

XEROSTOMIA AND BREAST CANCER

Xerostomia e câncer de mama

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ABSTRACT

Objective: To identify studies describing the prevalence of xerostomia in breast cancer patients undergoing chemotherapy. **Method:** Integrative review based on the guiding question << What is the scientific evidence on the prevalence of xerostomia in breast cancer patients undergoing chemotherapy? >>. We searched the US National Library of Medicine and National Institute of Health, Latin American and Caribbean Health Sciences Literature and Scientific Electronic Library Online databases using the Health Sciences Descriptors. We found 63 articles, which were analyzed by two researchers, following the inclusion and exclusion criteria. **Results:** The prevalence of xerostomia was described in 10 articles that used scales, questionnaires with dichotomous answers, and sialometry as evaluation method. **Conclusion:** A prevalence of 47% to 77.3% of xerostomia during chemotherapy was identified.

Descriptors: Xerostomia; Breast neoplasms; Adjuvant chemotherapy; Antineoplastic agents; Drug therapy.

RESUMO

Objetivo: Identificar os estudos que descrevem a prevalência de xerostomia em pacientes com câncer de mama e em quimioterapia. **Método:** Revisão integrativa, partindo da questão norteadora << Quais as evidências científicas sobre a prevalência de xerostomia em pacientes com câncer de mama e em quimioterapia? >>. Foi realizada uma busca nas bases de dados: *US National Library of Medicine and National Institute of Health*, *Literatura Latino-Americana e do Caribe em Ciências da Saúde* e *Scientific Electronic Library Online* por meio dos Descritores em Ciências da Saúde. Foram encontrados 63 artigos, analisados por dois pesquisadores seguindo os critérios de inclusão e exclusão. **Resultados:** A prevalência de xerostomia foi descrita em 10 artigos que utilizaram como método de avaliação escalas, questionários com respostas dicotômicas e sialometria. **Conclusão:** Identificou-se uma prevalência de 47% a 77,3% de xerostomia durante a quimioterapia.

Descritores: Xerostomia; Neoplasias da mama; Quimioterapia adjuvante; Antineoplásicos; Tratamento farmacológico.

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RESUMEN

Objetivo: Identificar estudios que describan la prevalencia de xerostomía en pacientes con cáncer de mama y quimioterapia. **Método:** Revisión integradora, basada en la pregunta guía << ¿Cuál es la evidencia científica sobre la prevalencia de xerostomía en pacientes con cáncer de mama y quimioterapia? >>. Se realizaron búsquedas en las bases de datos *US National Library of Medicine and National Institute of Health*, *Literatura Latino-Americana y del Caribe en Ciencias de la Salud* y *Scientific Electronic Library Online* utilizando los Descriptores de Ciencias de la Salud. Encontramos 63 artículos, que fueron analizados por dos investigadores siguiendo los criterios de inclusión y exclusión.

Resultados: La prevalencia de xerostomía se describió en 10 artículos que utilizaron escalas, cuestionarios con respuestas dicotómicas y sialometría como método de evaluación. **Conclusión:** Se identificó una prevalencia de xerostomía del 47% al 77,3% durante la quimioterapia.

Descriptores: Xerostomía; Neoplasias de la mama; Quimioterapia adyuvante; Antineoplásicos; Quimioterapia.

INTRODUCTION

Breast cancer is a growing problem worldwide and there are many policies for its early detection and diagnosis. It is recommended that the beginning of treatment occurs within 60 days, according to Law No. 12,732 of November 22, 2012.¹

In 2018 and 2019, 59,700 new cases of breast cancer are expected, with an increase of approximately 1,740 cases (2.9%) as estimated in 2016 by the National Cancer Institute (INCA).¹⁻²

Among the non-surgical treatments used for breast cancer, we can highlight chemotherapy. One of the side effects related to this therapy is xerostomia, defined as a subjective sensation of dry mouth, usually associated with decreased salivary flow.³⁻⁵

The emergence of xerostomia during chemotherapy occurs because mucosal cells suffer the effects of drugs that act on the destruction or inhibition of cell growth, not differentiating neoplastic cells from normal ones.⁵

Xerostomia can also lead to conditions such as burning mouth that compromises chewing and swallowing, bringing consequences to health in general and compromising the quality of life.^{4,6}

For its evaluation, some studies use salivary flow measurement, but a study conducted in 2017 showed that hyposalivation, a complaint usually associated with xerostomia, is not always true since most patients with dry mouth sensation had normal salivary flow. (70%)⁷

Another means of assessing xerostomia is the Thomson questionnaire created in 1999, known as the “Xerostomia Inventory”, consisting of 11 items designed to assess various dry mouth sensation situations, with five response options ranging from one to five.⁴

In this context, the objective of this review was to identify in the literature studies that describe the prevalence of xerostomia in breast cancer and chemotherapy patients, contributing to a reflection of this problem in this population.

METHOD

This is an integrative review carried out in six stages: the first with the definition of the guiding question and the research objective; the second with the selection and crossings of the descriptors and searching the databases; the third included the description of the inclusion and exclusion criteria of the articles found; the fourth was the analysis of articles by two researchers following the inclusion and exclusion criteria and content evaluation; the fifth with the discussion of the selected articles and the sixth and last stage, with the conclusion of the research itself.

The guiding question “What is the scientific evidence on the prevalence of xerostomia in breast cancer and chemotherapy patients?” Was elaborated in view of the PICO strategy: participants, intervention, control or comparison and outcome.⁸ This question led us to Objective: To identify studies describing the prevalence of xerostomia in patients with breast cancer and chemotherapy.

The selection of descriptors and databases for the search as well as the crossings were performed by the researchers together with a professional librarian in order to find all articles that corresponded to the theme.

The articles were searched in the scientific databases: US National Library of Medicine and National Institute of Health (PubMed), Latin American and Caribbean Health Sciences Literature (LILACS) and Scientific Electronic Library Online (SciELO) in the period. from March 4 to May 3, 2019, with the Descriptors in Health Sciences (DeCS).

The inclusion criteria of the articles were: scientific articles in the languages: Portuguese, Spanish and English and without time limit. Theses, dissertations, monographs, letters and health information were excluded. After reading the abstracts, those that did not correspond to the study theme and those that were duplicated in the databases were also excluded.

The scientific articles were analyzed by two independent researchers who considered the inclusion and exclusion criteria, the level of evidence⁹ of the studies and the content, seeking to answer the review question.

A data extraction instrument was created and standardized for this review and the results were later entered into the database and double-checked. Research type, sample size, main results, and study completion were the main documented characteristics for presentation of results and discussion.

All differences were discussed between the researchers and in case of disagreement an external evaluator was invited to give their opinion.

RESULTS

The data presented in Table 1 show the search performed in the three scientific databases.

Table 1 - Description of search terms, Sao Paulo, SP - Brazil, 2019

Electronic Databases	Keywords	Articles (n)
PubMed	(breast neoplasms OR breast cancer) AND (Chemotherap* OR drug therapy OR Antineoplastic Agents OR Antineoplast* OR Pharmacotherap*) AND (Xerostomia OR Asialia* OR Hyposalivation* OR Mouth Dryness)	53
LILACS	Neoplasias da Mama OR (neoplas\$ AND mama\$) OR (cancer AND mama\$) OR Câncer da Mama OR breast neoplasms OR (breast AND neoplas\$) OR breast cancer OR (breast AND cancer) [Palavras] and Xerostomia OR Asialia\$ OR assialia\$ OR Hyposalivation\$ OR Hipoalivação OR Mouth Dryness OR (Secura AND Boca) [Palavras]	08
SciELO	(mama) AND (xerostomia)	02
Total		63

After reading the titles and abstracts, 49 were excluded that did not correspond to the theme studied and four by duplicity. Thus, this integrative review analyzed 10 scientific articles.

The studies included in this review were classified according to the level of evidence, being five (50%) 3A and five (50%) 3B. There were a higher number of publications in 2017 and 2018 and, in relation to the location of the research, four (40%) were made in Brazil.

Samples from seven (70%) studies were from female populations diagnosed with breast cancer and three (30%) from both sexes including cancers other than breast cancer.

Regarding the method performed for the evaluation of xerostomia, four (40%) studies used measuring instruments such as: Likert scale; Symptom Assessment System (ESAS), modified Norwegian version; Udvalg for Kliniske Undersoegelser (UKU) is an instrument proposed by Philip Fox in 1987.

Questionnaires with dichotomous answers (present or absent / yes or no) were applied in four (40%) studies. One study performed sialometry and another did not describe the method used.

The timing of the application of xerostomia evaluation tests varied between the initiation of chemotherapy by one (10%) study, chemotherapy in four studies (40%), chemotherapy in two studies (20%) and all times in three studies (30%).

The prevalence of xerostomia in the studies was from 0% to 20.2% before chemotherapy, from 47% to 77.3% during and from 30% to 56.3% after treatment.

Table 2 presents the main results of the articles selected in this review.

Table 2 - Distribution of review articles and their results, São Paulo, SP - Brazil, 2019

Authors	Results
Jardim LC et al. ¹⁰	In the last 12 months 85 women (56.3%) reported xerostomia. In the multivariate analysis, women with xerostomia and more than three restored teeth had, respectively, 2.92 times (95% Confidence Interval (CI) 1.20 to 7.09) and 1.98 times (95% CI 1.01 to 3.87) greater chance of having a negative impact on oral health-related quality of life when compared to women without xerostomia and those with fewer restorations.
Taichman LS et al. ¹¹	When comparing three groups of breast cancer patients to salivary flow, the aromatase inhibitor group was significantly more affected with xerostomia than the tamoxifen and chemotherapy groups. And when compared to breast cancer patients with those without diagnosis, xerostomia was 2.48 times more prevalent in the group with the disease (2.48 versus 1.70; p < 0.01).
Marinho EDC et al. ¹²	Although prevalence did not change during treatment, dry mouth sensation (p = 0.66) was a frequently reported symptom.
Acharya S et al. ¹³	Xerostomia was not reported by any patient prior to the start of chemotherapy. This symptom became present as chemotherapy began, with 34 patients (65.4%) reporting xerostomia during the first follow-up and 23 patients (44.2%) in the second. Xerostomia and other oral disorders increased from 28.8% to 50% during chemotherapy.
Sözeri E et al. ¹⁴	Xerostomia was reported in 109 patients (59.2%). The average scores of patients with xerostomia, obtained from the subscales of "Decline of basic taste" and "Fantogeusia and Parageusia", were higher than those who did not report xerostomia.
Lancheros L et al. ¹⁵	Xerostomia was present in 15 of 25 women (60%) in the first cycle, 13 (52%) in the second cycle and 15.3 (61.3%) in the third cycle of chemotherapy.
Wilberg P et al. ¹⁶	In this study 91 patients (59%) reported xerostomia at the time of physical examination.
Jensen SB et al. ¹⁷	Through the UKU scale xerostomia was present in 48 of 75 women (64%) during chemotherapy, 28.5 (38%) after six months and 29.2 (39%) after one year. By Fox's instrument xerostomia was reported at 1.5 (2%) before chemotherapy, 35.2 (47%) during and 22.5 (30%) after one year. The prevalence of xerostomia remained significantly higher at one year after chemotherapy compared with the daily sensation of dry mouth, although the stimulated salivary flow rates had not normalized.
Araujo TLC et al. ¹⁸	In this study 56.4 patients (77.3%) were diagnosed with xerostomia. The results showed that xerostomia was the most common oral pathological condition among patients undergoing chemotherapy.
Musso MAA et al. ¹⁹	Xerostomia was present in 18 of 89 women (20.2%). There was a statistically significant difference when associated with xerostomia with age and race / color. Women 60 years of age and older (odds ratio (OR) = 3,460) and white women (OR = 3,452) were about three times more likely to have xerostomia.

DISCUSSION

We observed a limited number of publications on the theme: breast cancer and xerostomia. This fact made it difficult to identify the prevalence of xerostomia in both the general population and in patients with breast cancer and chemotherapy.

A systematic review conducted in 2018 showed an estimated overall prevalence of 22.0% xerostomia.⁴

In Brazil, where most of the studies in this review were performed, the prevalence of xerostomia in the general population was demonstrated in an ecological study, descriptive of correlation with secondary data analysis, performed in the city of Piracicaba in 2012 was 17%.²⁰

We can observe from these data that even in countries with a higher prevalence than described in Brazil, there are few studies involving this problem.⁴

Xerostomia evaluation methods have not been clearly presented in some studies. Those who used specific scales, questionnaires or instruments for the evaluation of xerostomia somehow standardized the approach in their sample and tried to evaluate a subjective complaint according to dry mouth situations and intensity, unlike studies that only identified the presence or absence of this sensation.

Measurement of salivary flow or sialometry is a method that enables the identification of the decrease in salivary flow that may or may not be associated with xerostomia, as demonstrated in a study conducted in Chile in 2017, where 556 patients were diagnosed with xerostomia using a questionnaire, performed sialometry with and without salivary stimulation, finding that hyposalivation was present in almost 30% of patients who complained of xerostomia.¹¹

As we can see, there is no specific method for the identification of xerostomia, since this sensation is subjective, but one should look for the most appropriate method for the studied population, as well as the appropriate time for its application.

The fact that some studies evaluated patients before chemotherapy allowed the identification of previous xerostomia and allowed the observation of an increase or decrease of this complaint during and after the end of treatment.

CONCLUSION

A discrepancy in values regarding the prevalence of xerostomia in breast cancer patients and chemotherapy was identified. This fact may be associated with the population profile, age, ethnicity, associated diseases, medication use, among other factors.

The findings of this review contribute to the development of new studies focused on this problem and to the elaboration of actions that minimize this discomfort and improve the patients' quality of life.

REFERENCES

1. Brasil. Ministério da Saúde. Instituto Nacional de Câncer José Alencar Gomes da Silva. Coordenação de Prevenção e Vigilância. Estimativa 2018: Incidência de Câncer no Brasil. Rio de Janeiro: INCA [Internet]. 2017 [acesso em 01 Out 2019]; 128. Disponível em: <https://www.inca.gov.br/publicacoes/livros/estimativa-2018-incidencia-de-cancer-no-brasil>
2. Brasil. Ministério da Saúde. Instituto Nacional de Câncer José Alencar Gomes da Silva. Coordenação de Prevenção e Vigilância. Estimativa 2016: Incidência de Câncer no Brasil. Rio de Janeiro: INCA [Internet]. 2016 [acesso em 01 Out 2019]; 51. Disponível em: <https://www.inca.gov.br/campanhas/dia-nacional-de-combate-ao-cancer/2015/estimativa-2016-incidencia-de-cancer-no-brasil>
3. Cordeiro LAM, Nogueira DA, Gradim CVC. Mulheres com neoplasia mamária em quimioterapia adjuvante: avaliação da qualidade de vida. *Rev enferm UERJ* [Internet]. 2018 [acesso em 19 Out 2019]; 26:e17948. Disponível em: <https://www.e-publicacoes.uerj.br/index.php/enfermagemuerj/article/view/17948>
4. Agostini BA, Cericato GO, Silveira ER, Nascimento GG, Costa FS, et al. How Common is Dry Mouth? Systematic Review and Meta-Regression Analysis of Prevalence Estimates. *Braz dent j* [Internet]. 2018 [acesso em 19 Out 2019]; 29(6):606-618. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/30517485>
5. Menezes JR, Luvisaro BMO, Rodrigues CF, Muzi CD, Guimarães RM. Confiabilidade teste-reteste da versão Brasileira do instrumento Memorial Symptom Assessment Scale para avaliação de sintomas em pacientes oncológicos. *Einstein (São Paulo)* [Internet]. 2017 [acesso em 19 Out 2019]; 15(2):148-54. Disponível em: <https://journal.einstein.br/pt-br/article/confiabilidade-teste-reteste-da-versao-brasileira-do-instrumento-memorial-symptom-assessment-scale-para-avaliacao-de-sintomas-em-pacientes-oncologicos/>
6. Cheng YM, Lan SH, Hsieh YP, Lan SJ, Hsu SW. Evaluate five different diagnostic tests for dry mouth assessment in geriatric residents in long-term institutions in Taiwan. *BMC oral health* [Internet]. 2019 [acesso em 19 Out 2019]; 19:106. Disponível em: <https://bmcoralhealth.biomedcentral.com/articles/10.1186/s12903-019-0797-2>
7. Niklander S, Veas L, Barrera C, Fuentes F, Chiappini G, Marshall M. Risk factors, hyposalivation and impact of xerostomia on oral health-related quality of life. *Braz oral res* [Internet]. 2017 [acesso em 01 Out 2019]; 31e14. Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1806-83242017000100211
8. Santos CM, Pimenta CA, Nobre MR. A estratégia PICO para a construção da pergunta de pesquisa e busca de evidências. *Rev latinoam enferm* [Internet]. 2007 [acesso em 01 Out 2019]; 15(3):1-4. Disponível em: http://www.scielo.br/scielo.php?pid=S0104-11692007000300023&script=sci_arttext&tlng=pt
9. Pedrosa KKA, Oliveira ICM, Feijão AR, Machado RC. Enfermagem baseada em evidência: caracterização dos estudos no Brasil. *Cogitare enferm* [Internet]. 2015 [acesso em 19 Out 2019]; 20(4):733-741. Disponível em: <https://revistas.ufpr.br/cogitare/article/view/40768>
10. Jardim LC, Flores PT, Araújo MCS, Chiesa J, de Moraes CMB, Antoniazzi RP. Oral health-related quality of life in breast cancer survivors. *Support care cancer* [Internet]. 2019 [acesso em 03 Mai 2019]; 01-07. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/30982094>
11. Taichman LS, Van Poznak CH, Inglehart MR. Oral health-related concerns, behavior, and communication with health care providers of patients with breast cancer: impact of different treatments. *Spec care dentist* [Internet]. 2018 [acesso em 03 Mai 2019]; 38(1):36-45. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/29337392>
12. Marinho ED, Custódio ID, Ferreira IB, Crispim CA, Paiva CE, Maia YC. Impact of chemotherapy on perceptions related to food intake in women with breast cancer: a prospective study. *PLoS ONE* [Internet]. 2017 [acesso em 03 Mai 2019]; 12(11):e0187573. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/29190717>
13. Acharya S, Pai KM, Bhat S, Mamatha B, Bejadi VM, Acharya S. Oral changes in patients undergoing chemotherapy for breast cancer. *Indian j dent* [Internet]. res. 2017 [acesso em 03 Mai 2019]; 28(3):261-8. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/28721989>

14. Sözeri E, Kutlutürkan S. Taste alteration in patients receiving chemotherapy. *J Breast Health* [Internet]. 2015 [acesso em 03 Mai 2019];11(2): 81-7. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5351492/>
15. Lancheros L, Gamba M, González H, Sánchez R. Caracterización de la evolución del estado nutricional de pacientes con cáncer de mama en tratamiento quimioterápico. *Rev colomb cancerol* [Internet]. 2004 [acesso em 03 Mai 2019];8(2):11-22. Disponível em: <http://www.scielo.org.co/pdf/rcc/v8n2/v8n2a03.pdf>
16. Wilberg P, Hjermsstad MJ, Ottesen S, Herlofson BB. Chemotherapy-associated oral sequelae in patients with cancers outside the head and neck region. *J pain symptom manage* [Internet]. 2014 [acesso em 03 Mai 2019];48(6):1060-9. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/24751438>
17. Jensen SB, Mouridsen HT, Reibel J, Brüner N, Nauntofte B. Adjuvant chemotherapy in breast cancer patients induces temporary salivary gland hypofunction. *Oral oncol* [Internet]. 2008 [acesso em 03 Mai 2019];44(2):162-73. Disponível em: <https://www.ncbi.nlm.nih.gov/pubmed/17588802>
18. Araujo TL, Mesquita LK, Vitorino RM, Macedo AK, Amaral RC, Silva TF. Manifestações bucais em pacientes submetidos a tratamento quimioterápico. *Rev cuba estomatol* [Internet]. 2015 [acesso em 03 Mai 2019];52(4). Disponível em: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1413-81232010000700016
19. Musso MA, Calmon MV, Pereira LD, Brandão-Souza C, Amorim MH, Zandonade E, et al. Associação das manifestações bucais com variáveis sociodemográficas e clínicas em mulheres com câncer de mama. *Rev bras ciênc saúde* [Internet]. 2018 [acesso em 03 Mai 2019];22(3):203-12. Disponível em: <http://docs.bvsalud.org/biblioref/2018/09/914456/35660-93457-1-pb.pdf>
20. Costa AM, Fonseca EP, Fonseca DAV, Sousa MLR. Distribuição espacial da xerostomia e índice de exclusão social de idosos de Piracicaba, SP. *Arq odontol*. [Internet]. 2015 [acesso em 19 Out 2019];51(1):39-46. Disponível em: <https://periodicos.ufmg.br/index.php/arquivoemodontologia/article/view/3672>

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