

Assessment and Management of Xerostomia in Palliative Care: Implications for Oral Comfort and Nursing Practice

Thomas Weber^{1*}, Elena Rossi², Kwame Boateng³, Li Chen⁴

¹*Department of Palliative Medicine and Oral Care, LMU Munich, Munich, Germany.*

²*Department of Palliative Nursing and Xerostomia, University of Bologna, Bologna, Italy.*

³*Department of Palliative Care and Oral Comfort, University of Ghana, Accra, Ghana.*

⁴*Department of Oral Medicine and Palliative Care, Fudan University, Shanghai, China.*

Abstract

Xerostomia is common in people with advanced illness and may affect oral comfort, speech, eating, swallowing, sleep, and social interaction. Its assessment is complicated by the distinction between the subjective experience of dry mouth and objectively measurable salivary gland hypofunction. Management evidence is distributed across palliative care, oncology, oral medicine, nursing, and symptom-management literature. To map contemporary evidence on the definition, causes, assessment, clinical consequences, and management of xerostomia in palliative care, with particular attention to oral comfort and nursing practice. A scoping-review approach informed by PRISMA-ScR and contemporary methodological guidance was used. Literature from 2017–2026 was examined across xerostomia, dry mouth, hyposalivation, palliative and end-of-life care, oral assessment, cancer treatment, medication exposure, oral care, salivary stimulation, and nursing. Evidence was charted according to population, care setting, measurement approach, etiologic context, intervention or practice, professional role, reported outcomes, and applicability to palliative care. Because the web-accessible search interfaces used during review development did not provide reproducible native database hit totals, numerical retrieval and deduplication counts were not reconstructed retrospectively. The mapped literature distinguishes patient-perceived xerostomia from salivary gland hypofunction and shows substantial variation in symptom ascertainment, objective measurement, treatment context, and management strategy. Patient-reported burden is not fully captured by clinical dryness or salivary measures alone. Evidence for specific interventions in palliative populations remains sparse and heterogeneous, whereas oral care, symptom assessment, medication review, patient education, and interprofessional collaboration recur across guidance and nursing literature. Xerostomia in palliative care is best approached as a multidimensional symptom and care problem. Assessment should preserve both patient-reported and clinically observed information, while management should remain individualized, comfort-oriented, and sensitive to cause, residual salivary function, treatment burden, and patient priorities.

Keywords: Xerostomia, Palliative care, Oral comfort, Hyposalivation, Nursing, Oral care

Introduction

Dry mouth occupies an unusual position in palliative care: it may be highly disruptive to patients while remaining inconsistently assessed, documented, and treated. A recent international review of clinical practice guidelines for people with life-limiting illness found wide variation in the quality and content of recommendations concerning dry-mouth assessment and management [1, 2].

Patient experience illustrates why symptom recognition matters. People receiving palliative care have described dry mouth as a persistent burden affecting speech, comfort, and ordinary daily activities [3]. In patients with

Corresponding author: Thomas Weber

Address: Department of Palliative Medicine and Oral Care, LMU Munich, Munich, Germany.

E-mail: ✉ thomas.weber@lmu.de

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advanced progressive disease who already reported dry mouth, greater symptom severity was accompanied by interference with talking, eating, taste, swallowing, sleep, and broader quality of life [4, 5].

Nursing practice is closely connected to this problem because nurses repeatedly encounter oral symptoms during routine care, symptom assessment, medication administration, hydration support, oral hygiene, patient education, and escalation to medical or dental professionals. Its distinctive task is to keep evidence concerning patient-reported dryness, objective salivary dysfunction, etiologic contributors, oral comfort, and management analytically separate before considering how these domains should be integrated in palliative nursing [6].

Review questions

This review addressed four questions:

1. How are xerostomia and salivary gland hypofunction defined and measured in contemporary palliative, oncology, and oral-health literature?
2. Which medication, disease, treatment, and contextual contributors are reported in association with dry mouth in patients relevant to palliative care?
3. What does current evidence show about patient-reported assessment, objective assessment, oral comfort, functional consequences, oral-care practices, saliva substitutes, salivary stimulation, and pharmacological management?
4. What nursing, patient-education, and interprofessional implications can be derived without inferring comparative effectiveness beyond the underlying evidence?

The review was designed to map concepts, practices, evidence types, and uncertainties. It was not designed to rank interventions or infer causal superiority from heterogeneous evidence.

Materials and Methods

A scoping-review design was used because the literature spans qualitative studies, observational research, measurement studies, clinical trials, systematic and scoping reviews, clinical practice guidelines, consensus work, and professional practice statements. Reporting was structured according to the PRISMA extension for scoping reviews [7], while conduct and evidence-charting principles followed contemporary methodological guidance for scoping reviews [8].

The unit of synthesis was the distinct evidence contribution relevant to xerostomia assessment, causation, consequences, management, or professional practice. Multiple publications were treated as separate reports when they addressed materially different questions, while duplicate manifestations of the same publication were removed during reference verification. Evidence was mapped rather than statistically pooled unless a cited secondary source had itself undertaken an appropriate quantitative synthesis.

The review deliberately distinguished the eligibility of evidence from the publication policy applied to the final bibliography. Journal quartile was not used to determine whether a potentially relevant study was scientifically eligible for consideration. Evidence was evaluated according to relevance to the review question, clinical setting, population, design, and extractable contribution.

Eligibility criteria

Eligible evidence was published from 2017 through 2026 and addressed xerostomia, dry mouth, salivary gland hypofunction, oral dryness, related assessment, etiologic factors, clinical consequences, management, or professional care. Direct palliative-care evidence was prioritized. Evidence from advanced cancer, cancer supportive care, geriatric medication research, oral medicine, and treatment-related salivary dysfunction was retained when it informed a construct, mechanism, assessment approach, or management practice applicable to palliative populations.

Eligible designs included primary quantitative and qualitative studies, controlled trials, observational studies, measurement research, systematic and scoping reviews, clinical guidelines, consensus studies, and evidence-based clinical practice statements. Oral-care evidence was considered particularly relevant because palliative oral-health research often integrates dry mouth with broader oral symptoms rather than studying xerostomia in isolation [9]. Evidence was excluded from substantive interpretation when it lacked a clinically relevant dry-mouth or salivary-function component, concerned purely technical laboratory outcomes without interpretable clinical relevance, or could not inform the review questions. Studies were not excluded because of null findings, methodological heterogeneity, or disagreement with other evidence.

Search strategy

Search development combined the core terms xerostomia, dry mouth, hyposalivation, and salivary gland hypofunction with contextual terms including palliative care, end of life, advanced cancer, and life-limiting illness. Additional searches incorporated assessment and management concepts, including patient-reported outcome, oral dryness, salivary flow, medication, chemotherapy, radiotherapy, targeted therapy, immune checkpoint inhibitor,

oral care, saliva substitute, moisturizer, salivary stimulation, pilocarpine, photobiomodulation, nursing, education, eating, swallowing, communication, and quality of life.

Methodological searches used scoping review, PRISMA-ScR, and data charting. Searches and bibliographic verification were conducted on 16 September 2026 using web-accessible PubMed records, publisher records, and supplementary citation verification. The search strategy sought breadth sufficient to capture palliative-specific evidence while also identifying transferable assessment, measurement, and management research.

The interfaces available during execution did not expose complete native database exports with stable source-level retrieval totals. Numerical search counts were therefore not reconstructed after the fact. This prevents false precision in the selection flow and is acknowledged as a methodological limitation rather than replaced with estimated or quota-derived values.

Study selection

Potentially relevant reports were screened for correspondence with the review questions, date window, clinical relevance, and extractable information concerning xerostomia, oral dryness, salivary function, associated causes, assessment, management, or professional practice. Duplicate DOI and version records were removed during bibliographic verification.

Screening distinguished palliative-specific evidence from evidence transferred from adjacent clinical fields. Studies from oncology or oral medicine were retained when they supplied information not adequately available from direct palliative research, such as measurement distinctions, treatment-specific salivary toxicity, or mechanisms of salivary dysfunction. Such evidence was not treated as automatically generalizable to all palliative populations.

A numerical PRISMA-ScR selection flow is not reported because reproducible database-level identification, deduplication, and screening totals could not be obtained from the search interfaces used. No retrieval, exclusion, or inclusion number has been inferred from the final reference allocation.

Data charting

Charted variables included citation identity, study or review design, country or region where available, care setting, population, professional groups, sample size where reported, palliative or serious-illness context, focal construct, definition or operationalization, exposure or intervention, comparator, measurement source, clinical or organizational process, contextual or mechanistic modifiers, analytical approach, temporal design, main finding, nature and direction of evidence, contradictory or null findings, stated limitations, applicability boundaries, and relevance to the synthesis.

Particular attention was given to measurement because the terms xerostomia and salivary gland hypofunction address related but nonidentical phenomena. Contemporary clinical guidance explicitly distinguishes the subjective sensation of dry mouth from objectively demonstrable reduction or alteration in salivary function [10]. A large systematic review of dry-mouth outcomes identified extensive variation in outcome domains and measurement instruments [11]. These differences were retained during charting rather than normalized into a single dry-mouth endpoint [12].

Synthesis

Evidence was synthesized descriptively according to clinical function: definitions, etiologic contributors, assessment, patient-reported outcomes, objective assessment, oral comfort and function, oral-care practices, replacement or moisturizing strategies, salivary stimulation, pharmacological approaches, nursing management, and education. A dry-mouth core outcome set developed through international consensus was used as a methodological reference for organizing outcome domains, but not as a diagnostic standard or a substitute for patient-centered assessment [13].

The synthesis preserved distinctions between direct palliative evidence and evidence transferred from oncology or oral medicine, between observational association and causal inference, and between evidence-supported practice and proposed interpretation. Quantitative pooling was not undertaken for the present scoping review.

Results and Discussion

The mapped literature supports four recurrent observations. First, dry mouth is clinically important but is often embedded within broader oral or symptom assessments. Second, subjective xerostomia and objectively assessed oral or salivary dryness overlap incompletely. In a palliative population, clinical oral-dryness scores showed relationships with some patient-reported manifestations but did not reproduce the full pattern of symptom experience [14]. Third, multiple etiologic contexts coexist, including medication exposure, cancer therapies, local oral conditions, hydration-related factors, and disease-related change [15]. Fourth, management evidence is distributed across basic oral care, wetting strategies, salivary stimulation, pharmacological therapy, and professional support, with comparatively limited direct trial evidence in palliative populations.

The literature also demonstrates why apparently objective measurements should not be treated as mechanistically self-explanatory. In cancer populations receiving chemotherapy, oral dryness has been examined alongside salivary inflammatory mediators, indicating potentially relevant biological associations while leaving causal pathways uncertain [16]. The result is an evidence field in which patient experience, clinical observation, salivary physiology, treatment exposure, and care practices provide different forms of information.

Study characteristics

The evidence informing this review is methodologically diverse. Direct palliative studies include qualitative accounts of patient experience, cross-sectional symptom assessment, inpatient observational research, oral-care studies, and small intervention trials. Additional measurement and etiologic evidence comes from oncology, oral medicine, and geriatric medication research.

This diversity is analytically useful because different designs answer different questions. Clinical guidance identifies recommended assessment and management practices. Trials test specific symptom-relief strategies, whereas systematic and scoping reviews expose inconsistency in outcomes, methods, and care settings.

Table 1. Methodological profile of evidence informing contemporary xerostomia assessment and management in palliative care

Evidence stratum	Typical clinical population or setting	Principal analytical contribution	Main strength	Main interpretive limitation
Direct palliative primary studies	Advanced illness, inpatient palliative care, terminal cancer	Symptom burden, patient experience, bedside assessment, oral-care response	High contextual relevance	Often small or single-setting samples
Palliative evidence syntheses	Palliative and end-of-life populations	Breadth of oral-care and symptom-management evidence	Integrates dispersed literature	Limited by small and heterogeneous primary evidence
Measurement studies	Dry-mouth, oral medicine, cancer and palliative populations	Patient-reported instruments, clinical dryness, outcome domains	Clarifies what different measures capture	Measures are not interchangeable and validation contexts differ
Oncology treatment evidence	Chemotherapy, radiotherapy, targeted therapy, immunotherapy	Treatment-specific salivary dysfunction and oral toxicity	Defines clinically important etiologic contexts	Transfer to general palliative populations requires qualification
Guidelines and practice statements	Cancer supportive care and life-limiting illness	Assessment and management recommendations	Clinically structured and practice oriented	Recommendation quality and evidence strength vary
Nursing and professional-role evidence	Palliative, terminal cancer and oncology nursing	Assessment, routine oral care, education, collaboration and escalation	Links evidence with bedside care	Does not establish professional-role superiority

Note: Table entries summarize evidence functions rather than study counts. Numerical totals are not inferred from the bibliography.

Definitions of xerostomia and hyposalivation

Xerostomia is the subjective experience of oral dryness. The distinction is clinically consequential because perceived dryness does not vary in a fixed relationship with measurable salivary output. Clinical assessment guidance therefore treats symptom report and salivary function as related but distinct constructs [10].

Measurement research supports the same conclusion. Across the broader dry-mouth literature, numerous outcome domains and measurement methods have been used, producing substantial heterogeneity [11]. International consensus work has attempted to reduce this inconsistency through a core outcome set [13], but standardizing research outcomes does not remove the need to ask patients directly about the experience and consequences of dryness [12].

The palliative evidence makes this distinction especially important. A patient may therefore have clinically important xerostomia without a proportionate abnormality on a salivary measure, or objective salivary impairment without equivalent subjective distress [14].

Table 2. Interpretation matrix for xerostomia and salivary dysfunction in palliative-care assessment

Assessment domain	Primary information obtained	What it can establish	What it cannot establish alone	Clinical interpretation
Direct patient report	Perceived dryness, bother and symptom severity	Presence and subjective intensity of xerostomia	Salivary output or biological cause	Essential whenever the patient can communicate symptoms
Functional symptom report	Effects on speech, taste, eating, swallowing, sleep and social function	Patient-centered consequence	Mechanism of dryness	Connects oral symptoms with comfort and daily activity

Oral examination	Visible mucosal, tongue, saliva and oral-care findings	Clinical signs compatible with oral dryness	Full patient burden or salivary secretory capacity	Complements symptom history and guides bedside care
Clinical oral-dryness scale	Structured observable dryness signs	Standardized clinical severity pattern	Complete correspondence with patient experience	Useful as an additional channel, not a substitute for patient report
Salivary-flow measurement	Secretory output under defined conditions	Objective salivary gland hypofunction	Degree of subjective xerostomia	Most useful when mechanism or gland function is clinically relevant
Biological or treatment context	Medication, anticancer therapy, inflammatory or disease-related information	Plausible etiologic contributors	Individual causal attribution without supporting evidence	Helps interpret findings and direct medication/treatment review

Note: The domains are complementary. The table does not define diagnostic thresholds or imply that one assessment method is universally superior.

Causes and medication contributors

The etiologic landscape is heterogeneous. In palliative care, where polypharmacy is common and medicines may be necessary for symptom relief, the practical question is not simply whether a medicine is xerogenic but whether its contribution is clinically important enough to justify modification within the patient's overall goals of care [17, 18].

Cancer treatment creates additional etiologic pathways. Immune checkpoint inhibitor-associated salivary gland dysfunction represents another distinct pattern in which immune-mediated injury, diagnostic variability, and management uncertainty must be considered [19]. Nonsurgical cancer therapies more broadly can produce xerostomia, measurable salivary gland dysfunction, or both, and international oncology guidance accordingly separates prevention, assessment, and treatment according to the underlying exposure and residual gland function [20, 21].

Preventive evidence remains heterogeneous. A recent systematic review of strategies intended to prevent salivary gland hypofunction or xerostomia caused by nonsurgical cancer therapies found that the strength and applicability of evidence varied substantially across interventions and treatment settings [22]. For palliative practice, these data are most useful as etiologic and mechanistic context rather than as a universal prevention protocol.

Causes should therefore be approached cumulatively. The presence of one plausible contributor does not exclude another, and identification of a medication or treatment exposure does not prove that it is the sole cause of an individual patient's symptom.

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Assessment approaches

Assessment is strongest when it begins with the patient's experience and then adds information needed to explain or manage that experience. Clinical guidance distinguishes history and symptom report from examination and objective evaluation of salivary function [10]. This distinction reduces the risk that a normal or mildly abnormal objective measure will be used to dismiss clinically important dryness.

A practical palliative assessment therefore includes the presence and severity of dryness, temporal pattern, aggravating factors, current medicines and recent treatment exposures, ability to eat and drink, swallowing, speech, taste, sleep disturbance, oral pain, mucosal condition, saliva appearance, oral hygiene, candidal or dental problems where relevant, and the patient's ability to perform self-care. Caregiver observations become particularly important when communication or functional capacity is reduced.

Objective investigations should be selective and proportional. In many patients approaching the end of life, detailed salivary testing will not alter management. In other situations, particularly when persistent symptoms are unexplained, cancer treatment has produced possible gland dysfunction, or treatment choice depends on residual salivary function, more structured assessment may be useful.

Patient-reported assessment

Patient-reported assessment is central because xerostomia is fundamentally a subjective symptom. In advanced progressive disease, patients have identified dryness-related interference with talking, eating, swallowing, taste, and sleep [4]. Assessment should therefore capture not only severity but also bother and functional consequences. The way questions are presented influences recognition. When dry mouth was included explicitly in a symptom-assessment instrument, it was reported far more frequently than when patients were expected to volunteer it under a general category [5]. This does not mean that one instrument is universally superior, but it demonstrates that symptom visibility is partly determined by assessment design.

Available patient-reported measures vary in content and psychometric evidence [12]. Outcome-mapping work similarly shows that dry-mouth research has used a large number of overlapping domains and instruments [11]. A score that records intensity without asking about speech, oral comfort, eating, swallowing, taste, sleep, or treatment burden may underestimate its clinical relevance [23, 24].

Objective assessment

Objective assessment can add clinically useful information but addresses a different question from patient-reported xerostomia. Structured clinical oral-dryness scales can increase consistency in describing observable findings.

However, correspondence between observable oral dryness and patient experience is incomplete. In a palliative population, a clinical oral-dryness scale correlated with some patient-reported symptoms while failing to reproduce all dimensions of perceived dryness and bother [14]. This supports a dual-channel approach in which clinical findings and patient experience are interpreted together.

Salivary-flow measurement is the clearest method for establishing objective secretory dysfunction, but its usefulness depends on the clinical question, patient condition, methodology, and feasibility. Such associations may help characterize treatment-related biology but should not be interpreted as proof that inflammatory activity alone causes an individual patient's xerostomia [16].

In palliative care, objective assessment should therefore be proportional to the decision it can change. The clinical aim is not maximal measurement. It is sufficient characterization of oral dryness, salivary dysfunction, associated oral disease, and plausible contributors to support comfort-focused and context-appropriate management.

Effects on oral comfort

Xerostomia affects more than the sensation of dryness. Patients receiving palliative care describe interference with speaking, oral comfort, and ordinary daily activities [3]. In advanced progressive disease, dry mouth has also been associated with difficulties involving eating, taste, swallowing, and sleep [4]. These consequences explain why symptom severity and salivary output cannot by themselves represent the clinical burden [25-28].

Evidence from head and neck cancer additionally links persistent post-radiotherapy xerostomia with poorer quality of life [29]. Near the end of life, oral care may also produce measurable short-term improvement in oral moisture, although small studies cannot establish durable benefit [30].

Table 3. Cross-domain integration of xerostomia-related oral comfort and palliative-care implications

Patient-centered manifestation	Assessment priority	Potential care response	Professional contribution	Important boundary
Persistent oral dryness or stickiness	Direct symptom inquiry plus oral examination	Frequent individualized mouth care and feasible wetting strategies	Nursing assessment with dental/medical input when needed	Subjective dryness may not parallel salivary-flow reduction
Difficulty speaking	Ask about speech effort and conversational limitation	Moistening immediately before important communication where helpful	Nurses and caregivers can anticipate timing needs	Speech difficulty may have additional neurologic, respiratory, or fatigue-related causes
Eating or swallowing difficulty	Clarify texture, dryness, pain, swallowing and intake	Adapt oral care, food texture, fluids and symptom support to goals	Nursing, medical, dietetic and swallowing expertise as appropriate	Xerostomia should not be assumed to be the sole cause
Taste disturbance and reduced enjoyment	Ask about taste, appetite and oral discomfort	Mouth care and individualized food/fluid strategies	Nursing and nutrition support	Cancer therapy, medicines and disease may contribute independently
Sleep interruption from dryness	Ask about nocturnal symptoms and mouth breathing	Bedside fluids or oral wetting when safe and consistent with goals	Nursing anticipatory care	Fluid strategies must respect aspiration and other clinical constraints
Dependence on others for oral care	Assess dexterity, cognition, fatigue and caregiver capacity	Assisted oral care and simplified regimens	Nurses, family caregivers and oral-health professionals	Care burden and patient preference determine feasible intensity

Eating, drinking, swallowing, and communication

Dry mouth can make speech effortful, reduce enjoyment of food, complicate bolus formation, and worsen perceived swallowing difficulty. These problems often coexist with pain, mucositis, taste change, fatigue, nausea, weakness, and disease-related dysphagia; xerostomia should therefore not be treated as the sole explanatory mechanism.

Supportive-care guidance increasingly recognizes eating and drinking as social as well as physiological activities [31]. The relevant outcome may be preserved participation or relief of distress rather than restoration of normal intake [32-37].

Oral-care regimens

Routine oral care remains a recurring component of palliative xerostomia management, although the supporting evidence is heterogeneous. A rapid review similarly found a small and diverse intervention literature [9, 38]. Simple measures may still provide meaningful short-term relief. In a randomized crossover study of palliative patients, both plain and mint-flavored ice reduced thirst and dry-mouth symptoms, with greater immediate reductions after mint ice [39]. Such findings support pragmatic symptom relief but do not establish long-term superiority of a specific oral-care regimen. Oncology guidance also identifies unresolved questions within basic oral care, reinforcing the need to adapt routines to mucosal condition, patient tolerance, and care goals [40].

Moisturizers and saliva substitutes

Moisturizers and saliva substitutes provide external wetting rather than restoring salivary gland function. Contemporary clinical guidance includes these approaches among symptomatic options, especially when endogenous secretion is insufficient or stimulation is unsuitable [41].

Their palliative value is therefore principally comfort-oriented. Selection should consider texture, taste, duration of relief, ease of application, swallowing safety, patient preference, and the practical ability of patients or caregivers to repeat applications. Current palliative intervention evidence remains too limited to support a universal product hierarchy [42].

Salivary stimulation

Stimulation is conceptually different from replacement because it depends on residual salivary capacity. Mechanical, gustatory, pharmacological, or other stimulation may be appropriate in selected patients, but feasibility changes with disease stage, swallowing ability, treatment history, and tolerance.

Evidence also shows why subjective and objective outcomes should remain separate. Photobiomodulation research in head and neck cancer has evaluated both xerostomia and salivary-flow outcomes, with effects that do not necessarily move in parallel [43]. The palliative implication is that increased secretion should not automatically be equated with meaningful symptom relief.

Pharmacological approaches

Systemic pharmacological stimulation can be considered when residual gland function and clinical condition make treatment reasonable. Evidence-based cancer guidance includes sialagogues among possible management approaches [21, 41].

Direct palliative evidence is substantially thinner. A pilot N-of-1 feasibility study of orally dissolving pilocarpine in advanced cancer experienced considerable attrition and identified clinically meaningful benefit in only a subset of evaluable participants [44]. Pharmacological therapy should therefore be interpreted as an individualized option whose possible benefit must be balanced against adverse effects, pill burden, prognosis, and patient priorities [42].

Nursing management

Nurses are positioned to recognize xerostomia repeatedly across the illness trajectory because oral comfort intersects with routine symptom assessment, medication administration, nutrition, hydration, communication, and personal care. Current nursing evidence describes roles in oral assessment, hygiene, symptom management, patient education, monitoring, referral, and interprofessional collaboration [6].

Professional boundaries nevertheless matter. Longitudinal research in terminal cancer demonstrates that nurse-led oral care and dental-professional management can be examined as complementary care pathways rather than automatically competing alternatives [45]. Small terminal-care studies also indicate that oral care can improve measured oral moisture even close to death [30].

Nursing management should therefore emphasize regular recognition of symptoms, inspection of the mouth, feasible comfort measures, review of potentially contributory medicines with prescribers, documentation of functional consequences, assistance when self-care declines, and timely referral when infection, severe mucosal disease, dental pathology, or complex salivary dysfunction is suspected.

Patient and family education

Education should be practical, brief, and adapted to functional capacity. Patients and families may benefit from knowing that dry mouth can arise from several causes, that symptom severity does not always correspond to measured salivary output, and that regular mouth care or wetting measures may need repetition.

Education should also identify circumstances that warrant professional review, including painful oral lesions, candidal symptoms, inability to maintain oral hygiene, rapidly worsening swallowing difficulty, or treatment-related oral toxicity. Nursing literature documents persistent variation in oral-health knowledge and practice, supporting continued attention to staff and patient education without implying that any single educational program has established superiority [46].

The synthesis across patient experience, assessment, oral comfort, supportive interventions, and education is summarized in **Figure 1**.

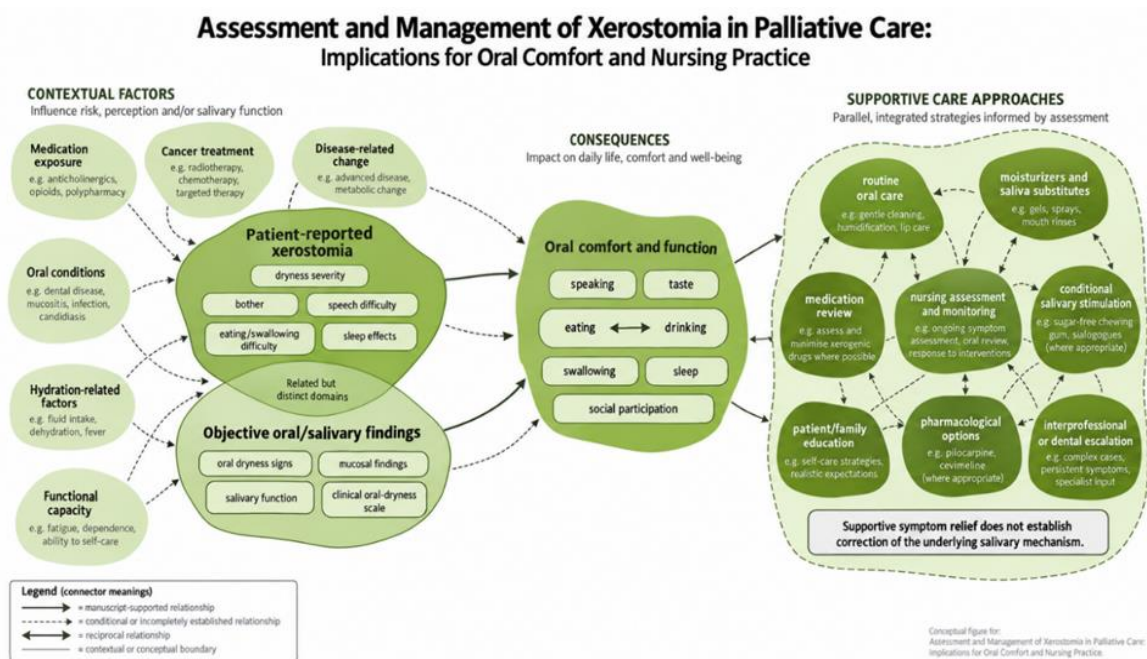


Figure 1. Xerostomia in palliative care as a linked symptom–assessment–comfort–support field

Evidence gaps

The most persistent limitation is the small amount of direct comparative intervention evidence in palliative populations. Measurement inconsistency compounds this problem: patient-reported instruments vary [11], dry-mouth studies use numerous outcome domains and measures [12], and even clinically structured oral-dryness assessments do not fully correspond with patient experience [14, 42].

Important setting and role gaps also remain. Future studies should preserve separate subjective and objective outcomes, document treatment burden, and report functional consequences important to patients [6].

The review indicates that xerostomia in palliative care is best understood as a multidimensional symptom-care problem rather than a direct surrogate for salivary flow [10, 14].

Management evidence is correspondingly plural. The more defensible clinical approach is therefore to identify what the patient experiences, clarify plausible contributors, determine whether objective assessment will alter care, and select the least burdensome support consistent with patient goals [41, 42].

Implications for palliative nursing

Palliative nurses should treat dry mouth as a symptom worthy of explicit enquiry rather than waiting for spontaneous reporting. Nursing assessment can combine patient-reported severity and functional impact with oral inspection, medication awareness, self-care capacity, and recognition of circumstances requiring medical or dental review [6].

Repeated bedside contact also allows response to be reassessed over time. Nursing practice should support comfort and continuity while avoiding assumptions that a dry-looking mouth accurately represents the patient's experience or that one intervention is appropriate across all causes.

Limitations

The evidence base combines different populations, care settings, measurement systems, and study designs. Such evidence may inform palliative care but is not automatically transferable.

A further limitation concerns review execution. A numerical PRISMA-ScR flow could therefore not be reconstructed legitimately. No identification, screening, exclusion, or inclusion count was estimated from the size of the reference list.

Conclusion

Xerostomia in palliative care cannot be represented adequately by either patient report or salivary measurement alone. Its clinical importance lies in the interaction between perceived dryness, oral findings, underlying contributors, functional consequences, and the burden and feasibility of treatment. Assessment should preserve the patient's experience while using objective evaluation selectively when it can change care. Current

management evidence supports individualized oral care, symptom relief, cause-sensitive review, nursing monitoring, education, and appropriate interprofessional support, while remaining too uncertain to justify a universal intervention hierarchy.

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References

1. van der Meulen AI, Stoppelenburg A, Theunissen M, de Nijs EJM, van den Beuken-van Everdingen MHJ, van der Linden YM. Dry mouth in palliative care: A systematic review of clinical practice guidelines around the world. *Palliat Med.* 2026;40(7):933-57. doi:10.1177/02692163261434188
2. Walsh M, Fagan N, Davies A. Xerostomia in patients with advanced cancer: A scoping review of clinical features and complications. *BMC Palliat Care.* 2023;22(1):178. doi:10.1186/s12904-023-01276-4
3. Murphy Dourieu E, Lisiecka D, Evans W, Sheahan P. Xerostomia: A silent burden for people receiving palliative care—a qualitative descriptive study. *BMC Palliat Care.* 2025;24(1):1. doi:10.1186/s12904-024-01617-x
4. Fleming M, Craigs CL, Bennett MI. Palliative care assessment of dry mouth: what matters most to patients with advanced disease? *Support Care Cancer.* 2020;28(3):1121-9. doi:10.1007/s00520-019-04908-9
5. Monsen RE, Lerdal A, Nordgarden H, Gay CL, Herlofson BB. A comparison of the prevalence of dry mouth and other symptoms using two different versions of the Edmonton Symptom Assessment System on an inpatient palliative care unit. *BMC Palliat Care.* 2024;23(1):75. doi:10.1186/s12904-024-01405-7
6. Amato S, Sguanci M, Napolitano D, Lo Cascio A, Bozzolan G, Diamanti O, et al. Nursing role in the management of oral disorders in palliative care: A scoping review. *Nurs Forum.* 2026;2026(1):6045336. doi:10.1155/nuf/6045336
7. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med.* 2018;169(7):467-73. doi:10.7326/M18-0850
8. Peters MDJ, Marnie C, Tricco AC, Pollock D, Munn Z, Alexander L, et al. Updated methodological guidance for the conduct of scoping reviews. *JBMI Evid Synth.* 2020;18(10):2119-26. doi:10.11124/JBIES-20-00167
9. Serra R, Roque S, Arco H. Oral hygiene care and the management of oral symptoms in patients with cancer in palliative care: A mixed methods systematic review. *JBMI Evid Synth.* 2025;23(8):1565-601. doi:10.11124/JBIES-24-00204
10. Hong C, Epstein JB, Jensen SB, Gueiros LA, van Leeuwen SJM, Kandwal A, et al. MASCC/ISOO clinical practice statement: clinical assessment of salivary gland hypofunction and xerostomia in cancer patients. *Support Care Cancer.* 2024;32(8):551. doi:10.1007/s00520-024-08691-0
11. Wiriyakijja P, Niklander SE, Santos-Silva AR, Kuten Shorrer M, Simms ML, Villa A, et al. World Workshop on Oral Medicine VIII: development of a core outcome set for dry mouth: A systematic review of outcome domains for xerostomia. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2023;135(6):827-75. doi:10.1016/j.oooo.2023.01.012
12. Gulati A, Kidane J, Chang JL. Patient reported outcome measures for salivary function: A systematic review. *Laryngoscope.* 2023;133(8):1796-805. doi:10.1002/lary.30550
13. Niklander SE, Simms ML, Wiriyakijja P, Santos-Silva AR, Kuten-Shorrer M, Sankar V, et al. World Workshop on Oral Medicine VIII: development of a core outcome set for dry mouth: A consensus study. *Oral Surg Oral Med Oral Pathol Oral Radiol.* 2023;135(6):885-92. doi:10.1016/j.oooo.2022.12.016
14. Murphy Dourieu E, Lisiecka D, Evans W, Sheahan P. Assessment of dry mouth in a palliative population: A comparison between patient-reported symptoms and clinical oral dryness scale measurements. *Am J Hosp Palliat Care.* 2026;43(8):833-41. doi:10.1177/10499091251356596
15. Sarkisyan EG, Korzhova PA, Esiev RK, Taralova MG, Gerasimova ES, Ermakov EA, et al. The clinical picture of the damage to the organs of the hepatobiliopancreatic area in hypothyroidism. *J Adv Pharm Educ Res.* 2023;13(4):30-5. doi:10.51847/iWlul3UmLXS
16. Kiyomi A, Yoshida K, Okamoto N, Kurokawa A, Saito C, Kanemaru H, et al. Relationship between salivary inflammatory mediators and oral dryness during chemotherapy in patients with cancer: A cohort study. *Support Care Cancer.* 2026;34(6):587. doi:10.1007/s00520-026-10796-7

17. Tan ECK, Lexomboon D, Sandborgh-Englund G, Haasum Y, Johnell K. Medications that cause dry mouth as an adverse effect in older people: A systematic review and meta-analysis. *J Am Geriatr Soc.* 2018;66(1):76-84. doi:10.1111/jgs.15151
18. Febrianti Y, Muhajir M, Khoiroh U, Claridho F, Djojodibroto JA, Srihadi N. Prevalence of potentially inappropriate medications in psychogeriatric patients in Indonesia based on the Beers 2019 criteria. *J Adv Pharm Educ Res.* 2023;13(2):144-9. doi:10.51847/FQO4oRKkfk
19. López-Pintor RM, González-Serrano J, Villa A, Musella G, Santos-Silva AR, Rodríguez-Molinero J. Diagnosis and management of immune checkpoint inhibitor-induced dry mouth and salivary gland dysfunction in oncology patients: A systematic review. *Support Care Cancer.* 2026;34(7):723. doi:10.1007/s00520-026-10945-y
20. Villa A, Epstein JB, Yarom N, Hong C, Fulop C, Bossi P, et al. MASCC/ISOO clinical practice statement: management of oral complications of targeted therapy. *Support Care Cancer.* 2024;32(8):549. doi:10.1007/s00520-024-08689-8
21. Mercadante V, Jensen SB, Smith DK, Bohlke K, Bauman J, Brennan MT, et al. Salivary gland hypofunction and/or xerostomia induced by nonsurgical cancer therapies: ISOO/MASCC/ASCO guideline. *J Clin Oncol.* 2021;39(25):2825-43. doi:10.1200/JCO.21.01208
22. Mercadante V, Smith DK, Abdalla-Aslan R, Andabak-Rogulj A, Brennan MT, Chagas Jaguar G, et al. A systematic review of salivary gland hypofunction and/or xerostomia induced by non-surgical cancer therapies: prevention strategies. *Support Care Cancer.* 2025;33(2):87. doi:10.1007/s00520-024-09113-x
23. Hassan A, Siddiqui N, Khan B, Malik S. Drift in patient-reported outcomes: A stability and bias assessment framework for longitudinal self-reported signals. *J Health Inform Digit Syst.* 2023;3:22. doi:10.68159/v857447659
24. Ali H, Farooq M, Shah U. Value-of-information diagnostics in clinical testing: A decision-theoretic framework for cost-constrained test selection. *J Health Inform Digit Syst.* 2025;5:44. doi:10.68159/w516803882
25. Ahmed S, Algarni T, Alshareef M, Alhussain A, Alrashidi K, Alahmari S. Prevalence of oral mucosal lesions among patients visiting private university dental hospital, Riyadh, Saudi Arabia. *Ann Dent Spec.* 2023;11(1):83-7. doi:10.51847/qvnfdOmZPj
26. Poornachitra P, Maheswari U. Analysis of clinical symptoms in patients with oral submucous fibrosis. *Ann Dent Spec.* 2023;11(1):1-6. doi:10.51847/iRUEgUex6m
27. Pavlova Z. Current trends in prevention of denture stomatitis: denture base materials with antimicrobial effect. *Ann Dent Spec.* 2023;11(3):59-67. doi:10.51847/HzJjQ1bn1I
28. Nadershah M. Translation and cross-cultural adaptation of orthognathic quality of life instrument to Arabic language. *Ann Dent Spec.* 2025;13(3):31-7. doi:10.51847/m05EFtO9ko
29. Hoene G, Waldzus LC, Schminke B, Gruber LJ, Dröge L, Schliephake H, et al. Post-radiotherapy xerostomia and quality of life in head and neck cancer patients. *Support Care Cancer.* 2026;34(7):698. doi:10.1007/s00520-026-10948-9
30. Okamoto M, Tanaka H, Tamura S, Kanamori D, Yokoi M, Usui M, et al. Effects of oral care in terminal cancer patients shortly before death. *Gerodontology.* 2026;43(1):21-6. doi:10.1111/ger.70008
31. Beauplet B, Semple C, Dornan M, Verdonck-de Leeuw I, Amano K, Choi A, et al. A Multinational Association of Supportive Care in Cancer and International Society of Oral Oncology clinical practice statement: management of social eating and drinking challenges in adults with cancer. *Support Care Cancer.* 2026;34(5):493. doi:10.1007/s00520-026-10654-6
32. Huacasi G, Quispe-Cruz H, Rodriguez J, Arocutipa W, Cutimbo-Quispe C. Epidemiological profile of oral health among secondary school students in the high-altitude region of Peru. *J Adv Pharm Educ Res.* 2024;14(4):63-8. doi:10.51847/oXr58ky3jp
33. Mucaj O, Krasniqi M, Qendro A. Technological innovation in dental and ocular industries: economic impacts and future prospects. *J Adv Pharm Educ Res.* 2025;15(1):49-53. doi:10.51847/ytKUn7R31S
34. Arunachalam LT, Suresh S, Lavu V, Vedamanickam S. In silico investigation of andrographolide and resveratrol with DNA-sensing inflammasomes AIM2 and IFI16 in periodontitis. *J Biochem Technol.* 2024;15(4):26-34. doi:10.51847/Qe4kzCk2DJ
35. Amaihunwa KC, Okubo EA, Ovwasa FT, Achi JC, Enwa OF. Synthetic engineering of probiotic biofilms for targeted immune enhancement and intestinal health: A review. *J Biochem Technol.* 2025;16(3):30-6. doi:10.51847/SZ4qsSeBYg
36. Chandrasekhar K, Nastro RA, Kumar P, Jujjavarapu SE, Babu DS, Rao AR, et al. Exploring the potential of microbial exopolysaccharides as innovative and eco-friendly cleansing agents: A review. *J Biochem Technol.* 2025;16(3):51-62. doi:10.51847/RQGqjwM4nG
37. Boulaares I, Derouiche S, Niemann J. *Ocimum basilicum* L.: A systematic review on pharmacological actions and molecular docking studies for anticancer properties. *J Biochem Technol.* 2024;15(1):12-8. doi:10.51847/TlkGjN14PM

38. Hammond L, Chakraborty A, Thorpe C, O'Loughlin M, Allcroft P, Phelan C. Relieving perception of thirst and xerostomia in patients with palliative and end-of-life care needs: A rapid review. *J Pain Symptom Manage.* 2023;66(1). doi:10.1016/j.jpainsymman.2023.02.315
39. Phelan C, Hammond L, Thorpe C, Allcroft P, O'Loughlin M. A novel approach to managing thirst and dry mouth in palliative care: A prospective randomized cross-over trial. *J Pain Symptom Manage.* 2023;66(5):587-94.e2. doi:10.1016/j.jpainsymman.2023.08.005
40. Raber-Durlacher JE, Zadik Y, Treister NS, Stempler N, Bruno JS, Epstein JB, et al. MASCC/ISOO clinical practice statement: current understanding on controversies in basic oral care in hemato-oncology and hematopoietic cell transplantation. *Support Care Cancer.* 2024;32(8):550. doi:10.1007/s00520-024-08690-1
41. Hong C, Jensen SB, Vissink A, Bonomo P, Santos-Silva AR, Gueiros LA, et al. MASCC/ISOO clinical practice statement: management of salivary gland hypofunction and xerostomia in cancer patients. *Support Care Cancer.* 2024;32(8):548. doi:10.1007/s00520-024-08688-9
42. Belo ACS, Santos ABA. Interventions for xerostomia and thirst in adults receiving palliative and end-of-life care: A systematic review with synthesis without meta-analysis. *Am J Hosp Palliat Care.* 2026;10499091261474447. doi:10.1177/10499091261474447
43. Pedroso MNM, Rech A, Casagrande N, Pissia JF, Zardo JS, Borges VL, et al. Effects of photobiomodulation on oral mucositis, oral pain, xerostomia, salivary flow rate, and quality of life in patients with head and neck cancer: A systematic review and meta-analysis. *Support Care Cancer.* 2026;34(4):364. doi:10.1007/s00520-026-10575-4
44. Foster K, Mitchell G, Richard E, Steadman KJ, Senior H, Estafanos R, et al. Orally dissolving pilocarpine tablets for xerostomia in advanced cancer: A pilot N-of-1 feasibility study. *Palliat Med.* 2025;39(2):298-306. doi:10.1177/02692163241306269
45. Suzuki H, Furuya J, Hidaka R, Motomatsu Y, Hara R, Kabasawa Y, et al. Comparison of nurse-led oral health care and dental professional-led oral health management in terminally ill cancer patients receiving palliative care: A longitudinal study. *Support Care Cancer.* 2025;33(5):386. doi:10.1007/s00520-025-09453-2
46. Dvorski RM, Hynes MV, Paisley ED, Hachey SM. Oral health education, knowledge, and practice patterns of nurses caring for cancer patients: A scoping review. *Policy Polit Nurs Pract.* 2026;27(1):58-70. doi:10.1177/15271544251322765