Supplementary files

Systematic reviews on the management of xerostomia and hyposalivation – an umbrella review

Journal: Gerodontology

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Online Supplementary Files

Online Resource Figure S1.

Figure S1. Databases searched by the systematic reviews included.

Online Resource Table S1.

Table S1. Excluded records with reasons.

Online Resource Table S2.

Table S2. Characteristics of the included studies.

Online Resource Table S3.

Table S3. Characteristics of the included population and treatments.

Online Resource Table S4.

Table S4. Outcome measures, follow-up, main results and conclusions.

Online Resource Table S5.

Table S5. Quality assessment of systematic reviews based on AMSTAR 2.

Online Resource Figure S2.

Figure S2. Dot plot showcasing the distribution of systematic review publications over the years related to pharmacological interventions.

Online Resource Figure S3.

Figure S3. Dot plot showcasing the distribution of systematic review publications over the years related to non-pharmacological interventions

Online Resource Figure S4.

Figure S4. Dot plot showcasing the distribution of systematic review publications over the years related to local interventions.

Online Resource Figure S5.

Figure S5. Subjective outcomes.

Online Resource Figure S6.

Figure S6. Salivary outcomes.

Online Resource Figure S7.

Figure S7. Other types of outcomes.

Online Resource Table S6.

Table S6. PRISMA 2020 for abstracts checklist.

Online Resource Table S7.

Table S7. Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.

Figure S1. Databases searched by the systematic reviews included.

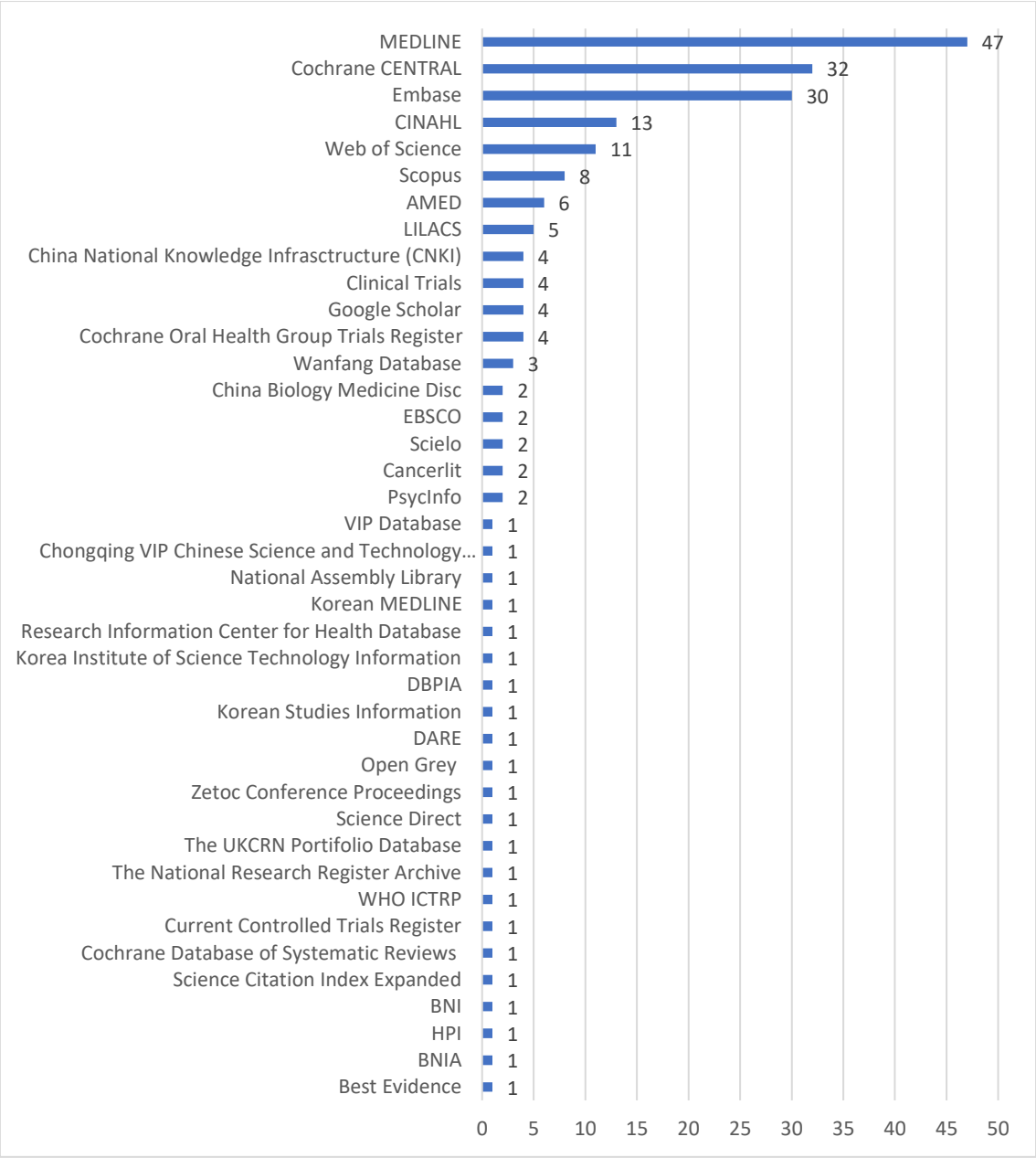


Table S1. Excluded records with reasons

First author (year)	Title/journal	Reason
Brennan (2002)	Treatment of xerostomia: a systematic review of therapeutic trials. Dent Clin North Am	Only addressed the methodological quality
Shiboski (2007)	Management of salivary hypofunction during and after radiotherapy. Oral Surg Oral Med Oral Pathol Oral Radiol Endod	Not systematic review
Pavlić (2012)	[The effects of low-level laser therapy on xerostomia (mouth dryness)]. Med Pregl	Only addressed the methodological quality
Pinna (2015)	Xerostomia induced by radiotherapy: an overview of the physiopathology, clinical evidence, and management of the oral damage. Ther Clin Risk Manag	Not systematic review
Park (2016)	A systematic review of herbal medicine for xerostomia in cancer patients. PROSPERO 2016 CRD42016046420	Protocol
Novais (2016)	Topical therapies for management of post-radiotherapy xerostomia: a systematic review. PROSPERO 2016 CRD42016026322	Protocol
Gao (2016)	The effectiveness and safety of hydroxychloroquine in the treatment of Sjögren syndrome. PROSPERO 2016 CRD42016048585	Protocol
Sridharan (2017)	Interventions for xerostomia: a mixed treatment network meta-analysis of randomized controlled clinical trials. PROSPERO 2017 CRD42017069630	Protocol
Chen (2017)	Effect of low level laser therapy on radiotherapy-induced hyposalivation and xerostomia: a systematic review and meta-analysis. PROSPERO 2017 CRD42017072858	Protocol
Alva (2018)	Systematic review of effectiveness of Bioxtra systems as salivary substitutes for radiation induced xerostomia in patients with head and neck cancers. PROSPERO 2018 CRD42018108972	Protocol
Li (2018)	The therapeutic effects of acupuncture on symptoms relief in patients with Sjögren syndrome. PROSPERO 2018 CRD42018114153	Protocol

Ni (2019)	The effectiveness of acupuncture in the patients of cancer-induced xerostomia: a systematic review. PROSPERO 2019 CRD42019129069	Protocol
Ni (2019)	Acupuncture for patients with cancer-induced xerostomia: a systematic review protocol. BMJ Open	Protocol
Garlapati (2019)	Meta-analysis on pharmacological therapies in the management of xerostomia in patients with Sjögren´s syndrome. Immunopharmacol Immunotoxicol	Systematic review of case-control studies
Miranda (2020)	Pharmacological and non-pharmacological management of radiotherapy-induced xerostomia: a systematic review and network meta-analysis. PROSPERO 2020 CRD42020159318	Protocol
Chiu (2020)	Electrical stimulation for radiation-induced xerostomia in patients with head and neck cancer: a systematic review of randomized controlled trials. PROSPERO 2020 CRD42020189130	Protocol
Catão (2020)	Evaluation of the effects of photobiomodulation on the stimulation of salivary flow in patients with hyposalivation. PROSPERO 2020 CRD42020166955	Protocol
Galiano-Castillo (2020)	Effectiveness of photobiomodulation (PBM) therapy in management of xerostomia/hyposalivation: a systematic review. PROSPERO 2020 CRD42020151145	Protocol
Bulthuis (2020)	The effect of hematopoietic stem cell transplantation on subjective oral dryness. PROSPERO 2020 CRD42020168364	Protocol
Chen (2020)	Acupuncture for the treatment of radiation-induced xerostomia among patients with cancer. A protocol for a systematic review and meta-analysis. Medicine	Protocol
Hubner (2022)	Methodological review: Summary of findings for acupuncture as treatment for cancer therapy-induced xerostomia. In vivo	Not systematic review
Bulthuis (2023)	The effect of hematopoietic stem cell-transplantation on patient-reported subjective oral dryness: a systematic review focusing on prevalence, severity and distress. Support Care Cancer	The review did not address interventions

Table S2. Characteristics of the included studies

First author (year)	Journal	Country	Article type	Registration	Funding	Objective or research question	Databases searched
Jedel (2005)	Journal of Oral Rehabilitation	Sweden	Systematic review	-	-	To assess the efficacy of acupuncture to manage xerostomia	MEDLINE and Cochrane Central Register of Controlled Trials (up to September 2003)
Bültzingslöwen (2007)	Oral Surgery Oral Medicine Oral Pathology Oral Radiology Endodontics	Sweden	Systematic review and clinical recommendations	-	-	To identify diseases and mechanisms associated with hyposalivation and xerostomia; to develop evidence-based management recommendations to treat these conditions	MEDLINE/PubMed, EMBASE, Cochrane Library and Best Evidence online databases
Jensen (2010)	Support Care Cancer	Denmark	Systematic review	-	-	To assess strategies to manage salivary gland hypofunction and determine the quality of recommendations for each strategy.	MEDLINE via PubMed and EMBASE (from January 1990 to December 2008)
O´Sullivan (2010)	Acupuncture in Medicine	Ireland	Systematic review	-	Irish Hospice Foundation	"Is acupuncture an effective and safe treatment for radiation-induced xerostomia in patients with head and neck cancer?"	AMED (1985 to 2009), BNIA (1985 to 2010), CINAHL (- to 2010), Cochrane, EMBASE (1980 to 2010), HPI (1985 to 2009), PsycInfo (1806 to 2010), Ovid Medline (1950 to 2010)
Furness (2011)	Cochrane Database of Systematic Reviews	United Kingdom	Systematic review	CD008934	University of Manchester, Manchester Academic Health Sciences Centre, MASHSC, NIHR Manchester Biomedical	To identify topical substances to relieve the dry mouth symptom.	Cochrane Oral Health Group Trials Register (- to October 2011), Cochrane Central Register of Controlled Trials, MEDLINE via OVID (1950 to October 2011), EMBASE via OVID (1980 to October 2011), CINAHL via EBSCO (1980 to October 2011),

					Research Centre, Department of Health – Cochrane Incentive Scheme 2010, British Orthodontic Society		AMED via OVID (1985 to October 2011), CANCERLIT via PubMed (1950 to October 2011)
Zhuang (2012)	Integrative Cancer Therapies	China	Systematic review	-	None	To assess the preventive and therapeutic effect of acupuncture for radiation-induced xerostomia in patients with head and neck cancer.	PUBMED, EMBASE and Cochrane Library (up to September 2011)
Daniels (2013)	Journal of Pharmacy Technology	Canada	Systematic review	-	-	"In older adults taking xerostomic drugs, do saliva substitutes, saliva stimulants, or topical fluoride gels relieve symptoms, improve quality of life, and/or prevent dental caries"	Cochrane Library (Issue 7, 2009), PubMed (1950 to July 2009), EMBASE (1980 to July 2009), and Cumulative Index to Nursing and Allied Health Literature (CINAHL) (1982 to February 2010)
Furness (2013)	Cochrane Database of Systematic Reviews	United Kingdom	Systematic review	CD009603	University of Manchester, Manchester Academic Health Sciences Centre, MASHSC, NIHR Manchester Biomedical Research Centre	"To assess the effects of non-pharmacological interventions administered to stimulate saliva production for the relief of dry mouth."	Cochrane Oral Health Group´s Trials Register (- to April 2013), The Cochrane Central Register of Controlled Trials (- to 2013), MEDLINE via OVID (1948 to April 2013), EMBASE via OVID (1980 to April 2013), AMED via OVID (1985 to April 2013), CINAHL via EBSCO (1981 to April 2013), CANCERLIT via PubMed (1950 to April 2013)
Hanchanale (2014)	Support Care Cancer	United Kingdom	Systematic review	-	-	To determine the effectiveness	MEDLINE (1966 to February 2014), EMBASE (1980 to

						of pharmacological and non-pharmacological alternatives to relieve the symptom of xerostomia in patients with advanced malignancy	February 2014), CINAHL (1982 to February 2014), BNI and Cochrane
Lopez-Lopez (2014)	Medicina Clínica	Spain	Systematic review	-	-	To review the scientific evidence about the treatment of dry mouth	1998 to November 2012 – no database mentioned
Lovelace (2014)	Oral Surgery Oral Medicine Oral Pathology Oral Radiology	USA	Systematic review and meta-analysis	-	-	To analyze the efficacy of treatment options for radiation-induced xerostomia in patients with head and neck cancer	MEDLINE via PubMed
Pinto (2014)	Oral and Maxillofacial Surgery Clinics of North America	USA	Systematic review	-	-	To review the alternatives for the management of the oral complications of the Sjögren Syndrome	MEDLINE through PubMed
Sood (2014)	Oral Oncology	USA	Systematic review and meta-analysis	-	-	To review the efficacy of salivary gland transfer to prevent the reduction of the salivary flow rate.	PubMed-NCBI
Cheng (2015)	The Journal of the American Dental Association	China	Systematic review and meta-analysis	-	National Natural Science Foundation of China (grant no. 81302371 and 81202324)	To investigate the efficacy and safety of pilocarpine to treat xerostomia induced by radiotherapy in patients with head and neck cancer.	MEDLINE, EMBASE, Cochrane Library, Science Citation Index Expanded (up to July 2014)
Davies (2015)	Cochrane Database of	United Kingdom	Systematic review	CD003782	The National Institute for Health Research (NIHR)	"To determine the efficacy and tolerability of	Cochrane Oral Health Group Trials Register, Cochrane Central Register of Controlled Trials,

	Systematic Reviews					parasympathomimetic drugs in the treatment of radiation-induced salivary gland dysfunction (specifically radiation-induced xerostomia)".	MEDLINE, Embase and CINAHL – up to July 2015
Fox (2015)	Oral Surg Oral Med Oral Pathol Oral Radiol	USA	Systematic review	-	-	To verify whether hyperbaric oxygen treatment improves xerostomia symptoms or quality of life of patients undergoing radiotherapy.	PubMed, Google Scholar and Cochrane Library
Hackett (2015)	Rheumatology	United Kingdom	Systematic review	-	Arthritis Research UK grant 20169, The United Kingdom Occupational Therapy Research Foundation and The Constance Owens Trust.	To evaluate the effects of non-pharmacological interventions for adults with Primary Sjögren Syndrome.	Cochrane Central Register of Controlled Trials; Cochrane Database of Systematic Reviews; Medline via OVID; EMBASE via OVID; PsychINFO via OVID; CINAHL via EBSCO; Current Controlled Trials Register (USA); World Health Organization International Clinical Trials Registry Platform; The National Research Register Archive (UK); and The UKCRN Portfolio Database (UK) – up to September 2014
Kay Garcia (2015)	Medical Acupuncture	USA	Systematic review	-	-	To assess evidence related to acupuncture for treatment of xerostomia in cancer patients	PubMed, SCOPUS, EMBASE, MEDLINE, CINAHL, Cochrane (up to December 2014)

Villa (2015)	Clinical Oral Investigations	Israel	Systematic review	-	American Academy of Oral Medicine, Biocosmetics, European Association of Oral Medicine, Johnson and Johnson, The Oral Cancer Foundation, Unilever and Elsevier with educational grants to the Workshop	"Which management measures for medication-induced salivary gland disfunctions (MISGD) have been described and what is their efficacy?"	PubMed, Embase and Web of Science – up to June 2013
Yang (2015)	International Journal of Radiation Oncology Biology Physics	Hong Kong	Systematic review and meta-analysis	-	National Natural Science Foundation of China (No. 81371160)	To assess the efficacy of pilocarpine administered concomitant to radiotherapy in patients with head and neck cancer.	PubMed, Web of Science, Cochrane Library and Clinical Trials
Gil-Montoya (2016)	Medicina Oral Patologia Oral Cirurgia Bucal	Spain	Systematic review	-	-	To assess the evidence regarding the treatment of dry mouth.	MEDLINE, Embase, Clinical Trials – from 2006 to March 2015
Nair (2016)	Journal of Clinical and Diagnostic Research	India	Systematic review	-	-	To assess the evidence regarding the aloe vera preparation to treat oral diseases.	PubMed/MEDLINE, Scopus, Cochrane Database, Embase and Science Direct – from July 1998 to December 2015
Souza (2016)	Plos One	Brazil	Systematic review and meta-analysis	40654814.6.0000.5505	-	To assess the effectiveness and safety of Rituximab for treating the Primary Sjögren Syndrome.	Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE via PubMed, Embase and LILACS – up to December 2015
Mercadante (2017)	Oral Oncology	United Kingdom	Systematic review and meta-analysis	-	None	To assess the efficacy of the available interventions for	MEDLINE, EMBASE, Cochrane CENTRAL, CINAHL, AMED (up to July 2016)

						radiotherapy-induced dry mouth	
Nabil (2017)	Complementary Therapies in Clinical Practice	Malaysia	Systematic review	-	-	To assess the effectiveness and safety of Chinese herbs to relieve radiotherapy-induced xerostomia	PubMed, Cochrane Central Register of Controlled Trials (CENTRAL), Embase, AMED, CINAHL, China National Knowledge Infrastructure (CNKI), www.controledtrials.com and clinicaltrials.gov – up to May 2017
Ravi (2017)	Journal of Stomatology, Oral and Maxillofacial Surgery	India	Systematic review	-	-	To assess the effect of hyperbaric oxygen therapy in patients undergoing radiation therapy for head and neck cancer.	Pubmed, Ovid MEDLINE, Google Scholar and Cochrane Library
Riley (2017)	Cochrane Database of Systematic Reviews	United Kingdom	Systematic review	CD012744	Cochrane Oral Health, UK, The University of Manchester, Manchester Academic Health Sciences Centre (MAHSC), NIHR Manchester Biomedical Research Centre, UK, National Institute for Health Research (NIHR), UK, Cochrane Oral Health Global Alliance, Association of Public Health Dentistry, USA; the	To assess the effects of pharmacological interventions for the prevention of radiation-induced salivary gland dysfunction	Cochrane Oral Health's Trials Register (up to September 2016), Cochrane Central Register of Controlled Trials (CENTRAL) in the Cochrane Library (up to September 2016), MEDLINE via Ovid (1946 to 14 September 2016), Embase via Ovid (1980 to September 2016), CINAHL EBSCO (Cumulative Index to Nursing and Allied Health Literature) (1937 to September 2016), LILACS BIREME Virtual Health Library (Latin American and Caribbean Health Science Information database) (1982 to September 2016), Zetoc Conference Proceedings (1993 to

					British Association for the Study of Community Dentistry, UK; the British Society of Paediatric Dentistry, UK; the Canadian Dental Hygienists Association, Canada; the Centre for Dental Education and Research at All India Institute of Medical Sciences, India; the National Center for Dental Hygiene Research & Practice, USA; New York University College of Dentistry, USA; NHS Education for Scotland, UK; and the Swiss Society for Endodontology, Switzerland.		September 2016), OpenGrey (1997 to September 2016)
Sivaramakrishnan (2017)	Journal of Traditional and Complementary Medicine	Fiji	Systematic review and meta-analysis	CRD42016036259	None	To assess the efficacy of electrical nerve stimulation (TENS) for xerostomia management	MEDLINE via PubMed, Cochrane CENTRAL, DARE (up to March 2016)
Assy (2018)	BMC Complementary	The Netherlands	Systematic review	-	-	To determine whether acupuncture is evidence-based to treat	MEDLINE via PubMed and Web of Science – up to July 2015

	and Alternative Medicine					xerostomia/hypossalivation.	
Park (2018)	Integrative Cancer Therapies	South Korea	Systematic review	CRD42016046420	None	To assess the efficacy of herbal medicine for xerostomia in cancer patients.	MEDLINE, Cochrane Central Register of Controlled Trials (CENTRAL), Embase, Allied and Complementary Medicine database (AMED), the China National Knowledge Infrastructure (CNKI), the Wanfang database, Korean medical databases (Korean Studies Information, DBPIA, Korea Institute of Science Technology Information, Research Information Center for Health Database, Korean Medline, National Assembly Library and Google Scholar – up to September 2016
Al Hamad (2019)	Oral Diseases	United Kingdom	Systematic review and meta-analysis	-	None	To assess the effectiveness of the treatments available for xerostomia in individuals with Sjögren Syndrome.	MEDLINE, Embase, The Cochrane Central Register of Controlled Trials – up to February 2018
Assery (2019)	Journal of Pharmacy and BioAllied Sciences	Saudi Arabia	Systematic review	-	None	The review aimed to assess the effectiveness and safety of artificial saliva substitutes for the management of dry mouth in adults.	Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, and Embase (from 2009 to April 2018)
Paim (2019)	Communication Disorders, Audiology and Swallowing	Brazil	Systematic review	-	Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)	To assess the effects of electrical stimulation on radiotherapy-induced hyposalivation	MEDLINE via PubMed, Cochrane Library (Central Register of Controlled Trials), Scielo and LILACS – up to January 2018

Rajkumar (2019)	Journal of Clinical and Diagnostic Research	India	Systematic review	-	-	To synthesize research on electrical nerve stimulation for patients with xerostomia	MEDLINE via PubMed, Cochrane CENTRAL (up to June 2018)
Heiskanen (2020)	Photobiomodulation, Photomedicine, and Laser Surgery	Finland	Systematic review	-	None	To systematically review the efficacy of photobiomodulation to manage dry mouth in cancer patients.	PubMed – up to December 2018
Louzeiro (2020)	Critical Reviews in Oncology	Brazil	Systematic review and meta-analysis	CRD42019139620	Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq - Brazil) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES – Brazil) – Finance code 001	"Can photobiomodulation (PBM) prevent head and neck radiotherapy-induced hyposalivation?"	Embase, MEDLINE/PubMed, Cochrane, EBSCO, Scopus, LILACS and Web of Science (up to July 2020)
Ni (2020)	Integrative Cancer Therapies	China	Systematic review and meta-analysis	CRD42019129069	National Natural Science Foundation of China (Grant No. 81722050, 81973962) and Project of Science and Technology Department of Sichuan Province (Grant No. 20ZDYF1199.	To assess the preventive and therapeutic effect of acupuncture in cancer patients with radiation-induced xerostomia.	PubMed/MEDLINE, Cochrane Library, Embase, China National Knowledge Infrastructure, Chongqing VIP Chinese Science and Technology Periodical Database, Wanfang Database, and China Biology Medicine Disc
Galiano-Castillo (2021)	Oral Diseases	Spain	Systematic review and	CRD42020151145	-	To assess the efficacy of photobiomodulation	MEDLINE via PubMed, Scopus, Web of Science, CINAHL and

			meta-analysis			to treat xerostomia or hyposalivation	Cochrane Library – up to February 2020
Golež (2021)	Lasers in Medical Science	Slovenia	Systematic review and meta-analysis	-	-	"Does low-level light irradiation therapy of the salivary glands affect salivary flow rate or indicators of salivary function (ion and protein concentrations) in patients with xerostomia or hyposalivation?"	PubMed/MEDLINE via Ovid, Web of Science and Scopus – up to December 2020
Salimi (2021)	Annals of Medicine and Surgery	United Kingdom	Systematic review	reviewregistry 1027	FONDECYT 3180551 – National Agency of Research and Development (ANID) – Chilean Government	To verify the evidence on the effectiveness of electrical stimulations to treat radiotherapy and chemotherapy induced hyposalivation.	MEDLINE (PubMed), EMBASE, and Google Scholar
Bonomo (2022)	European Archives of Oto-Rhino-Laryngology	Italy	Systematic review	-	Universita degli Studi di Firenze within the CRUI-CARE Agreement.	To assess the efficacy of acupuncture on radiation-induced side effects.	MEDLINE and Embase (01/01/10 to 30/09/20)
Nayar (2022)	The International Journal of Prosthodontics	Canada	Systematic review	-	-	To assess the effect of intraoral devices in the reduction of adverse oral and dental effects of radiotherapy in head and neck cancer patients.	MEDLINE and Embase – up to March 2019
Wicaksono (2022)	International Journal of Applied Pharmaceutics	Indonesia	Systematic review	-	-	To guide the selection of saliva substitutes and oral moisturizing agents in the	MEDLINE (PubMed) and EBSCOHost-CINAHL within the last 10 years

						management of dry mouth.	
Wu (2022)	Frontier in Public Health	China	Systematic review and network meta-analysis	INPLASY202070054	-	To assess the efficacy of different acupuncture therapies for radiotherapy-induced adverse effects.	MEDLINE (PubMed), Cochrane Library, Web of Science, EBSCO, Embase, China National Knowledge Infrastructure (CNKI), Wanfang Database, VIP Database, and China Biology Medicine Disc (CBM).
De Sousa (2023)	Journal of Clinical Nursing	Brazil	Systematic review	CRD42022336787	-	To describe the main acupuncture techniques and parameters used to treat symptoms of different types of cancer.	Scopus, PubMed and Web of Science
Liu (2023)	Oral Diseases	China	Systematic review and meta-analysis	CRD42021241322	National Natural Science Foundation of China, Grant/Award Number: 81971319	To assess the efficacy of 1% acid malic spray to treat xerostomia.	PubMed, Cochrane Library, Embase, ClinicalTrials.gov and Web of Science – from 1980 to 2021
Nakamura (2023)	Radiotherapy and Oncology	Brazil	Systematic review and meta-analysis	CRD42021264830	-	To determine whether there is a significant effect of bethanecol chloride in the prevention/treatment of radiation-induced xerostomia; its effect on quality of life and salivary flow and its side effects, tolerability and dose-response	MEDLINE (PubMed), Embase, Scopus, LILACS via Portal Regional BVS and Web of Science
Pérez-Nicoláz (2023)	Annals of Anatomy	Spain	Systematic review	CRD42022312952	-	To synthesize the evidence of the available studies on the efficacy of	MEDLINE, Cochrane Library, Web of Science, Scopus and SciELO

						mouthwashes to treat specific oral pathologies.	

Table S3. Characteristics of the included population and treatments

First author (year)	Included primary studies (n analyzed)	Date range of the included primary studies	Population	Sample age (year range)	Cause of dry mouth	Active treatments tested	Classification of treatments
Jedel (2005)	3 randomized controlled trials (n=79)	1992-1998	Adults with radiotherapy-induced xerostomia (1 trial), with primary Sjögren´s Syndrome (1 trial) and with xerostomia from various causes (1 trial)	33-82	Head and neck irradiation, Sjögren´s Syndrome, and other causes	Acupuncture vs. sham acupuncture or no treatment	Non-pharmacological
Bültzingslöwen (2007)	11 randomized controlled trials, 2 cohort studies and 2 systematic reviews	2002-2005	Adults undergoing systemic diseases who experience salivary dysfunction	-	Patients with systemic diseases who experience salivary dysfunction	Parasympathomimetic drugs, disease modifying agents: cytokines, hormones, targeted immunoregulation, acupuncture, local stimulants, lubricants, protectants and gene therapy	Pharmacological and non-pharmacological
Jensen (2010)	44 randomized controlled trials	-	Adults undergoing cancer treatment	-	Cancer treatments (head and neck irradiation, radioactive iodine treatment, total body irradiation, hematopoietic stem cell transplantation, chemotherapy)	Intensity-modulated radiation therapy (IMRT), pilocarpine, cevimeline, bethanechol, gustatory and masticatory stimulation, mucosal lubricants/saliva substitutes, submandibular gland transfer, acupuncture	Pharmacological and non-pharmacological

						and hyperbaric oxygen	
O´Sullivan (2010)	3 randomized controlled trials (n=108)	1996-2010	Patients with head and neck cancer	35-82	Head and neck irradiation	Acupuncture vs. sham acupuncture or no treatment	Non-pharmacological
Furness (2011)	36 randomized controlled trials (n=1597)	1981-2010	People with xerostomia (regardless of the cause)	14-101	Radiotherapy, Sjögren´s syndrome, advanced cancer, advanced age, medication or polymedication, rheumatic diseases, hemodialysis, combination of causes and non-described causes	Saliva stimulants and substitutes: lozenges, sprays, mouthrinses, gels, oils, chewing gum or toothpastes for the treatment of dry mouth symptom.	Pharmacological and non-pharmacological
Zhuang (2012)	4 randomized controlled trials (n=196)	1996-2011	Patients undergoing head and neck radiotherapy	Mean age of 45.6 to 64	Head and neck radiotherapy	Acupuncture	Non-pharmacological
Daniels (2013)	3 randomized controlled trials and 5 controlled trials (n=811)	1995-2008	Older adults with xerostomia caused by head and neck radiotherapy, Sjögren´s syndrome or medication	Mean age of 58.2 to 84	Head and neck radiotherapy, Sjögren´s syndrome and medication	Saliva substitutes, saliva stimulants, and topical fluoride	Pharmacological and non-pharmacological

Furness (2013)	9 randomized controlled trials (n=366)	1988-2008	Adults under radiotherapy for oral cancer (4 trials), with Sjögren´s Syndrome (3 trials), with medication-related xerostomia (1 trial) and with xerostomia by varying causes (1 trial)	-	Head and neck irradiation, Sjögren´s Syndrome, medication, and other causes	Acupuncture (5 trials), electrostimulation (3 trials) and powered toothbrush (1 trial)	Non-pharmacological
Hanchanale (2014)	3 randomized controlled trials, 3 open prospective studies (n=120)	1997-2009	Patients with advanced head and neck cancer	-	Advanced cancer, opioids	Acupuncture, pilocarpine, Saliva Orthana and chewing gum	Pharmacological and non-pharmacological
Lopez-Lopez (2014)	29 studies (15 controlled trials, 2 non-controlled trials, 4 observational studies, 2 systematic reviews and 5 literature reviews)	2003-2012	Patients with Sjögren´s syndrome, head and neck cancer and dry mouth with no specific cause	-	Sjögren´s syndrome, head and neck cancer and dry mouth with no specific cause	Pilocarpine, cevimeline, chewing gum, topic products (Oral Balance and Xerostom) and electrostimulation	Pharmacological and non-pharmacological
Lovelace (2014)	14 prospective controlled studies	1993-2008	Patients with head and neck cancer	-	Head and neck irradiation	Acupuncture (2 trials), pilocarpine (4 trials), salivary substitutes (2 trials), hyperbaric oxygen therapy and cevimeline (6 trials)	Pharmacological and non-pharmacological
Pinto (2014)	4 studies (n=274)	2008-2011	Patients with primary and secondary Sjögren´s syndrome	-	Primary and secondary	Gustatory stimulants of salivary secretion (xylitol + fluoride +	Pharmacological and non-pharmacological

					Sjögren´s syndrome	malic acid against citric acid), electrostimulation, Rituximab and Cevimeline	
Sood (2014)	7 prospective studies (n=177)	2003-2012	Patients with head and neck cancer	-	Head and neck irradiation	Salivary gland transfer	Non-pharmacological
Davies (2015)	3 randomized controlled trials (n=298)	1993-1994	Patients with head and neck cancer	46-82	Head and neck irradiation	Parasympathomimetic stimulation (pilocarpine hydrochloride)	Pharmacological
Fox (2015)	4 prospective cohorts, 1 retrospective cohort, 2 randomized controlled trials (n=246)	2007-2012	Patients with head and neck cancer	Mean age of 56.3 to 64	Head and neck irradiation	Hyperbaric oxigen therapy	Non-pharmacological
Hackett (2015)	5 randomized controlled trials (n=130)	1991-2013	Patients with primary Sjögren´s syndrome	Mean age of 35 to 65	Primary Sjögren´s syndrome	Oral lubricating device, acupuncture, lacrimal punctum plugs for dry eyes and psychodynamic group therapy	Non-pharmacological
Garcia (2015)	6 randomized controlled trials	1996-2013	Patients with head and neck cancer undergoing radiotherapy	-	Head and neck irradiation	Acupuncture vs. sham acupuncture or no treatment	Non-pharmacological
Villa (2015)	149 studies: 5% of systematic reviews, 7% of randomized controlled trials, 44% of other clinical studies, 24% of narrative reviews, 3% of	1993-2013	Patients using medications that induce hyposalivation and/or xerostomia	-	Medication	Substitution of medications, oral or systemic therapy with sialogogues, use of saliva substitutes or electrostimulation	Pharmacological and non-pharmacological

	studies in animals, 6% of epidemiological studies and 11% of others						
Yang (2015)	6 randomized controlled trials (n=736)	2002-2008	Patients with head and neck cancer	Mean age of 43 to 60	Head and neck irradiation	Pilocarpine	Pharmacological
Cheng (2016)	6 placebo-controlled randomized trials (1 multicenter study) (n=752)	1993-2006	Patients with head and neck cancer	-	Head and neck irradiation	Pilocarpine vs. placebo	Pharmacological
Gil-Montoya (2016)	26 randomized controlled trials	2006-2015	Individuals complaining of dry mouth due to medication use, Sjögren's syndrome and head and neck cancer	52-81	Medication, Sjögren´s syndrome, other systemic diseases and head and neck radiotherapy	Pilocarpine mouthwash, 1% malic acid spray, lozenges, salivary gland transfer, cevimeline, Rituximab, Bethanechol, Aloe Vera mouthrinse, toothpastes, lubricant adhesive disks, Omega-3 and vitamin E, Biotene Oral, Xerostom, Oral Balance, iron supplements, education in oral health care associated to acupuncture, mechano-electrical stimulation and electrostimulation	Pharmacological and non-pharmacological

Nair (2016)	1 study (n=77)	1998-2014	Patients with burning tongue sensation, need to drink liquids to swallow and the sensation of swallowing difficulty	-	-	Aloe Vera mouthrinse	Non-pharmacological
Souza (2016)	4 randomized controlled trials (n=276)	2008-2015	Patients with xerostomia due to Primary Sjögren's Syndrome	-	Primary Sjögren's syndrome	Rituximab	Pharmacological
Mercadante (2017)	20 randomized controlled trials (n=1732)	1993-2016	Patients with head and neck cancer	-	Head and neck irradiation	Systemic or topic pilocarpine, systemic cevimeline, saliva substitutes/mouthcare systems, hyperthermic humidification, acupuncture, acupuncture-like transcutaneous electrical nerve stimulation, low-level laser and herbal medicine	Pharmacological and non-pharmacological
Nik Nabil (2017)	14 randomized controlled trials (n=994)	2004-2016	Patients with head and neck cancer undergoing radiotherapy	-	Head and neck irradiation	Chine herbal drugs	Pharmacological
Ravi (2017)	10 case series and 2 systematic reviews	1999-2015	Patients with head and neck cancer undergoing radiotherapy	-	Head and neck irradiation	Hyperbaric oxygen therapy	Non-pharmacological
Riley (2017)	39 randomized studies (n=3520)	1997-2012	Patients undergoing radiotherapy	-	Radiotherapy	Amifostine, pilocarpine, palifermin, biperiden plus pilocarpine, Chinese medicines, bethanechol, artificial saliva, selenium, antiseptic	Pharmacological

						mouthrinse, antimicrobial lozenge, polaprezinc, azulene rinse, and Venalot Depot (coumarin plus troxerutin)	
Sivaramakrishnan (2017)	6 randomized controlled trials (n=393)	1986-2015	Adults with radiotherapy-induced xerostomia (1 trial), with primary Sjögren´s Syndrome (3 trials) and with xerostomia (2 trials)	-	Head and neck irradiation, Sjögren´s Syndrome, and other causes	Electrical nerve stimulation (TENS) vs. placebo or no intervention	Non-pharmacological
Assy (2018)	10 randomized controlled trials (n=503)	1992-2013	Patients with symptoms of xerostomia or hyposalivation from any cause	-	Any cause	Acupuncture	Non-pharmacological
Park (2018)	25 randomized controlled trials (1586)	1998-2016	Patients with cancer	-	Radiotherapy	Herbal medicine	Pharmacological
Al Hamad (2019)	36 randomized controlled trials (n=3274)	1981-2017	Patients with Sjögren´s syndrome	-	Sjögren´s syndrome	Salivary substitutes, topical saliva stimulants, systemic cholinergic agonists, electrostimulation, acupuncture, biologic response modifier, disease modifying anti-rheumatic drugs	Pharmacological and non-pharmacological
Assery (2019)	10 randomized controlled trials	2010-2017	Patients with both drug- and radiation-induced xerostomia.	-	Medication and radiotherapy	Artificial saliva substitutes	Non-pharmacological
Paim (2019)	2 randomized controlled trials and 2 non-controlled	2003-2015	Patients with head and neck cancer	-	Radiotherapy	Electrostimulation	Non-pharmacological

	intervention studies (n=212)						
Rajkumar (2019)	11 studies (n=435)	1986-2016	Patients with xerostomia	-	Head and neck irradiation, Sjögren´s Syndrome, medications, and other causes	Electrostimulation	Non-pharmacological
Heiskanen (2020)	3 randomized controlled trials (n=80) and 2 intervention studies (n=51)	1997-2017	Adults undergoing cancer-treatment	≥ 18	Radiotherapy, radiochemotherapy and hematopoietic stem cell transplantation	Photobiomodulation	Non-pharmacological
Louzeiro (2020)	6 randomized controlled trials (n=212)	2006-2020	Adults undergoing head and neck radiotherapy	28-88	Head and neck irradiation	Photobiomodulation	Non-pharmacological
Ni (2020)	8 randomized controlled trials (n=725)	1996-2019	Adults undergoing head and neck radiotherapy	Mean age range from 44 to 63	Head and neck irradiation	Acupuncture	Non-pharmacological
Galiano-Castillo (2021)	11 randomized controlled trials (n=490)	2014-2019	Adults with Burning Mouth Syndrome, Sjögren Syndrome and radiotherapy-induced xerostomia	47-70	Burning Mouth Syndrome, Sjögren Syndrome, radiotherapy	Photobiomodulation	Non-pharmacological
Golež (2021)	13 randomized controlled trials (n=425), controlled trial (n=50), cohort (n=80), case series (n=3)	1997-2020	Patients with xerostomia or hyposalivation	-	Radiotherapy, radiochemotherapy, Sjögren Syndrome, Burning Mouth Syndrome, medication, Diabetes Mellitus, other causes	Photobiomodulation (low-level light therapy)	Non-pharmacological

Salimi (2021)	3 randomized controlled trials (n=148) and 2 intervention studies (n=70)	2003-2019	Adults undergoing chemotherapy and/or head and neck radiotherapy	-	Chemotherapy and/or head and neck irradiation	Conventional and acupunctured trans-cutaneous electrical nerve stimulation (TENS)	Non-pharmacological
Bonomo (2022)	5 randomized controlled trials (n=633)	2011-2019	Adults undergoing head and neck radiotherapy	21-83	Head and neck irradiation	Acupuncture	Non-pharmacological
Nayar (2022)	3 randomized controlled trials (n=106)	2010-2016	Adults undergoing head and neck radiotherapy	-	Head and neck irradiation	Intraoral devices	Non-pharmacological
Wicaksono (2022)	5 randomized controlled trials (n=403)	2018-2021	Patients experiencing xerostomia	18-85	Head and neck radiotherapy, Sjögren Syndrome, Diabetes Mellitus, other causes	Oral moisturizers	Non-pharmacological
Wu (2022)	41 studies (n=3011)	1994-2022	Individuals with radiation-induced adverse effects or cancer patients undergoing radiotherapy	-	Head and neck irradiation	Acupuncture	Non-pharmacological
De Sousa (2023)	1 randomized controlled trial (n=339)	2017-2021	Patients undergoing head and neck radiotherapy	21-79	Head and neck irradiation	Acupuncture	Non-pharmacological
Liu (2023)	5 randomized controlled trials (n=244)	2013-2019	Patients with xerostomia	Mean age range from 42 to 78	Age-related physiological dry mouth, medications	1% malic acid spray	Non-pharmacological
Nakamura (2023)	2 randomized controlled trials (n=140) and 1 prospective uncontrolled study (n=30)	2007-2017	Patients undergoing head and neck radiotherapy	Mean age range from 54.9 to 56.4	Head and neck irradiation	Bethanecol chloride	Pharmacological

Pérez-Nicoláz (2023)	2 randomized controlled trials (n=53)	2008-2015	Old people with xerostomia	73.5-81.3	-	Mouthwash	Non-pharmacological

Table S4. Outcome measures, follow-up, main results and conclusions

First author (year)	Outcome measures	Follow-up time	Main results	Main conclusion
Jedel (2005)	Stimulated and unstimulated salivary flow rates (3 trials), burning mouth and mouth dryness sensation (VAS) (1 trial)	6 weeks (2 trials), 10 weeks (1 trial)	Two studies found no significant difference between acupuncture and the control group ($p>0.05$). The other study found statistically significant increase in stimulated and unstimulated salivary flow rates using acupuncture. This study also found tiredness and haemorrhages in acupuncture sites as side effects. Quality assessment based on Jadad´s instrument classified one study as high quality and the other two as low quality.	No evidence of efficacy of acupuncture for the management of xerostomia was found.
Bültzingslöwen (2007)	Relief of dry mouth (7 trials), quality of life (3 trials), patient satisfaction (1 trial), flow rate of unstimulated whole saliva (1 trial), oral health status (1 trial), total bacterial count on buccal mucosa (1 trial), objective dry mouth score, salivary pH, buffering capacity of saliva, SF rate and observed adverse events.	2 weeks (4 trials), four weeks (2 trials)	Several treatments were assessed. Pilocarpine and cevimeline were assessed as pharmacological therapies, and 1 and 2% pilocarpine mouthwash increased flow salivary flow, which persisted for 75 minutes with both concentrations. The subjective feeling of dry mouth improved with the 2% mouthwash. Cevimeline improved xerostomia and salivary flow in doses of 30mg. Interferon-alpha pastilles increased unstimulated salivary flow after 24 weeks, while the alpha tumor necrosis factor did not show positive results, besides increasing the risk of lymphomas, being not recommended. Rituximab administered as infusions 4x a week significantly improved the dry mouth symptoms and salivary gland function. It also was shown to decrease B cells peripheral nerves, proving effective in the treatment of Sjögren´s Syndrome in primary phase. The study that associated Lauryl ether sodium sulfate with osmoprotectant glycinebetaine in a dentifrice showed improvement of xerostomia symptoms and alleviation of lip dryness. Chewing gum had effect on thirst, but not on xerostomia. Tray containing artificial saliva reservoir improved the quality of life and oral health of patients.	The recommendations presented guide the management decisions involving patients with salivary glands disfunction induced by systemic diseases. New drug formulations are being developed based on the etiopathogenesis of Sjögren´s Syndrome.
Jensen (2010)	Salivary gland function, xerostomia, xerostomia-related quality of life, whole	Not clear from the review	The lowest xerostomia symptoms were achieved with modulated intensity radiation, limiting the accumulation of radiation in glandular tissues. Pilocarpine produced satisfactory results in salivary function and xerostomia. Submandibular	The prevention of salivary gland hypofunction through modulated intensity radiotherapy was characterized as the best alternative.

	salivary flow rate, unstimulated salivary flow rate, stimulated salivary flow rate, scintigraphy, adverse effects		gland transfer surgery and acupuncture are suggested for preservation or function improvement of the salivary glands. Amifostine did not produce promising results to support its use. Adverse events have been reported with pilocarpine, cevimeline and amifostine.	
O´Sullivan (2010)	Stimulated and unstimulated salivary flow rates (SFRs) (2 trials), xerostomia inventory (XI) (1 trial) and subjective questionnaires (2 trials)	4 weeks (1 trial), 6 weeks (1 trial) and 1 year (1 trial)	Salivary flow rates were collected in two studies, while subjective questionnaires were used in all three studies. All studies reported reduction of xerostomia from baseline ($p<0.05$). Two studies reported improved performance in xerostomia questionnaire ($p<0.05$) comparing the acupuncture group with the control group. One study revealed higher stimulated salivary flow in the intervention group ($p<0.01$). Two studies reported minor adverse events. Two trials were rated as moderate risk of bias and one, high risk of bias.	The review found insufficient evidence from three high quality RCTs to support acupuncture for the treatment of radiation-induced xerostomia. It recommends further research to produce evidence regarding this treatment alternative.
Furness (2011)	VAS for xerostomia (13 studies), Xerostomia Inventory (13 studies), unstimulated whole saliva (15 studies), patient satisfaction (14 studies), oral health assessment (5 studies), quality of life (1 study)	Not clear from the review (several cross-over design studies reported)	The topical methods for treating dry mouth were classified as saliva substitutes (sprays, gels, oils, mouthwashes, lozenges or viscous liquids) and saliva stimulants (lozenges, chewing gum, toothpastes with or without medication). None presented sufficient evidence to support its use. Still, products based on Oxygenated Glycerol Triester (OGT) showed promising results and the chewing gum seems to increase salivary secretion. Only one study was classified as low risk of bias.	No topical treatment, saliva substitute or stimulant has sufficient evidence to support its use. OGT Saliva Replacement Spray was more efficient than the aqueous spray with electrolytes.
Zhuang (2012)	Stimulated and unstimulated salivary flow rates (SFRs), xerostomia inventory (XI) and adverse effects	4 weeks (1 trial), 6 weeks (1 trial), 6 months and 1 year (1 trial)	Three trials of therapeutic effect and one of preventive effect of acupuncture on radiation-induced xerostomia were included. Studies that addressed the effect through salivary flow reported an increase of flow six weeks after the end of treatment ($p<0.05$). The one-year assessment did not show statistically significant difference between groups. The studies that addressed the therapeutic effect through questionnaires reported relief of xerostomia symptoms ($p<0.05$). The effects of preventive measures revealed significant increase of salivary flow three weeks after acupuncture ($p<0.05$), seven weeks after acupuncture (unstimulated salivary flow rate ($p<0.0001$);	Although studies have shown improvement with acupuncture, evidence is insufficient to justify the effectiveness of acupuncture in preventing or treatment of radiation-induced xerostomia in patients with head and neck cancer. More research should be carried out to recommend acupuncture for routine use in radiation-induced xerostomia.

			stimulated salivary flow rate (p=0.002)), eleven weeks after acupuncture (unstimulated salivary flow rate (p<0.03); stimulated salivary flow rate (p<0.02)) and six months after acupuncture (stimulated salivary flow rate (p<0.003)). Three studies reported side effects, however, minimal and well tolerated by patients, these being small haemorrhages at the site of puncture.	
Daniels (2013)	VAS scale (5 trials), sialometry (three trials), % of improvement (three trials), root caries remineralization (1 trial)	1 week (1 trial), 2 weeks (2 trials), 4 weeks (2 trials), 8 weeks (1 trial), 12 weeks and 2 years (1 trial)	Four studies assessed the effect of saliva substitutes, three studies, saliva stimulants and one study, fluoride. Saliva substitutes significantly improved perceived oral dryness based on a 10-point VAS (weighted mean difference – WMD = -1.91, 95%CI -2.54 to -1.29; p = 0.00001, I^2 = 0%) compared to other treatments and similar to placebo (WMD = 0.26, 95%CI 0.51 to 1.02; p = 0.51, I^2 = 0%). Parasympathetic stimulants improved oral dryness more than placebo (OR = 0.37, 95%CI 0.19 to 0.72; p = 0.003, I^2 = 15%). Topical fluoride could not be meta-analysed, due to lack of data.	Oral dryness is more improved with parasympathetic salivary stimulants than with saliva substitutes. However, low quality of evidence and the risk of adverse effects must be considered.
Furness (2013)	Xerostomia questionnaire (1 trial), VAS scale (2 trials), xerostomia inventory (1 trial), stimulated salivary flow (8 trials), unstimulated salivary flow (7 trials)	4 weeks (3 trials), 6 weeks (1 trial), 20 weeks (1 trial), 3 months (1 trial), 6 months (1 trial) and 12 months (3 trials)	Three comparisons were found in 9 studies. Acupuncture vs. placebo for radiotherapy patients generated a pooled estimate (5 trials; n=153) of no effect for dry mouth (SMD = -0.34, 95%CI -0.81 to 0.14; p = 0.17, I^2 = 39%). Unstimulated salivary flow increased with acupuncture (MD = 0.02ml/min, 95%CI 0 to 0.04; p = 0.04, I^2 = 57%), persisting at the 12-month follow-up (MD = 0.06ml/min, 95%CI 0.01 to 0.11; p = 0.03; I^2 = 10%). Stimulated salivary flow also was benefited following acupuncture, with the benefit extended to 12 months (MD = 0.19ml/min, 95%CI 0.07 to 0.31, p = 0.002; I^2 = 1%) and (MD = 0.28 ml/min, 95%CI 0.09 to 0.47; p = 0.004; I^2 = 0%), respectively. Whether this improvement in salivary flow is clinically significant is unclear. Three studies comparing electrostimulation with placebo found no improvement of dry mouth with electrostimulation, similar to the one study that compared powered vs manual toothbrushing.	The evidence to support the use of the interventions studied on dry mouth is insufficient. Some evidence was found that acupuncture increases saliva in patients undergoing radiotherapy. Mild and transient adverse effects of acupuncture and electrostimulation were found. The review suggests that none of these treatments are funded by healthcare providers.
Hanchanale (2014)	VAS scale for xerostomia (5 trials), severity scale (1 trial),	Not clear from the review	Three studies assessed artificial saliva with mucin (Saliva Orthana). One of them compared it with pilocarpine hydrochloride (Salagen) and observed a statistically significant	The studies that address saliva substitutes and stimulants provide low quality evidence. Even so,

	adverse effects (4 trials)		improvement in xerostomia symptoms as measured by VAS for the pilocarpine group ($p<0.003$). Another study compared artificial saliva with chewing gum (Freedent). Improvement of xerostomia symptoms were expressed by VAS for both, artificial saliva and chewing gum, with no significant difference between them ($p>0.05$). The third study compared Orthana vs. placebo spray with both interventions having relieved oral dryness, with no significant difference between them ($p>0.05$). The study that assessed only pilocarpine revealed its effectiveness within the first 24 hours ($p<0.0005$). Two trials assessed the effect of acupuncture, and both identified significant improvement after five and ten sessions ($p<0.05$). Improvements in dysphagia, dysarthria and speech were also observed. Side effects were seen in three out of six studies, and involved pilocarpine (sweating and dizziness), artificial saliva (unpleasant taste), chewing gum (irritation in mucous membranes) and acupuncture (bruises). The risk of bias of the studies was not mentioned.	pilocarpine, chewing gum, acupuncture and artificial saliva are promising results. Noteworthy, side effects and preferences of the patients must be considered for selection of the best therapeutics. Clinical trials with larger samples are required to upgrade the level of evidence.
Lopez-Lopez (2014)	Not clear from the review	Not clear from the review	Salivary stimulation was assessed after treatment with saliva substitute, citric acid and water and improved after the first two treatments. Salivary flow rate, though, did not improve. Biotene and Oral Balance improved oral burning sensation and swallowing. Still, they did not reduce the xerostomia nor increased the amount of saliva. BioXtra was favoured over Oral Balance in one study, while in another it did not show any difference compared to water. The palate device with Oral Balance proved effective in controlling the symptoms for four hours. OraMoist disks improved the saliva production and the dry mouth sensation lasting for four hours. Xialine did not improve xerostomia, yet, it was the patient´s preference in one study ($p=0.011$). Saliwell and GenNarino improved xerostomia sensation ($p<0.05$). Pilocarpine had its best effect with 5mg tablets, whie hydroxychloroquine did not produce significant results. Bethanecol administered since the beginning of radiotherapy improved immediate salivation, but not medium	The treatments identified focused on etiology, prevention, symptoms, local salivary stimulation and systemic treatments. Treatment decision should be individualized. Saliva substitutes and mechanical stimulation alternatives are possible alternatives.

			term. Alpha interferon produced conflicting results across studies.	
Lovelace (2014)	VAS (10 trials), stimulated salivary flow (8 trials), unstimulated salivary flow (12 trials), xerostomia questionnaire (1 trial), EORTC (2 trials), H&N35 (2 trials)	Not clear from the review	Subjective outcome measures of xerostomia improvement: Pooled comparison between systemic pilocarpine (n=476) and placebo produced an OR = 1.345, 95%CI 0.564 to 3.205; topical pilocarpine (n=404) compared to placebo generated an OR of improvement of xerostomia of 2.024, 95%CI 1.323 to 3.097. Pooled VAS scores comparing salivary substitutes and placebo (n=68) resulted in SMD = -1.002, 95%CI -5.236 to 3.232. Treatments as acupuncture, cevimeline and salivary substitutes were not different from placebo. Hyperbaric oxygen (based on 1 study) seemed to improve xerostomia. Objective outcome measures (salivary flow rates): Pooled comparison of acupuncture and sham acupuncture produced unstimulated salivary flow rate -0.652 (SMD), 95%CI -2.346 to 1.042 and stimulated salivary flow rate of -0.459, 95%CI of -2.109 to 1.192. Pilocarpine and salivary substitute significantly increased salivary flow rate, while cevimeline did so similar to the control group, excepting in one study, where it had significant comparative improvement.	The evidence supports the use of cholinergic agonists to treat radiation-induced xerostomia compared to salivary substitutes, hyperbaric oxygen and acupuncture.
Pinto (2014)	Xerostomia questionnaire, whole stimulated salivary flow, quality of life	Not clear from the review	One study showed improved xerostomia when treated with cevimeline compared to placebo (p=0.001). Objective salivary flow did not improve, though. One study assessing two saliva stimulants revealed an absolute risk reduction of 52.8%, 95%CI 33.4 to 72.1 in the potential for tooth erosion. The intraoral electrical stimulator device produced significant effects on severe xerostomia ($p<0.002$). Variation of frequency had no effect on salivary flow ($p>0.05$). Rituximab significantly improved unstimulated salivary flow ($p = 0.038$).	Evidence for the management of xerostomia and salivary hypofunction in Sjogren's Syndrome are moderate, pointing to systemic sialogogues, such as pilocarpine and cevimeline.
Sood (2014)	Stimulated salivary flow rate (3 studies), unstimulated salivary flow rate (4 studies), perception of saliva amount and consistency (4 studies)	There are mentions to 2-3 months, 6 months, 12-16 months and 18-24 months after radiation therapy	Salivary flow rate was assessed before, during and 12 months after radiotherapy to assess the gland transfer surgery. The unstimulated flow rate increased 120% after the procedure, reducing 61% at the third month after treatment. Following, the rate increased, reaching 88% 12 months after radiation. The stimulated rate remained stable after the procedure, decreasing by 50% at the third month after radiotherapy and increasing to	The transfer of salivary glands seems effective in preventing xerostomia after radiation in head and neck, keeping salivary flow close to the normal before radiation.

			76% after 12 months. Four studies assessed the patient´s perception as to the decrease of saliva and 11.2% of the patients reported significant reduction of saliva. Two studies assessed the consistency of the saliva and 17% of the patients had it worsened. Xerostomia was avoided in 82.7% of the patients who had undergone head and neck radiotherapy with the prior salivary gland transfer surgery.	
Davies (2015)	Salivary flow rates, adverse effects, other oral symptoms, other oral problems	Not clear from the review	Pilocarpine hydrochloride was tested in all studies, in pill and mouthwash form. The doses ranged from 2.5 to 10mg, administered three times a day for 3 months. One study compared pilocarpine as a mouthwash versus Orthana artificial saliva spray and obtained an improvement of 22.5mm on the visual analogue scale with pilocarpine, compared to 15.2mm with artificial saliva 15.2mm. Two studies compared pilocarpine tablets with placebo, and both had positive results, with VAS values greater than 25mm for the pilocarpine. Adverse effects were dose-dependent, and involved sweating, nausea, tearing, headache, increased urinary frequency, vasodilation, dizziness, dyspepsia, asthenia, diarrhoea and rhinitis. All studies have at least one point with high risk of bias.	Evidence supporting the use of pilocarpine is limited. In addition, its side effects deserve attention.
Fox (2015)	EORTC (European Organization for Research and Treatment of Cancer) QLQ (Quality of Life Questionnaire) C-30, EORTC QOL H&N35, VAS for xerostomia, salivary flow rates, xerostomia grade, salivary pH, saliva microbiology, University of Washington quality of life scale	Not clear from the review	Seven studies were included. Two out of them were randomized controlled trials. All studies analysed xerostomia, either with VAS or sialometry, and also assessed quality of life. Hyperbaric oxygen therapy improved dry mouth symptoms two weeks after starting treatment, effect maintained for 18 months. Quality of life was also improved in the experimental group within the first six weeks. No adverse effects were reported. The risk of study bias was not mentioned.	Hyperbaric oxygen therapy can be used to treat xerostomia by radiation in refractory or primary cancer, Its favourable effect in xerostomia and stimulated saliva flow is also long-term. The evidence is limited by the small number of clinical trials available.

Hackett (2015)	VAS for xerostomia, VAS for dry eyes, Schirmer´s test for dry eyes	Not clear from the review	Five studies were included. They investigated the effectiveness of oral lubricating device for dry mouth, acupuncture for dry mouth, lacrimal punctum plugs for dry eyes and psychodynamic therapy to cope with symptoms. Visual acuity was improved with both the eye plug and with the eye drops, without differences between the groups. The study sample size was small. Psychodynamic therapy and acupuncture did not improve oral symptoms, speech, mastication or daily activities. Adverse effects of the plug were identified, with 28% of extrusion. Three studies were considered at high risk of bias while the other two were of moderate and low risk.	There is no evidence supporting any non-pharmacological intervention to improve quality of life of people with Primary Sjögren Syndrome. Well-designed, well-conducted, appropriately powered randomized controlled trials are required.
Garcia (2015)	Stimulated (5 trials) and unstimulated (5 trials) salivary flow rates, quality of life questionnaire (1 trial), xerostomia questionnaire (3 trials), xerostomia inventory (1 trial), MDASI-HN (2 trials), QLQC30 (1 trial), H&N35 (1 trial)	2 weeks (1 trial), 4 weeks (1 trial), 6 weeks (1 trial), 6 months (2 trials), 12 months (1 trial)	Four studies attempted to verify the effect of acupuncture to treat radiation-induced xerostomia and two to prevent it. Four studies significant difference favouring acupuncture for either salivary flow (1 trial) and subjective xerostomia symptoms report (4 trials) ($p>0.05$). Low statistical power and lack of blinding limited the level of evidence.	Acupuncture may help manage xerostomia symptoms in patients with head and neck cancer. Larger well-designed studies are required to confirm acupuncture as a treatment alternative.
Villa (2015)	Stimulated and unstimulated salivary flow rates	Not clear from the review	In two studies pilocarpine increase non-responsive salivary flow. The study with 1% malic acid showed an increase in stimulated and unstimulated salivary flow rate, despite the possibility of causing enamel erosion. Salivix decreased the severity of xerostomia, while the use of olive oil, betaine and xylitol relieved xerostomia and increased unstimulated salivary flow. Salese's tablets altered the salivary pH, making it more neutral. The mucin spray, assessed in four studies, despite controversial results, was more effective than the placebo. Mucoadhesive devices placed on the palate increased sensation of oral wetness. The only method that showed side effects was the pilocarpine, causing nausea, vomiting, diarrhoea, ulcers, sweating, vasodilation, bronchoconstriction, bradycardia, hypotension and visual difficulties. The risk of study bias	Some treatment alternatives presented good results. Still, most studies have a small number of participants, heterogeneous methods and high risk of bias. Dentists should assess the salivary flow of their patients and classify their complaints to decide the best management alternative.

			was not described.	
Yang (2015)	PFCP (stimulated parotid flow rate complication probability) (1 trial), LENT SOMA (objective grades of the Late Effects of Normal Tissues Subjective, Objective, Management and Analytic) (2 trials), PRX (patient-rated xerostomia scoring) (5 trials), unstimulated salivary flow rate (3 trials), stimulated salivary flow rate (2 trials), University of Washington quality of life scale (1 trial), adverse effects (2 trials), MU-HNRQ (McMaster University head and neck questionnaire) (1 trial)	5 weeks post-RT (1 trial), 6 months post-RT (2 trials), 12 weeks (1 trial), 6 months (1 trial), 12 months (1 trial)	Unstimulated salivary flow rates were analyzed in three studies. Administration of pilocarpine concomitant to radiation increased unstimulated saliva production (MD = 0.28ml/min, 95%CI 0.18 to 0.37; $p<0.00001$, $I^2 = 13\%$), continuing for 3 months after radiotherapy and decreasing over time. At 5-6 weeks unstimulated salivary flow rate increase was 0.15ml/min, 95%CI 0.07 to 0.24; $p = 0.0005$, $I^2 = 0\%$), and at three months the increased rate was 0.10ml/min, 95%CI 0.00 to 0.20; $p = 0.04$). Six months after radiotherapy, the difference between groups was no significant (MD = 0.10 ml/min, 95%CI -0.02 to 0.22; $p = 0.99$). Xerostomia symptoms reported by the patient were not significantly impacted by pilocarpine in the first three months but was after six months.	Administration of pilocarpine concomitant to radiation increases salivary flow rate and reduces the degree of xerostomia. Six- and 12-months xerostomia is also relieved. Still, pilocarpine has no effect on stimulated salivary flow rate.
Cheng (2015)	Visual analog scale (VAS) (5 trials), LENT-SOMA scale (1 trial), quality of life HNRQ (1 trial), stimulated (1 trial) and unstimulated (2 trials) salivary flow rates (SFRs) and report of adverse events	4 weeks (1 trial), 12 weeks (4 trials) and 13 weeks (1 trial)	Five studies revealed significant clinical improvement with the use of pilocarpine. From the 6 trials, three were meta-analyzed based on the VAS score to generate an OR=12.00 (95%CI 1.93-22.08; $p = 0.02$), favouring pilocarpine. Other 2 studies observed improved SFR with pilocarpine. One trial did not find any significant difference between groups. All studies reported adverse effects, including sweating, rhinitis, nausea, urinary frequency, dizziness, chills and asthenia. The OR for sweating based on three studies was 3.71 (95%CI 2.34-5.86; $p<0.00001$)	Pilocarpine provides clinical benefits for the radiation-induced xerostomia symptoms in patients with head and neck cancer. Mild to moderate adverse events (mainly sweating) were associated to pilocarpine. These results were based on a meta-analysis of 3 trials.

			using pilocarpine. No significant difference was found for rhinitis or nausea.	
Gil-Montoya (2016)	Stimulated (5 trials) and unstimulated (7 trials) salivary flow rates, minor gland salivary flow (1 trial), questionnaire of dry mouth symptoms (16 trials), time to drop pH below 4.5 (1 trial), saliva stimulation capacity (1 trial), sialometry (15 trials), VAS for xerostomia (10 trials), questionnaire for latter effects (1 trial), adverse effects (1 trial), microbiology (4 trials), OHIP (1 trial), quality of life (2 trials), GOHAI (1 trial)	20 days (1 trial), 40 days (1 trial), 2 weeks (3 trials), 3 weeks (1 trial), 4 weeks (5 trials), 8 weeks (1 trial), 12 weeks (3 trials), 24 weeks (1 trial), 36 weeks (1 trial), 2 months (1 trial), 3 months (3 trials), 6 months (2 trials)	Pilocarpine was the only drug to improve salivary flow and xerostomia symptoms. The association between Rebamipide and malic acid was not significantly different from the placebo. One study revealed improvement of symptoms with this treatment, which was not followed by sialometry measures. The evidence of effectiveness of the different therapeutic strategies is not sufficient to recommend a particular treatment, pharmacological or not.	Little improvement of xerostomia symptoms was observed with the treatments assessed. Mid- and long-term assessment are still required. Pilocarpine is the best treatment available for individuals with xerostomia.
Nair (2016)	Dry mouth sensation, need to drink liquid, swallowing difficulty	Not clear from the review	One study assessed the effectiveness of Aloe vera as treatment for drug-induced xerostomia and found out that when associated with salivary substitutes and anticariogenic agents, Aloe vera relieves the xerostomia symptoms.	The promising potential of Aloe vera to treat oral diseases requires further controlled clinical trials to be confirmed. The results regarding xerostomia were based on a single trial and were not satisfactory.
Souza (2016)	Salivary flow rate and VAS for xerostomia	At least, 24 weeks	All included studies assessed salivary flow as outcome measure. Salivary flow rate improved with Rituximab at week 24 (MD = 0.09, 95%CI 0.02 to 0.16; p = 0.01, I^2 = 0%). Oral dryness was expressed by VAS and was not significantly different between Rituximab and placebo at week 24 (MD = -13.5, 95%CI -42.8 to 15.9; p = 0.37, I^2 = 86%). The risk of fatigue, expressed by	There is moderate-quality evidence that Rituximab improves discretely lacrimal function and low-quality evidence that it improves salivary flow in patients with Primary Sjögren Syndrome.

			VAS was higher with Rituximab at 6 and 16 weeks, but not at 24 weeks.	
Mercadante (2017)	VAS scale (9 trials), xerostomia inventory (1 trial), Walizer mouth dryness questionnaire (1 trial), global rating of change scale (2 trials), general xerostomia questionnaires (2 trials), EORTC-H&N35 questionnaire (2 trials), unstimulated salivary flow rate (12 trials) and quality of life questionnaires (5 trials)	1 week (2 trials), 2 weeks (3 trials), 4 weeks (3 trials), 6 weeks (3 trials), 9 weeks (2 trials), 12 weeks (5 trials), 9 months (1 trial)	Meta-analysis was possible for mean overall change in xerostomia symptoms based on 4 studies, and tested systemic pilocarpine vs. placebo and systemic cevimeline vs. placebo. The use of pilocarpine (2 trials; n = 280) for 12 weeks reduced VAS scores of xerostomia compared to placebo (OR = 2.37, 95%CI 1.43 to 3.94; I^2 = 6%). Use of cevimeline for 12 weeks (2 trials; n = 563) also improved xerostomia sensation compared to placebo (OR = 1.37, 95%CI 0.98 to 1.91; I^2 = 0%). Unstimulated salivary flow rate was meta-analyzed, comparing acupuncture vs. sham acupuncture (2 trials; n = 50), cevimeline vs. placebo (2 trials; n = 563) and pilocarpine vs. placebo (2 trials; n = 280). For the first comparison, no increase was observed (MD = 0.00, 95%CI -0.02 to 0.03); I^2 = 0%); The second comparison revealed a small increase in salivary flow rate (MD = 0.04, 95%CI 0.02 to 0.06; I^2 = 0%); the third comparison revealed a short-term increase of salivary flow rate with pilocarpine tablets (MD = 2.27; 95%CI 1.37 to 3.76; I^2 = 6%). The other interventions generated no evidence or very weak evidence of efficacy towards reduction of xerostomia symptoms or increase of salivary flow.	Pilocarpine and cevimeline are the first therapeutic line for dry mouth in head and neck cancer patients treated with radiotherapy. There is weak evidence of some small magnitude benefit from salivary substitutes with unclear benefits. Other treatment alternatives are not supported by evidence.
Nik Nabil (2017)	Xerostomia grading, VAS for xerostomia, salivary flow rate, RTOG (Radiation Therapy Oncology Group) grading, LENTSOMA grading, adverse effects, quality of life	Not clear from the review	Chinese herbal treatment can relieve radiotherapy-induced xerostomia and other related complications (such as oral mucositis and loss of appetite). However, the quality of the included studies was very low to moderate in the evidence found.	There is limited evidence that herbal treatment Chinese herbs can relieve xerostomia induced by radiotherapy.
Ravi (2017)	Salivary gland function and quality of life	Not clear from the review	Two prospective case-series were included. The first revealed 55.5% of the patients with improved salivary flow rate after hyperbaric oxygen treatment. The second study reported improved salivary flow and pH and decreased colonization by cariogenic microorganisms. The included studies hindered the	Low quality evidence revealed that hyperbaric oxygen therapy improves xerostomia symptoms and overall quality of life. Further well-designed randomized clinical trials are needed

			generation of quality evidence due to design (none was a randomized controlled trial), incomplete data, not mentioning the interval between the radiotherapy and hyperbaric oxygen therapy. Three studies assessing quality of life found improved overall quality of life.	to substantially assess their efficiency.
Riley (2017)	VAS for xerostomia, RTOG (Radiation Therapy Oncology Group) EORTC (European Organization for Research and Treatment of Cancer), NCI CTCAE (National Cancer Institute Common Terminology Criteria for Adverse Events), WHO classification, LENT SOMA, unstimulated whole saliva, stimulated whole saliva, scintigraphy and adverse effects	14 and 28 days after radiotherapy (RT), 2-, 4- and 6-weeks during RT, 3, 4, 5, 6, 7, 12, 24 and 52 weeks after RT, 1, 2, 3, 6, 9, 12, 18 and 24 months after RT, 3, 4 and 6 months, 1, 2 and 3 years	Pilocarpine was assessed in 12 studies. No difference in xerostomia, stimulated or unstimulated salivary flow rates was observed between treatment groups either at the end of the radiotherapy, three or six months later. Evidence was deemed insufficient to determine the benefit of pilocarpine to quality of life or increased survival. Amifostine was examined in 11 studies. Some of them evidenced reduced risk of developing higher degrees of xerostomia. Insufficient evidence was found on its effect of improving xerostomia symptoms at 12 months-post-radiotherapy. Palifermine was assessed in three trials. The evidence to determine whether it could be administered to reduce xerostomia up to three months after radiotherapy was not sufficient. Adverse events were reported with the use of amisfotine, and included vomit, low blood pressure, nausea and allergy. Evidence to show the effectiveness of any other treatments were missing.	Low-quality evidence suggests that amifostine prevents dry mouth symptoms in cancer patients under radiation therapy (up to three months after the radiotherapy). The maintenance of this effect for longer than 12 months is still unclear. Benefits of amifostine must be weighed against its high cost and adverse effects. Any other intervention was evidenced as beneficial.
Sivaramakrishnan (2017)	Stimulated (5 trials) and unstimulated (4 trials) salivary flow rates (SFRs), subjective response from patient (1 trial), clinical assessment of xerostomia (1 trial)	Not clear from the review	The effect of TENS was assessed based on 5 of 6 studies (n=369) and the salivary flow rate revealed an SMD = 0.63, 95%CI -0.03 to 1.29 (not statistically significant). Analysis of symptomatic improvement revealed an SMD = 1, 95%CI 0.6 to 1.66 (not statistically significant). Random sequence generation generated high risk of bias in 5 studies and allocation concealment in all 6 studies.	No evidence was found to support the use of TENS to manage xerostomia. Parameters of TENS application (type, frequency and amplitude of current) require further high quality randomized controlled trials with adequate power.
Assy (2018)	VAS for xerostomia (3 trials), salivary flow rate (8 trials), subjective symptoms	Not clear from the review	Ten studies were included in the review. Acupuncture was compared to sham/placebo acupuncture, oral hygiene/usual care and to oral care sessions as control. Acupuncture did not increase saliva production or improve xerostomia symptoms in	Evidence to recommend acupuncture to manage xerostomia/hyposalivation is insufficient.

	(2 trials), xerostomia questionnaire (3 trials), Xerostomia Inventory (1 trial), quality of life (1 trial)		patients with Sjögren Syndrome. Some evidence of increase of salivary flow rate and relief of xerostomia symptoms with acupuncture was found for patients under radiotherapy or in heterogeneous groups of patients was found. Still, risk of bias downgraded the level of evidence, which was considered overall insufficient to recommend acupuncture to treat xerostomia and hyposalivation.	
Park (2018)	RTOG (Radiation Therapy Oncology Group) grading (13 studies), VAS for xerostomia (6 studies), unstimulated salivary flow rate (4 studies), stimulated salivary flow rate (6 studies), secretion of salivary amylase (1 study), grade of dry mouth (7 studies), scintigraphy (3 studies), adverse effects (4 studies), salivary flow time (1 study), quality of life (1 study), LENTSOMA grading (1 study)	Not clear from the review	Twenty-five trials were included, and 24 formulations were studied. Preventive and treatment effects were analysed. Salivary flow rate was increased by 5 formulations, while all formulations, except one, reduced the severity of xerostomia symptoms. Adverse effects of herbal medicines were reported in three trials. The evidence was considered weak due to high risk of bias in most studies and due to the limited sample size.	Herbal medicines may improve salivary function and reduce the severity of dry mouth in cancer patients. Also, they are relatively safe. Evidence, though, is weak, requiring high-quality trials.
Al Hamad (2019)	VAS for xerostomia (17 studies), Xerostomia Inventory (1 study), Likert scale of improvement (9 studies), 0-10 numerical rating scale (1 study), ESSPRI (1 study), sialometry (31	Not clear from the review	Three studies assessed the effect of pilocarpine and showed higher likeliness of reducing in 25mm or more the xerostomia score in a VAS compared to placebo (OR = 3.79, 95%CI 2.63 to 5.47; p = 0.00001, I^2 = 0%). Two studies assessing the effect of cevimeline revealed higher reduction of dry mouth symptoms than placebo, with a MD = 9.85, 95%CI 1.76 to 17.94; p = 0.02, I^2 = 0%). Two studies revealed increased unstimulated salivary flow rate with cevimeline tablet (MD = 0.16mL/min, 95%CI 0.09 to 0.22; p<0.00001, I^2 = 37%). Other three studies	Evidence supports the use of pilocarpine to treat dry mouth symptoms of people with Sjögren Syndrome. Beneficial effects of pilocarpine, rituximab and interferon-alpha on salivary flow are supported by moderate quality evidence. Adverse events related to these treatments are common. Other

	studies), scintigraphy (1 study), GOHAI (1 study), SF-36 (4 studies)		assessing the effect of interferon-α found increased unstimulated salivary flow rate with this medication (MD = 0.01mL/min, 95%CI 0.01 to 0.02, $p<0.00001$, $I^2 = 35\%$). The quality of evidence for the effect of cevimeline on salivary flow rate was downgraded due to randomization, allocation concealment and imprecision. High evidence was found for reduction of dry mouth symptoms by pilocarpine and moderate evidence for increase of unstimulated whole salivary flow.	treatments do no find support on the current evidence.
Assery (2019)	Grade of dry mouth (7 studies), quality of life (three studies), patient satisfaction (1 study), unstimulated whole saliva (1 study), oral health (1 study), microbiology (1 study), adverse effects (1 study), salivary pH (1 study), buffer capacity of saliva (1 study)	1 week (1 study), 2 weeks (two studies), 4 weeks (3 studies), 6 months (1 study)	Herbal products produced greater improvement of radiation-induced xerostomia than artificial saliva. 3% citric acid-based oral spray provided a lasting effect on xerostomia induced by medicines. Oral moisturizing jelly, oral spray (Aequasyal) and DC161-DP0292 aqueous solution improved symptoms of oral dryness during swallowing and speech. The variability of products impaired the comparison of effectiveness by meta-analysis. Most studies presented high risk of bias.	All artificial saliva-based products assessed reduced the xerostomia symptoms. Therefore, patients' needs must be taken into consideration for the choice of the product. High risk of bias was identified in most studies. Hence, long-term randomized clinical trials are still required.
Paim (2019)	Salivary flow	Not clear from the review	All studies showed an increase in salivary flow, either by using electroacupuncture or by electrical stimulation in the salivary glands. The methodological quality of the included studies was low due to important risk of bias.	TENS has the clinical potential to increase salivary flow in patients with radiation-induced xerostomia.
Rajkumar (2019)	Salivary flow rate (5 studies), unclear (6 studies)	3 weeks (1 study), 4 weeks (2 studies), 12 weeks (1 study), unclear (7 studies)	Five studies reported increase in salivary flow rate. One study reported good tolerance to electrostimulation. Another study reported good response to electrostimulation, not specifying what it meant. Outcome measures are unclear for several studies reported.	Electrostimulation would trigger the reflex salivary stimulation when applied intra or extra orally.
Heiskanen (2020)	Stimulated (3 trials) and unstimulated (4 trials) salivary flow rates, quality of life (2 trials), saliva pH (1	0 (last day of radiotherapy) (3 trials), 20 days after treatment (1 trial) and 90 days	Five studies were included. Xerostomia was significantly improved ($p<0.05$) in the PBM group in two studies. Three studies found improvements in salivary flow rates using the laser therapy ($p<0.05$). Mean pH and mean score of quality of life were statistically different in the laser group of one study	Most studies show positive effects of PBM in the reduction of xerostomia/hyposalivation. Still, evidence to recommend the use of

	trial), VAS (1 trial), xerostomia score (1 trial), adverse effects (1 trial)	after treatment (1 trial)	($p<0.05$). One study did not find any significant difference between groups in salivary flow rate, xerostomia and quality of life.	PBM in cancer treatment-related salivary dysfunction is not sufficient.
Louzeiro (2020)	Stimulated and unstimulated salivary flow rate	30 days after the end of treatment (3 trials), at the 15th session (4 trials), at the 30th session (1 trial), 30, 60, 90 days after the end of treatment (1 trial each)	Five out of six studies were included in the meta-analysis, which evidenced an increase in unstimulated salivary flow (MD = 0.20ml/min, 95%CI 0.10 to 0.30; p = 0.00001, I^2 = 96%) and in stimulated salivary flow (MD = 0.27ml/min, 95%CI 0.08 to 0.046; p = 0.00001, I^2 = 95%). High heterogeneity and high risk of bias due to compromised random sequence generation (33.3%), blinding of the participants (50%), and allocation concealment led to downgrading the evidence for both outcomes.	Low quality evidence indicated that the photobiomodulation concomitant to radiotherapy can reduce radiation-induced hyposalivation.
Ni (2020)	Stimulated (5 trials), unstimulated (4 trials) and resting (1 trial) salivary flow rates, xerostomia questionnaire (5 trials), xerostomia inventory (1 trial), Murley score (1 trial), Modified constant Murley score (1 trial), QLQC30 (1 trial), H&N35 (1 trial), quality of life (1 trial) and salivary constituents (1 trial)	4, 5 and 6 weeks (1 trial each), 8 weeks (2 trials), 6 months (1 trial) and 12 months (2 trial)	Two out of eight studies were meta-analysed regarding the Xerostomia Questionnaire and showed a reduction in xerostomia symptoms with the acupuncture (MD = -3.05, 95%CI -5.58 to -0.52; p = 0.02, I^2 = 0%. The stimulated salivary flow rate was assessed based on three studies and revealed no significant difference between the treatment groups (MD = 0.37, 95%CI -0.05 to 0.79; p = 0.08, I^2 = 60%). Two studies provided data of unstimulated salivary flow rate and showed no difference between groups (MD = 0.09, 95%CI -0.02 to 0.21; p = 0.12, I^2 = 64%). The quality of evidence was very low for the objective outcomes, mainly due to methodological limitations, unexplained inconsistencies and limited sample sizes.	The evidence to recommend acupuncture to manage radiation-induced xerostomia is still insufficient. The improvement in the xerostomia symptoms by acupuncture is based on a limited number of studies.
Galiano-Castillo (2021)	Unstimulated salivary flow rate (3 trials), stimulated salivary flow rate (2 trials), VAS (2 trials), Xerostomia Severity Test (1 trial), Oral	7 days (1 trial), 10 days (1 trial), 14 days (1 trial), 1 month (2 trials), 2 months (2 trials), 3 months (2 trials)	Eleven studies were included. Parameters of PBM application varied substantially. Three studies were meta-analysed for quality of life based on OHIP and revealed improved quality of life for the group PBM (SMD = -0.90, 95%CI -1.48 to -0.32; p = 0.002, I^2 = 59%). No adverse effect was found in the PBM-based group. Risk of bias downgraded the level of evidence.	There is limited evidence that PBM is effective and safe to treat xerostomia. For this purpose, PBM parameters still require standardization.

	Health Impact Profile (OHIP) (7 trials), adverse effects			
Golež (2021)	Salivary flow, unstimulated salivary flow, saliva pH, buffering capacity, salivary constitution, quality of life, Xerostomia Severity Score	10 days, 20 days, 6 weeks, 1 month, 2 months, 3 months	Salivary flow after increased after PBM therapy in thirteen studies, while no effect was identified in three studies. Half the studies did not find any effect of the PBM on the patient´s quality of life; for the other half, a positive effect was found. Risk of bias, lack of control groups, lack of randomization, risk of recruitment bias and selective reporting downgraded the quality of these studies. Nine placebo-controlled studies were meta-analyzed for unstimulated salivary flow and revealed higher flow change with PBM (SMD = 0.51, 95%CI 0.16 to 0.86; p = 0.005, I^2 = 55%). The result did not depend on the cumulative energy dose.	There is evidence showing benefits of the treatment by PBM on unstimulated salivary flow and other salivary parameters short-term. Long-term effects are still required.
Salimi (2021)	Salivary flow (4 trials), whole saliva production (1 trial), Xerostomia Related Quality of Life Scale (XeLOS) (1 trial), xerostomia through VAS (1 trial), self-perception of salivary flow (SPSF) and Quality of Life (1 trial)	4, 6, 9, 15 months after randomization (1 trial), 6, 8, 12 weeks after treatment beginning and 3, 6, 12 months after treatment end (1 trial)	Two studies assessed the effect of conventional TENS and two, of the acupuncture-like TENS. All five studies revealed the increase of saliva production with TENS. No adverse effect was reported. Acupuncture-like TENS were compared with pilocarpine in two RCTs. In the oldest RCT it presented similar salivary stimulation to pilocarpine. Still, it was considered less toxic than the medication.	Salivary flow from patients under chemotherapy and head and neck radiotherapy increases with TENS. The best TENS parameters for optimal results are still required.
Bonomo (2022)	Resting salivary flow rate (3 trials), stimulated salivary flow rate (3 trials), xerostomia report (VAS) (1 trial), Xerostomia Questionnaire (3 trials), quality of life (1 trial), EORTC H&N35 (1 trial), MD Anderson	0 (last day of radiotherapy) (1 trial), 1 month (1 trial), 3 months (1 trial), 6 months (2 trials), 12 months (2 trials)	One of the five included trials revealed improved sialometry measures with acupuncture; other study found improved patient-reported xerostomia and preventive effect of acupuncture on acute and late (6-month) toxicity. The third study found improved relief of chronic xerostomia. The forth study found the intervention feasible, although no difference was observed in dysphagia-related quality of life. The last study found improved patient-reported xerostomia, with decrease in severity and a preventive effect on late xerostomia. No meta-analysis was performed	No evidence supports the use of acupuncture against acute and late radiation-induced adverse effects. Further well-designed studies are required.

	dysphagia inventory (MDADI) (1 trial)			
Nayar (2022)	Saliva changes with RTOG HANC (Radiation Therapy Oncology Group head and neck adverse events (2 trials), unstimulated and stimulated salivary flow rates and xerostomia (1 trial)	45 days (1 trial), 1 month (2 trials), 2 months (1 trial), 3 months (2 trials), 6 months (1 trial)	Two RCTs found significant improvement of xerostomia in all follow-up times in the intervention group. The other RCT found higher unstimulated and stimulated saliva flow rates at 3 and 6 months in the intervention group compared with the control group. Only one RCT presented low risk of bias.	Limited data supports the use of intraoral devices to treat xerostomia among other adverse effects of head and neck radiotherapy. Well-designed studies are required to confirm the trend observed of a potential effect.
Wicaksono (2022)	Challacombe score (2 trials), questionnaire (4 trials), VAS scale for pain (1 study)	Not clear from the review	Five RCTs were included in the review. Moisturizers based on carboxy polycellulose (CPC), carboxy methyl cellulose (CMC), hydroxyethylcellulose, aloe vera mouthwash and Verramin and ginger herbal ingredients were tested. Confort sensation improved after the administration of CPC mouthwash and Verramin preparations containing CMC. The ora moisturizing jelly (OMJ) reduced dry mouth symptoms, besides increasing salivary pH and reducing candidiasis. Only two studies reported the occurrence of non-serious adverse effects.	Saliva substitutes or moisturizing substances may overcome dry mouth sensation effectively and safely, although they are less effective for patients with Sjögren´s syndrome.
Wu (2022)	Stimulated salivary flow rate (7 trials)	Not clear from the review	Network meta-analysis established the comparison between acupuncture, acupoint massage + medication and TEN. All treatments were superior to the control group (SMD = -0.56, 95% CI -0.88~-0.15; SMD = -0.43, 95%CI = -0.86~-0.00). Overall, acupuncture was the most effective in improving stimulated salivary flow rate (SUCRA = 63.2%). The results are limited by the low quality of the included studies.	Acupuncture performed best for improving the stimulated salivary flow rate of patients undergoing radioactive xerostomia. High-quality studies are still needed to provide conclusive evidence.
De Sousa (2023)	Xerostomia	12 months	The study addressing xerostomia revealed a reduction of radiation-induced xerostomia symptoms compared with the sham treatment group.	Acupuncture is a safe intervention to reduce cancer-related symptoms, such as gastrointestinal symptoms, chemotherapy-induced peripheral pain neuropathy, xerostomia, fatigue, insomnia and cognitive ability. Still, further studies are still

				required to determine the extent of symptom improvement.
Liu (2023)	Dry mouth questionnaire (DMQ) (3 trials), Xerostomia Inventory (1 trial) and Visual Analogue Scale (VAS) (1 trial), stimulated (4 trials), unstimulated (5 trials) salivary flow rates	0 and 2 weeks	At week 0, no difference between the groups was observed (SMD = 0.10, 95%CI −0.15 to 0.35; p = 0.42, I^2 = 0%). After 2 weeks, the 1% malic acid spray improved dry mouth relief compared to placebo (SMD = 0.79, 95%CI 0,46 to 1,13; p < 0.00001, I^2 = 98%). The DMQ nor any other result was not affected by the use of malic acid spray until the second week of use. At two weeks, the DMQ of the malic acid spray was higher than the placebo – better effect (MD = 2.02, 95%CI 1.95 to 2.09; p < 0.00001, I^2 = 0%). The malic acid also significantly affected the Xerostomia inventory and the VAS, towards a improvement in xerostomia symptoms. Unstimulated salivary flow rates (based on 5 RCTs) increased in the experimental group compared to control, only at the 2-weeks assessment (MD = 0.06, 95%CI 0.03 to 0.09; p = 0.0002, I^2 = 0%), similarly to the stimulated salivary flow rates after two weeks (MD = 0.14, 95%CI 0.03 to 0.24; p = 0.01, I^2 = 0%).	The topical spray based on 1% malic acid is effective in reducing xerostomia short-term (two weeks). Still, longer-term high-quality studies are required to attest this curative effect.
Nakamura (2023)	Whole stimulating saliva and whole resting saliva	1 month, 2 months, 3 months	Three RCTs accessed the effect of bethanecol chloride in radiotherapy-induced xerostomia and hyposalivation. Whole stimulating saliva was improved by bethanecol chloride when administered during radiotherapy (SMD = 0.66, 95%CI 0.28 to 1.03; p = 0.0006). Whole resting saliva was improved by bethanecol chloride both, when administered during and after radiotherapy (during: SMD = 0.4, 95%CI 0.04 to 0.76, p = 0.03; after: SMD = 0.45, 95%CI 0.04 to 0.86, p = 0.03). Two out of the three studies had overall low risk of bias, while the other presented high risk of bias.	Bethanechol chloride can help reduce the occurrence of radiotherapy-induced xerostomia and hyposalivation at low or very low level of evidence.
Pérez-Nicoláz (2023)	VAS for xerostomia	Not clear from the review	Pilocarpine is pointed out as effective in reducing xerostomia symptoms, while lactoperoxidase, lactoferrin and lysozyme rinse are not.	Different types of mouthwashes are presented along with their potential of treatment of oral health issues of older people.

Table S5. Quality assessment of systematic reviews based on AMSTAR 2

AMSTAR 2 Items / Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Methodological quality
Jedel (2005)	N	N	Y	N	N	N	N	Y	N	N	NM	NM	Y	N	NM	N	**Critically low**
Bültzingslöwen (2007)	N	N	Y	N	N	Y	N	Y	N	N	NM	NM	N	N	NM	N	**Critically low**
Jensen (2010)	N	N	N	PY	Y	Y	N	PY	N	N	NM	NM	N	N	NM	N	**Critically low**
O´Sullivan (2010)	Y	N	Y	Y	Y	Y	Y	Y	N	N	NM	NM	N	N	NM	Y	**Critically low**
Furness (2011)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	**High**
Zhuang (2012)	Y	N	Y	Y	Y	Y	N	Y	Y	N	NM	NM	Y	N	NM	Y	**Critically low**
Daniels (2013)	Y	N	Y	PY	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	**Critically low**
Furness (2013)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	**High**
Hanchanale (2014)	Y	N	N	PY	N	Y	N	Y	N	N	NM	NM	N	N	NM	Y	**Critically low**
Lopez-Lopez (2014)	N	N	N	N	Y	Y	N	PY	N	N	NM	NM	N	N	NM	Y	**Critically low**
Lovelace (2014)	N	N	N	N	N	Y	N	PY	N	N	Y	N	N	N	N	N	**Critically low**
Pinto (2014)	Y	N	N	N	N	N	N	N	Y	N	NM	NM	Y	N	NM	Y	**Critically low**
Sood (2014)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	**Critically low**
Davies (2015)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	NM	NM	Y	N	NM	Y	**Moderate**
Fox (2015)	N	N	N	N	N	N	N	Y	N	N	NM	NM	N	N	NM	N	**Critically low**
Hackett (2015)	N	N	N	Y	Y	Y	N	Y	Y	N	NM	NM	Y	Y	NM	Y	**Critically low**

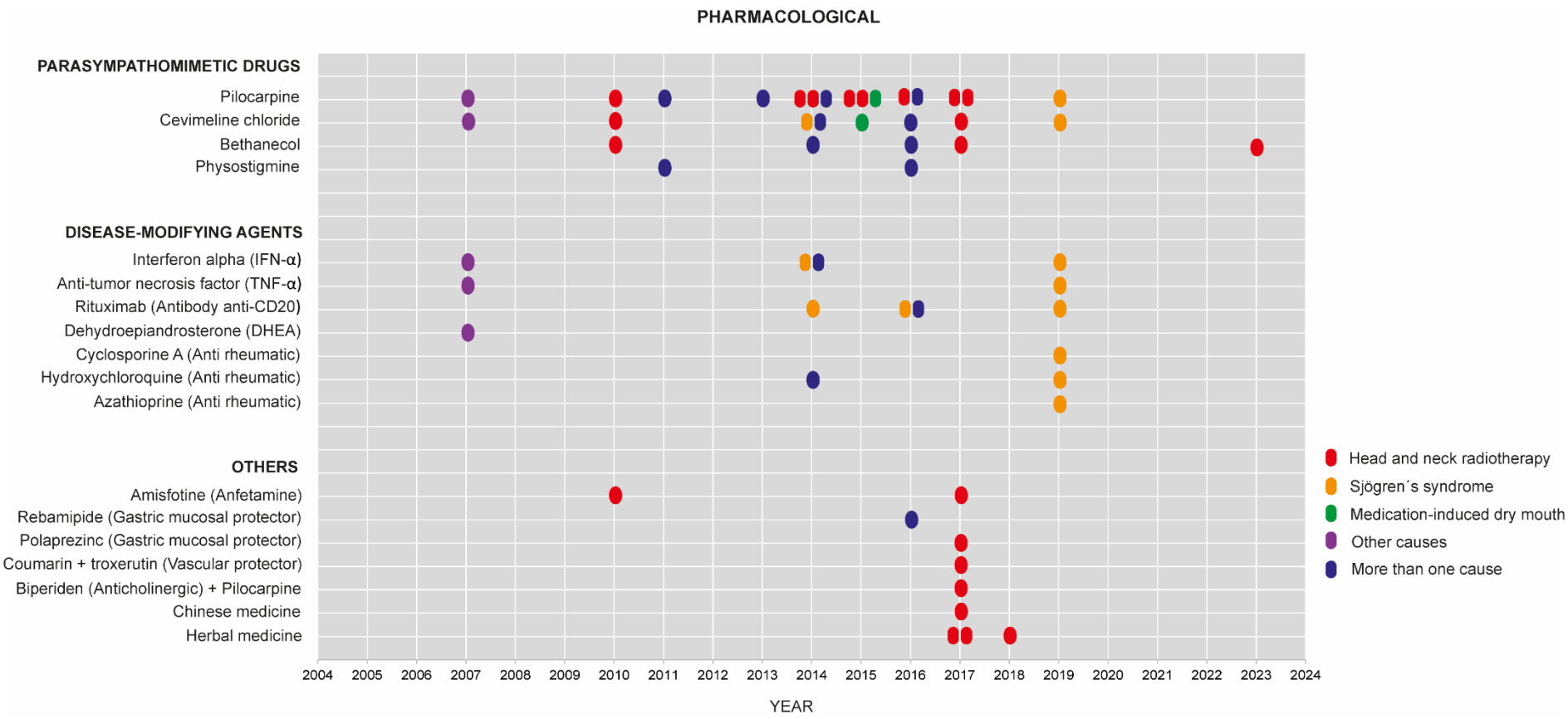
Garcia (2015)	N	N	N	N	N	N	N	Y	Y	N	NM	NM	Y	N	NM	Y	**Critically low**
Villa (2015)	N	N	N	N	Y	Y	N	Y	N	N	NM	NM	N	N	NM	Y	**Critically low**
Yang (2015)	N	N	N	Y	Y	Y	N	N	Y	N	Y	Y	Y	N	N	Y	**Critically low**
Cheng (2016)	N	N	N	N	Y	Y	N	Y	Y	N	N	N	N	N	N	Y	**Critically low**
Gil-Montoya (2016)	N	N	N	N	N	N	N	PY	N	N	NM	NM	N	N	NM	Y	**Critically low**
Nair (2016)	N	N	N	N	Y	Y	N	PY	Y	N	NM	NM	N	N	NM	Y	**Critically low**
Souza (2016)	N	Y	N	PY	Y	Y	N	N	Y	N	Y	Y	Y	N	Y	Y	**Critically low**
Mercadante (2017)	Y	Y	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	N	Y	**Critically low**
Nik Nabil (2017)	Y	N	N	PY	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	**Critically low**
Ravi (2017)	N	N	N	Y	N	N	N	PY	N	N	NM	NM	N	N	NM	Y	**Critically low**
Riley (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	**High**
Sivaramakrishnan (2017)	N	Y	Y	Y	Y	Y	N	PY	Y	N	Y	Y	N	N	Y	Y	**Critically low**
Assy (2018)	N	N	N	PY	Y	Y	N	PY	Y	N	NM	NM	Y	N	NM	Y	**Critically low**
Park (2018)	N	Y	N	Y	Y	Y	N	Y	Y	N	Y	Y	Y	N	Y	Y	**Critically low**
Al Hamad (2019)	N	N	N	PY	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	**Critically low**
Assery (2019)	N	N	N	N	N	N	N	Y	Y	N	N	Y	Y	N	Y	Y	**Critically low**
Paim (2019)	Y	N	N	N	Y	N	N	Y	N	N	NM	NM	N	N	NM	Y	**Critically low**
Rajkumar (2019)	Y	N	N	PY	N	N	N	PY	N	N	NM	NM	N	N	NM	Y	**Critically low**
Heiskanen (2020)	N	N	Y	N	N	Y	N	Y	N	N	NM	NM	N	N	NM	Y	**Critically low**

Louzeiro (2020)	Y	Y	N	PY	Y	Y	Y	PY	Y	N	Y	Y	Y	Y	Y	Y	**Moderate**
Ni (2020)	Y	Y	N	PY	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	**Low**
Galiano-Castillo (2021)	Y	Y	N	PY	Y	Y	N	PY	Y	N	Y	Y	Y	Y	Y	Y	**Low**
Golež (2021)	Y	N	N	PY	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	**Low**
Salimi (2021)	Y	Y	N	PY	Y	N	Y	PY	N	N	NM	NM	N	N	NM	Y	**Critically low**
Bonomo (2022)	Y	N	N	Y	Y	N	Y	Y	Y	N	NM	NM	Y	N	NM	Y	**Low**
Nayar (2022)	Y	N	N	PY	Y	Y	Y	Y	Y	N	NM	NM	Y	N	NM	N	**Critically low**
Wicaksono (2022)	Y	N	N	N	N	N	N	PY	N	N	NM	NM	N	N	NM	Y	**Critically low**
Wu (2022)	Y	Y	N	PY	Y	Y	N	PY	Y	N	Y	Y	Y	N	Y	Y	**Critically low**
De Sousa (2023)	Y	Y	N	PY	Y	N	N	PY	Y	N	NM	NM	N	N	NM	Y	**Critically low**
Liu (2023)	Y	Y	N	PY	Y	Y	N	PY	Y	N	Y	Y	Y	Y	N	Y	**Critically low**
Nakamura (2023)	Y	Y	N	PY	Y	N	N	PY	Y	N	Y	Y	Y	N	N	Y	**Critically low**
Pérez-Nicoláz (2023)	N	Y	N	PY	N	N	N	PY	Y	N	NM	NM	Y	N	NM	Y	**Critically low**

* Red numbers in the AMSTAR items reflect the critical domains;

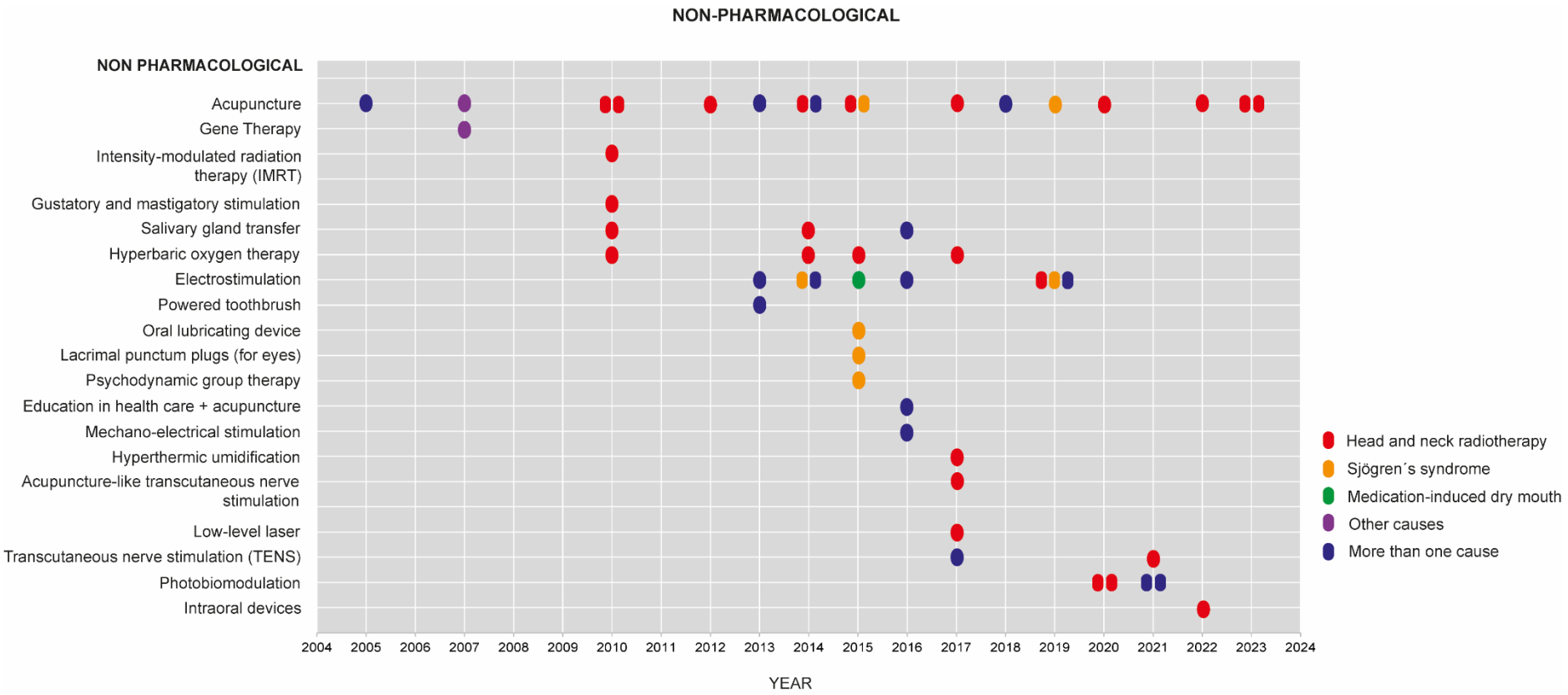
Y – Yes; PY – Partial yes; N – No; NM – no meta-analysis

Figure S2. Dot plot showcasing the distribution of systematic review publications over the years related to pharmacological interventions



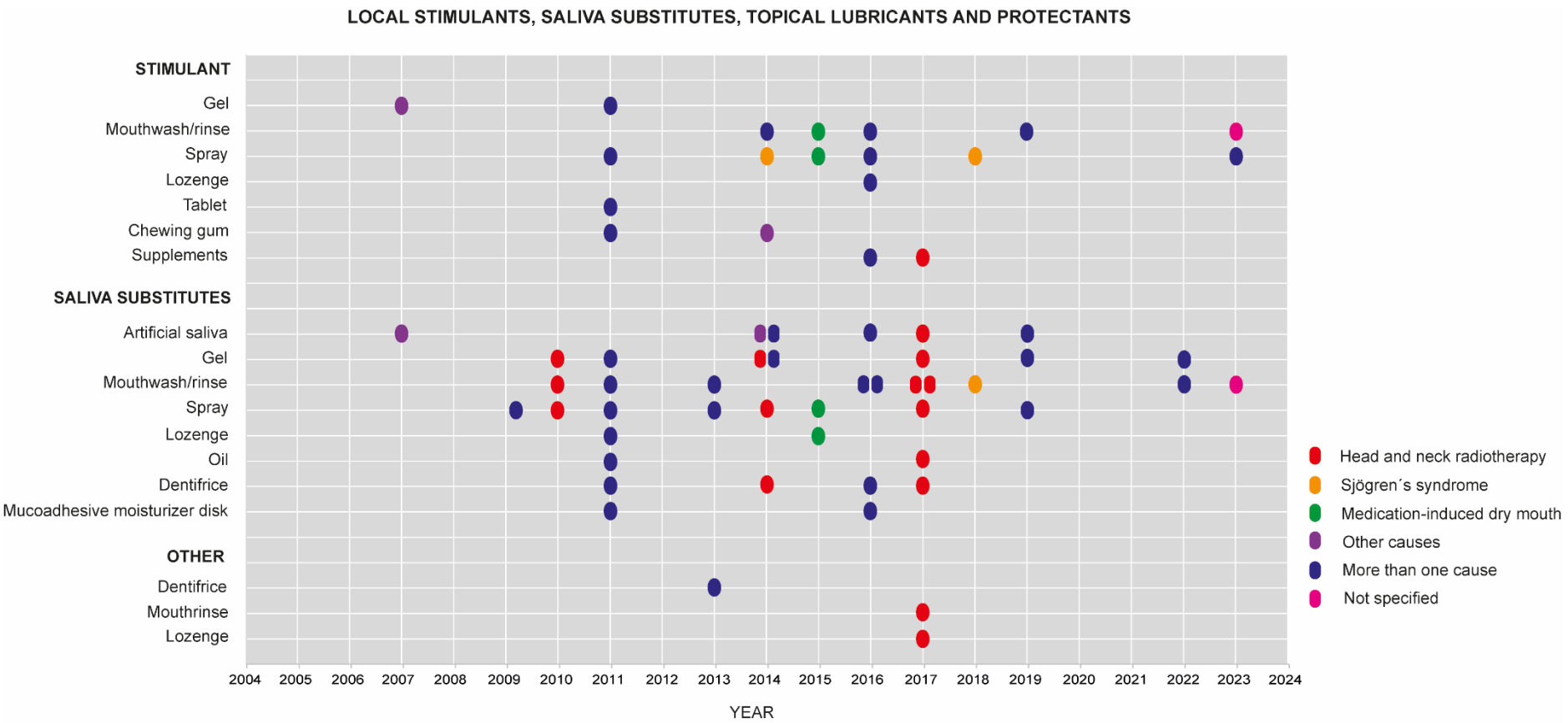
Colored plots represent the systematic reviews published considering the different categories of interventions for dry mouth. The colors represent the leading cause of dry mouth in each study. When the review addressed more than one cause, it was classified as ‘More than one cause’.

Figure S3. Dot plot showcasing the distribution of systematic review publications over the years related to non-pharmacological interventions



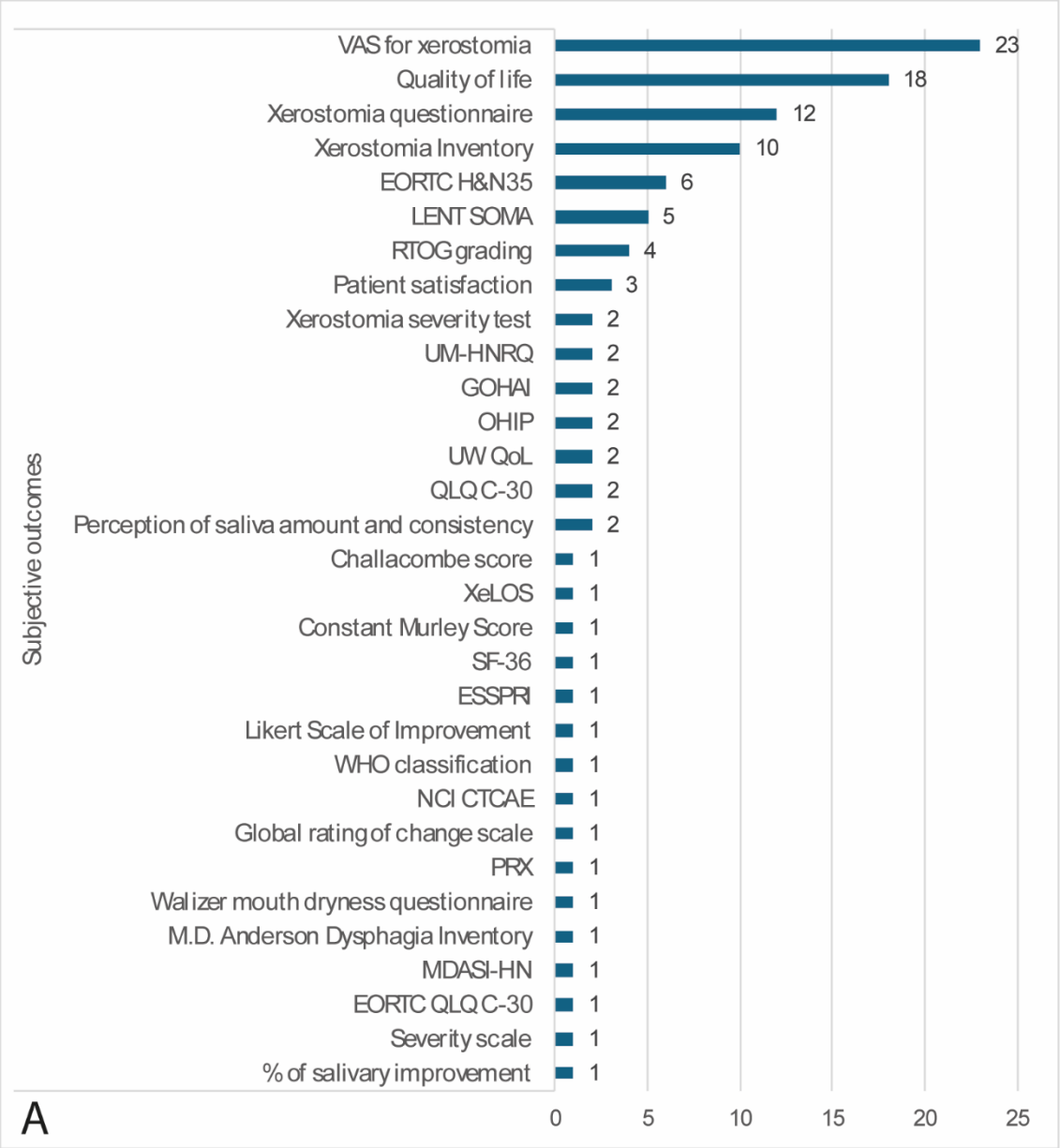
Colored plots represent the systematic reviews published considering the different categories of interventions for dry mouth. The colors represent the leading cause of dry mouth in each study. When the review addressed more than one cause, it was classified as ‘More than one cause’.

Figure S4. Dot plot showcasing the distribution of systematic review publications over the years related to local interventions.



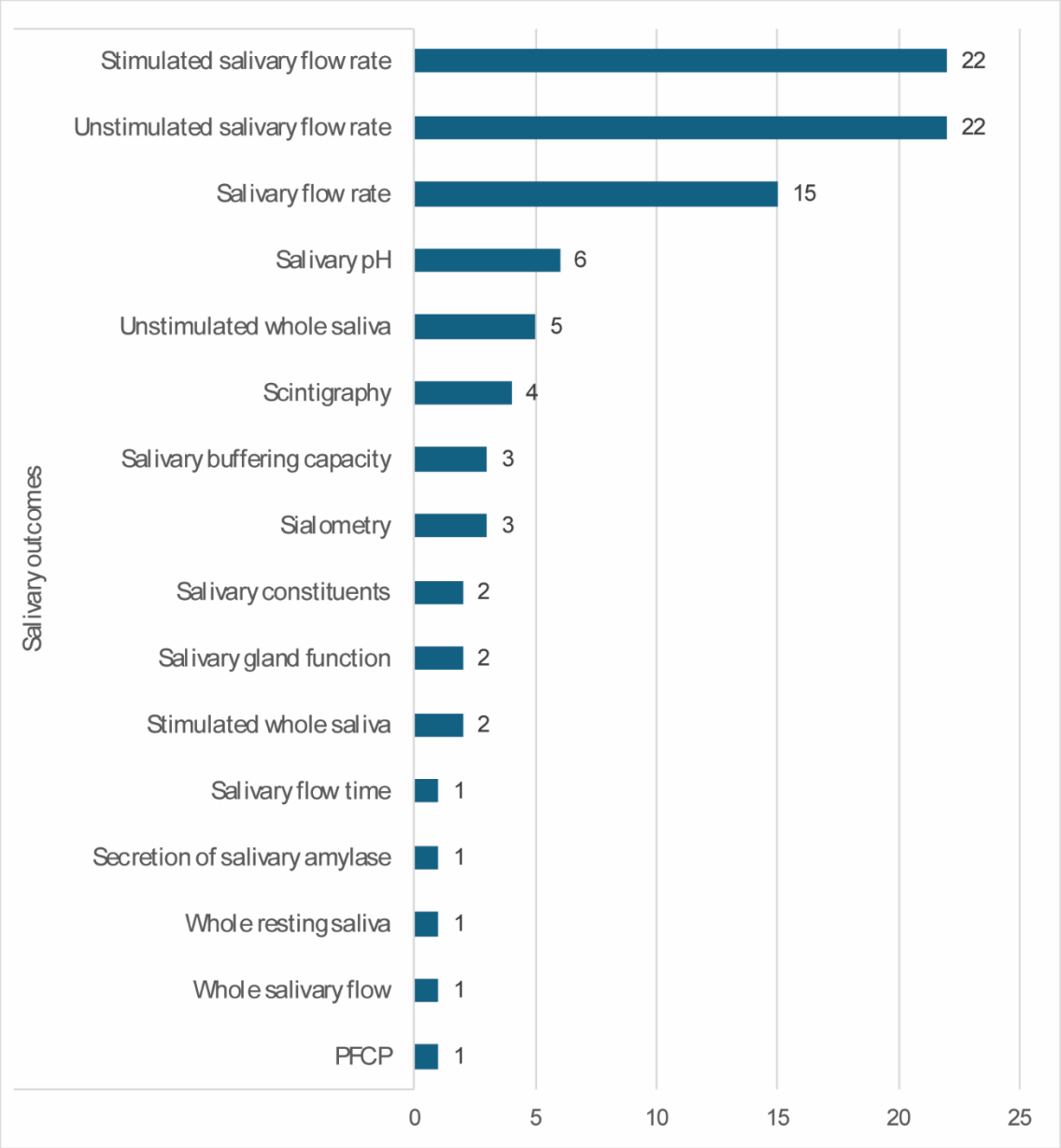
Colored plots represent the systematic reviews published considering the different categories of interventions for dry mouth. The colors represent the leading cause of dry mouth in each study. When the review addressed more than one cause, it was classified as ‘More than one cause’. The ‘Other’ category refers to interventions that do not qualify primarily as saliva stimulants or substitutes

S5. Subjective outcomes.



VAS (Visual Analogue Scale); EORTC (European Organization for Research and Treatment of Cancer); H&N35 (Quality of life questionnaire Head and Neck 35); LENT (Late Effects of Normal Tissues) SOMA (Subjective, Objective, Management and Analytic); RTOG (Radiation Therapy Oncology Group); UM-HNRQ (McMaster University Head and Neck Questionnaire); GOHAI (Geriatric Oral Health Assessment Index); OHIP (Oral Health Impact Profile); UW QoL (University of Washington Quality of Life Scale); QLQ C-30 (Quality of Life Questionnaire Core 30); XeLOS (Xerostomia Related Quality of Life Scale); ESSPRI (Eular Sjögren´s Syndrome Patient Reported Index); NCI CTCAE (National Cancer Institute Common Terminology Criteria for Adverse Events); PRX (Patient-rate xerostomia scoring); MDASI-HN (M.D. Anderson Symptom Inventory – Head and Neck Module); EORTC QOQ C-30 (European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30)

Figure S6. Salivary outcomes.



PFCP (Stimulated parotid flow rate complication probability)

Figure S7. Other types of outcomes.

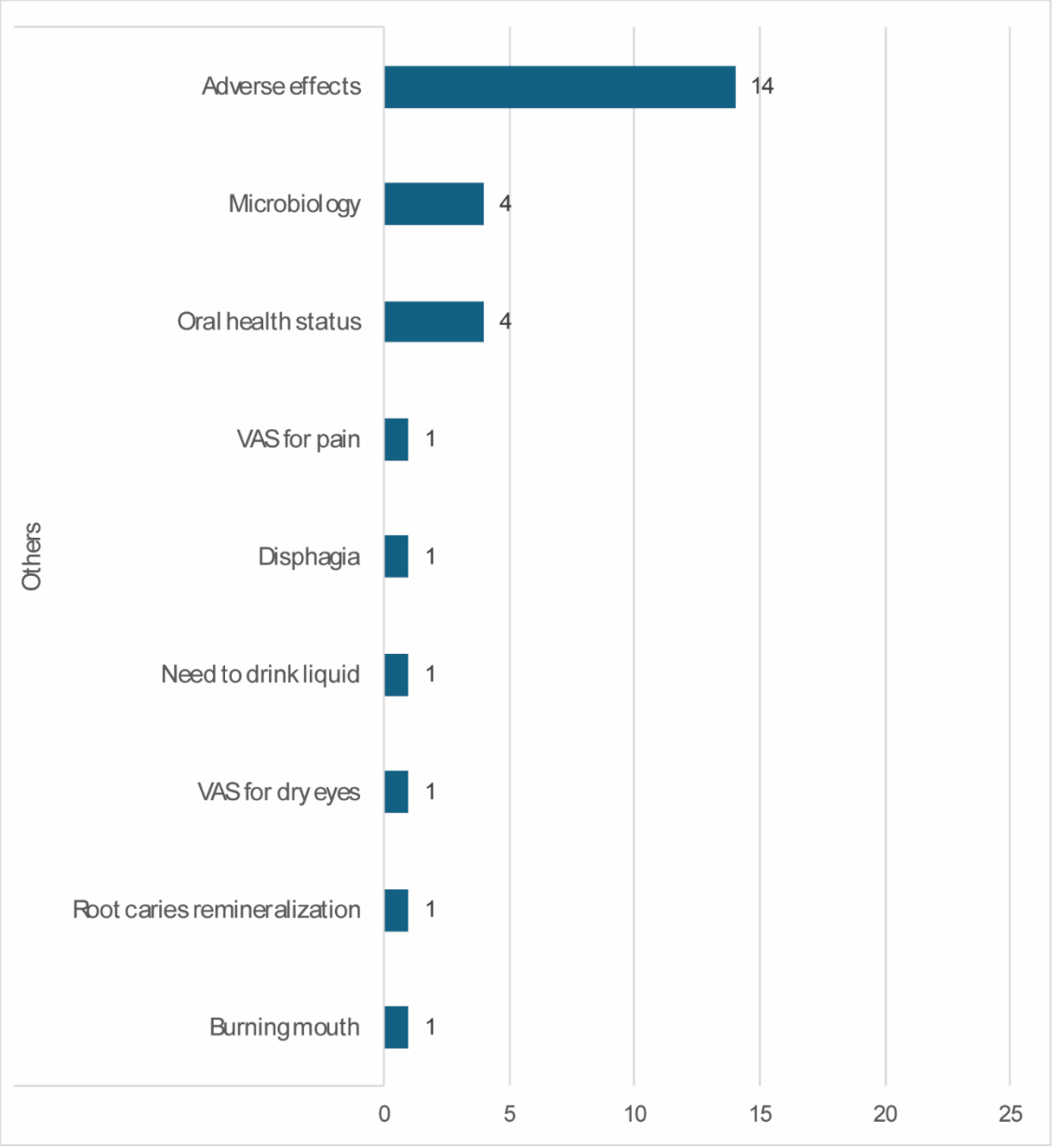


Table S6. PRISMA 2020 for abstracts checklist.

Section and Topic	Item #	Checklist item	Reported (Yes/No)
TITLE			
Title	1	Identify the report as a systematic review.	Yes
BACKGROUND			
Objectives	2	Provide an explicit statement of the main objective(s) or question(s) the review addresses.	Yes
METHODS			
Eligibility criteria	3	Specify the inclusion and exclusion criteria for the review.	Only inclusion
Information sources	4	Specify the information sources (e.g. databases, registers) used to identify studies and the date when each was last searched.	Yes
Risk of bias	5	Specify the methods used to assess risk of bias in the included studies.	Yes
Synthesis of results	6	Specify the methods used to present and synthesise results.	Yes
RESULTS			
Included studies	7	Give the total number of included studies and participants and summarise relevant characteristics of studies.	Yes
Synthesis of results	8	Present results for main outcomes, preferably indicating the number of included studies and participants for each. If meta-analysis was done, report the summary estimate and confidence/credible interval. If comparing groups, indicate the direction of the effect (i.e. which group is favoured).	Not applicable*
DISCUSSION			
Limitations of evidence	9	Provide a brief summary of the limitations of the evidence included in the review (e.g. study risk of bias, inconsistency and imprecision).	Yes
Interpretation	10	Provide a general interpretation of the results and important implications.	Yes
OTHER			
Funding	11	Specify the primary source of funding for the review.	Yes
Registration	12	Provide the register name and registration number.	Yes

* As an umbrella review that involves other systematic reviews, it is not possible to estimate the total number of participants pooled. Also, meta-analysis was not in the plans of this review.

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

Table S7. Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	1
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	1
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	2, 3
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	3
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	3
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	4
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	4
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	*T1
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	4
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	5
Critical appraisal of individual	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how	5

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
sources of evidence§		this information was used in any data synthesis (if appropriate).	
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	5
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	**F1
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	***TS2, TS3, TS4
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	T2, TS5
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	TS2, TS3, TS4
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	F2, F3, F4, T2, T3
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	7
Limitations	20	Discuss the limitations of the scoping review process.	11
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	7, 8, 9, 10, 11
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	1, TS2,

* T stands for Table; ** F stands for Figure; *** TS stands for Table Supplementary

JBI = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation. Ann Intern Med. 2018;169:467–473. doi: 10.7326/M18-0850.