARI with the meta-aggregation approach.[24] This will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings and categorizing these findings based on similarity in meaning. These categories will then be subjected to a synthesis to produce a comprehensive set of synthesized findings that can be used as a basis for evidence-based practice. Where textual pooling is not possible, the findings will be presented in narrative format.

Integration of quantitative evidence and qualitative evidence

The findings of each method of synthesis included in this review will then be configured according to the JBI methodology for mixed methods systematic reviews. This will involve quantitative evidence and qualitative evidence being juxtaposed together and organized/linked into a line of argument to produce an overall configured analysis. Where configuration is not possible, the findings will be presented in narrative format.

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Author contributions

Conceptualization and search strategy: RS and CO. Original draft preparation: RS. Review and editing: CO, SR, FH, HA. All authors read and agreed to the published version of the manuscript.

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Appendix I: Search strategy

CINAHL Complete (EBSCOhost)
Search conducted on August 8, 2023.

Search	Query	Records retrieved
#1	(MH "Palliative Care")	41,929
#2	(MH "Hospice Care")	9704
#3	(MH "Hospice Patients")	573
#4	(MH "Cancer Patients")	49,344
#5	(MH "Neoplasms+")	658,361
#6	(MH "Terminally Ill Patients+")	12,761
#7	TI palliative care patient?	1706
#8	AB palliative care patient?	3496
#9	TI advanced cancer	13,948
#10	AB advanced cancer	16,349
#11	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10	720,213
#12	(MH "Oral Hygiene+")	8646
#13	(MH "Mouth Care")	9629
#14	(MH "Mouthwashes+")	2698
#15	(MH "Toothbrushing")	2962
#16	TI oral hygiene care	84
#17	AB oral hygiene care	203
#18	TI oral spray?	37
#19	AB oral spray?	79
#20	TI oral care	2109
#21	AB oral care	4057
#22	S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21	15,564
#23	(MH "Oral Health")	14,936
#24	(MH "Xerostomia+")	5235
#25	(MH "Mucositis+")	1128
#26	(MH "Dysgeusia")	203
#27	(MH "Ageusia")	120
#28	(MH "Taste Disorders+")	1154
#29	(MH "Candidiasis, Oral")	994
#30	(MH "Halitosis")	752

(*Continued*)

Search	Query	Records retrieved
#31	TI dry mouth	279
#32	AB dry mouth	1859
#33	TI mouth pain	22
#34	AB mouth pain	230
#35	TI oral symptom?	110
#36	AB oral symptom?	570
#37	TI oral condition?	229
#38	AB oral condition?	1181
#39	S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38	25,752
#40	S11 AND S22 AND S39	381
#41	S11 AND S22 AND S39 limit to year 2000 to present	349
#42	S41 NOT child*	320

