




Toothache and Associated Factors in Brazilian Indigenous Populations: A Critical Review

Deise Berger Velten^{1,2}, Marcela Vieira Calmon^{1,3}, Maria Helena Monteiro de Barros Miotto⁴

¹School of Dentistry, Federal University of Espírito Santo, Vitória, ES, Brazil.

²Brazilian Dental Association of Espírito Santo, Vitória, ES, Brazil.

³Scientific Initiation Program, Anhanguera Faculty, Linhares, ES, Brazil.

⁴Postgraduate Program in Public Health, Federal University of Espírito Santo, Vitória, ES, Brazil.

Corresponding author: Deise Berger Velten

E-mail: deisebv82@gmail.com

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ABSTRACT

Objective: To know the information available in bibliographic sources about dental pain and its associated factors in Brazilian Indigenous individuals. **Material and Methods:** Critical review in which a literature search was conducted in the databases: BVS encompassing LILACS, MEDLINE and also PubMed and Scielo. Descriptors in Portuguese and English were used, and the Boolean operator “AND” was used to cross the information. **Results:** After completing literature searches in the databases and other sources the authors obtained 285 articles, and after exclusion of duplicate journals and articles whose titles, abstracts and texts were not related to the researched subject, 02 articles were included in the review. **Conclusion:** There are few studies on the topic researched, which highlights the need to develop more research in this area to enable comparisons and obtain the best scientific evidence on the researched topic. The Indigenous adult and adolescent population, when compared to the general population, showed a higher percentage of people with toothache that was associated with poor self-perception of oral health.

Keywords: Toothache; Indigenous Peoples; Oral Health.

■ Introduction

Updated data describing the current and daily situation of the oral conditions of Indigenous people are fundamental to allow adequate monitoring, so that the public power can guarantee more public policies aimed at these people [1].

The epidemiological situation of the oral health of Brazilian Indigenous people is scarcely known. Furthermore, there is evidence of inequalities between Indigenous and non-Indigenous people regarding access to oral health care services and regular prevention methods, which makes Indigenous populations more vulnerable, including to caries and its complications [2].

The health care to Indigenous people is complex and there are several difficulties to achieve efficiency in care, such as access to communities, sociocultural diversity and the specificities of each ethnic group, the shortage of health professionals qualified for this activity, the organizational structure, among others [3].

Regarding oral health conditions, few epidemiological studies are available about Brazilian Indigenous populations, and in most cases they are related to Indigenous communities residing in the northern region of the country. Furthermore, there are Indigenous people with high and low rates of dental caries, which demonstrates an epidemiological diversity [2]. However, a more in-depth analysis of the theme is not possible because these studies present diverse methodologies, have been conducted at different times and in specific groups, as well as because nationwide surveys conducted so far have not included the Indigenous population residing on Indigenous lands [4].

In Indigenous populations, the risks to development of caries have increased with the greater interaction of these populations with the general society [2]. This permanent contact with non-Indigenous populations has led to changes in lifestyles, livelihoods, and sociocultural systems of these people, generally causing negative impacts on their health [2].

National epidemiological analyses have demonstrated a decline in dental caries indicators; however, research on oral health conditions of Brazilian Indigenous people suggests a trend towards an increase in the prevalence of caries, attributed to the impact caused by changes to be implemented, sociocultural, economic and environmental factors, in addition to the lack of preventive programs [5].

Toothache, pain of dental origin, is the most prevalent type of orofacial pain that can affect the soft and hard tissues of the oral cavity and face. This condition can damage people's quality of life, impacting the performance of their activities [6]. This condition is a frequent reason for seeking dental services and causes a significant impact on the lives of people and society, thus constituting an important public health problem [7].

Better knowledge about the oral health conditions of different Indigenous communities in Brazil is necessary to develop strategies for action and organization of health services [8]. Therefore, this review aimed to assess the information available in the literature about toothache and its associated factors in Brazilian Indigenous communities.

■ Material and Methods

This critical review was performed based on the PRISMA recommendation, which represents recommended guidelines for reporting systematic reviews.

Guiding Question

Before starting this review, planning was conducted on the guiding question of the research structured and based on the PECO strategy. The question that guided the study was “What information is available in the literature on toothache and its associated factors in the Brazilian Indigenous population?”

Bibliographic Search Strategy

From there, the bibliographic searches of this critical review were started, which were performed in the following databases: Biblioteca Virtual em Saúde (BVS) comprising the LILACS, MEDLINE, besides searches in Pubmed and Scielo databases. This search employed the following descriptors in Portuguese: *Dor de dente*, *odontalgia*, *população indígena*, *índios*, *índios sul americanos* and *Brasil*. English descriptors were also used: toothache, Indigenous population, Indians, Indians South American e Brazil (Table 1). Cross-references were made with these descriptors using the Boolean operator "AND", because the surveyed articles should be related to the descriptors in combination. Inclusion criteria were articles written in English, Portuguese and Spanish, and the exclusion criteria comprised congress documents, case report articles and traditional literature review articles.

After completion of literature searches in the databases, a search for articles related to the topic of dental pain in the Brazilian Indigenous population was also performed in Google Scholar and a manual search was also performed in the references of articles found in the review.

The End Note Web reference manager software was used to organize the bibliographic searches performed, and also to exclude duplicate articles found.

Table 1. The search strategy for articles in the databases.

Descriptors	BVS	MeSH Terms	Pubmed	MeSH Terms	Scielo
<i>Dor de dente</i> “AND” <i>População Indígena</i> “AND” <i>Brasil</i>	03	Toothache “AND” Indigenous population “AND” Brazil	12	Toothache “AND” Indigenous population “AND” Brazil	02
<i>Dor de dente</i> “AND” <i>Índios</i> “AND” <i>Brasil</i>	02	Toothache “AND” Indians “AND” Brazil	04	Toothache “AND” Indians “AND” Brazil	02
<i>Dor de dente</i> “AND” <i>Índios Sul-Americanos</i>	02	Toothache “AND” Indians South American	03	Toothache “AND” Indians South American	02
<i>Odontalgia</i> “AND” <i>População Indígena</i> “AND” <i>Brasil</i>	02				
Total					34

This review was conducted by pairs, and during identification the searches were performed using the descriptors and the Boolean operator "AND", because the goal was to find articles that addressed the topic of toothache in the Brazilian Indigenous population comprehensively, since other types of search strategies would have resulted in articles not completely related to the subject of interest. All articles related to the topic in English, Portuguese and Spanish were included, excluding congress documents, traditional literature review articles and clinical case study articles. In the selection phase duplicate articles were initially excluded, and then a careful reading of the titles was made, which resulted in the exclusion of articles whose title was unrelated to the subject studied.

In the next phase of eligibility, the abstracts of articles were carefully read and articles whose abstracts were unrelated to the review topic were excluded. In this same phase, the texts of articles were read in full, leading to exclusion of articles that did not address the researched subject. After these phases, the articles included in this review were obtained. Figure 1 shows the flowchart referring to the phases of this review.

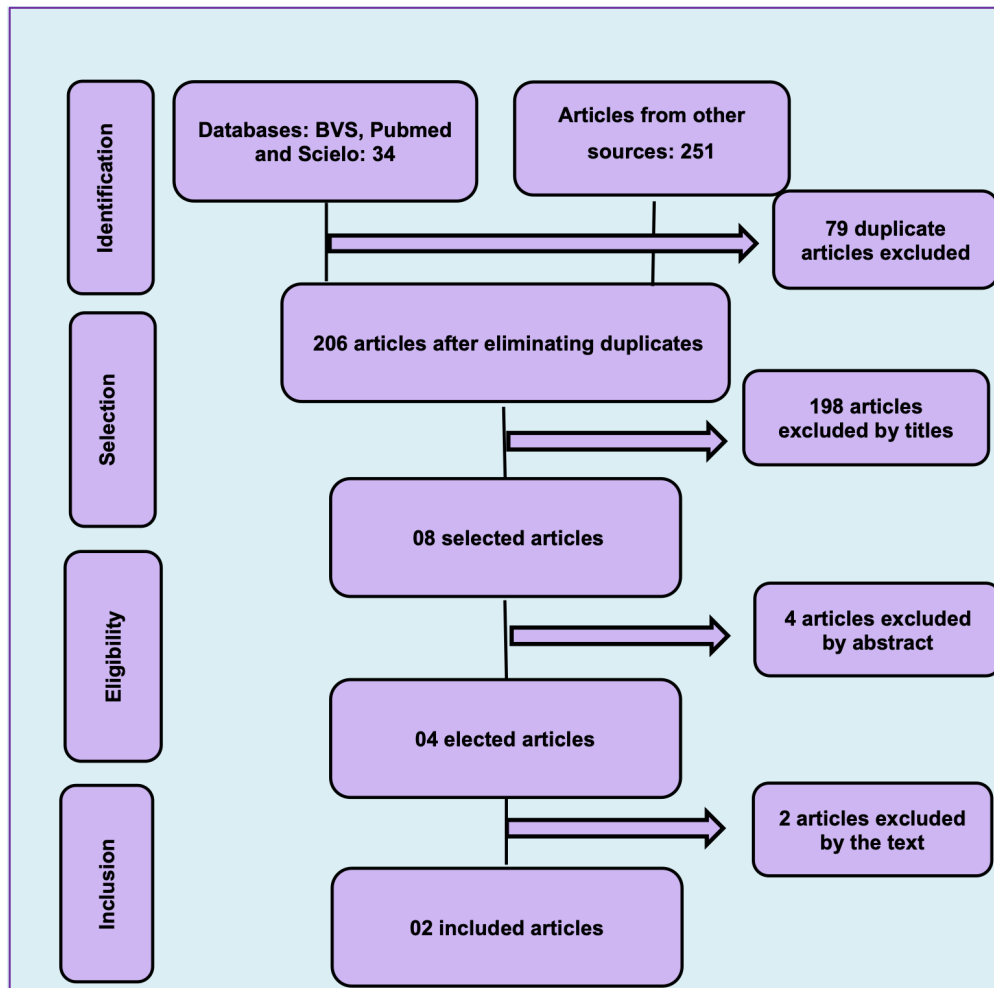


Figure 1. Flowchart demonstrating the phases of the critical review.

■ Results

This critical review was completed in January 2021, but it was very difficult to find articles about the researched topic, which is evidenced by the quantity of articles included in the review. Therefore, no restriction was made regarding the year of publication of articles included in the review and also of articles used in the construction of this manuscript.

After search in the databases and other sources, 285 articles were obtained, 79 of which were excluded because they were duplicate publications. After reading the titles, 198 more articles were excluded and then the abstracts were read, which resulted in the exclusion of 4 more articles. Then, the full text of the remaining articles was read, which resulted in the exclusion of two more articles that were not related to the theme. Therefore, at completion of the review, two articles from the main search strategy of the review were included, which demonstrates the reliability of the search strategy used.

As shown in Table 2, this review included two articles published in the years 2014 and 2018, one of which was published in an epidemiology journal and the other in an oral health journal. As for the locations in which the research was conducted, one study was conducted in the Northeast region and the other in the Midwest region, and both surveys had population-based cross-sectional designs. Cross-sectional studies provide evidence, but not the best scientific evidence, since it is not possible to establish a cause/effect relationship. strength of evidence such as clinical trials, cohort studies or case-control studies, cross-sectional studies remain the existing evidence on this topic, which demonstrates the need to develop more studies with higher quality of evidence to

allow comparisons between them. The objectives of the included studies are different; however, the two articles evaluate normative and subjective conditions related to oral health in Indigenous populations.

Table 2. Description of articles included in the critical review.

Articles	Information
(1) Author/Local	Maurício and Moreira [9], Pernambuco, Brazil
Objective	To evaluate the factors associated with the absence of caries in the Indigenous community Xukuru do Ororubá in the age group 10 to 14 years, in Pesqueira, Pernambuco.
Materials and Methods	Cross-sectional population-based study conducted in the Xukuru Indigenous Land locality from January to March 2010. Oral examinations were performed in a random sample of 233 Indigenous people.
Results	It was observed that 26.61% of Indigenous people in the age group 10 to 14 years are caries-free. The variables higher per capita income (Block 2), no sleep deprivation due to oral problems (Block 4), never having been to the dentist (Block 5), no occurrence of toothache and no need for dental treatment (Block 6) showed a positive association with caries absence.
Conclusion	Contextual and individual aspects of the Xukuru do Ororubá people are associated with the absence of caries in the 10 to 14 year age group.
(2) Author/Local	Arantes and Frazão [10], Mato Grosso do Sul, Brazil
Objective	To evaluate whether subjective and clinical oral symptoms were associated with self-assessment of oral health in 4 different Indigenous communities (Kaiwo, Kadiw, Terena and Guarani) in the Midwest of Brazil.
Materials and Methods	A population-based cross-sectional study conducted between 2012 and 2014 assessing the oral health status of 4 ethnic groups of Indigenous people in the state of Mato Grosso do Sul in the age groups 15-19 and 35-44 years. Stratified sampling methodology was used to ensure that a minimum number of individuals of each ethnicity were selected, resulting in a sample size of 682 individuals.
Results	The prevalence of toothache was 32.9% and was associated with poor self-perception of oral health.
Conclusion	Oral symptoms such as tooth pain and difficulty speaking due to tooth problems play an important role in self-assessment of oral health.

Regarding methodology, article 1 assesses the age range between 10 and 14 years (adolescent individuals) and article 2 assesses age ranges between 15-19 and 35-44 years (adolescent and adult individuals). Also, the ethnicities of investigated people are different, which precludes comparisons between the studies.

The results demonstrate that, in both articles, dental pain appears as an independent variable and not as an outcome variable. In article 1 the non-occurrence of toothache is associated with the absence of dental caries, and article 2 found a prevalence of dental pain of 32.9%, which was associated with self-perception of poor oral health.

■ Discussion

Oral conditions have multiple causative elements related to various socioeconomic factors, which are more evident in Indigenous people due to their precarious and peculiar living conditions. Indigenous communities worldwide have significantly worse oral health, and inequities in access to dental care are largely attributed to social determinants of health [2]. A comparison of the magnitude of inequities between Indigenous and non-Indigenous populations in Brazil, Australia, and New Zealand showed that, regardless of country, Indigenous individuals have worse oral health status [11].

In article 2, it was observed that nearly one-third (32.9%) of the Indigenous population in Midwest Brazil had already felt dental pain, which demonstrates a very unequal situation related to Indigenous oral health in relation to the non-Indigenous population, which presents lower prevalences of toothache in all age groups.

For comparison, the National Oral Health Survey performed in Brazil in 2010 (SB Brazil 2010), the last oral health survey conducted on the entire Brazilian population, showed percentages of dental pain frequency of 24.7% for 15-19 years old and 27.5% for 35-44 years old [4].

In article 1, it was observed that 26.61% of Indigenous individuals in the age group 10 to 14 years were caries-free, and the non-occurrence of toothache showed a positive association with the absence of caries. When this result related to caries is compared with the results of SB Brazil 2010, once again an unfavorable oral condition of the Indigenous communities can be observed, since a percentage of 43.5% of caries-free adolescents at 12 years of age was found in the general population. There is evidence that toothache is more frequent in individuals with higher caries experience, because caries, periodontal diseases and dental trauma are the main oral health problems leading to episodes of dental pain [12]. Therefore, in Indigenous communities there is a higher number of people with toothache, which demonstrates how this population has been neglected in issues related to oral health care.

The results of article 2 showed that toothache was associated with self-perception of poor oral health, and the authors also observed that toothache and reported difficulty in speaking were more relevant than chewing in the self-assessment of oral health in the sample. Dental pain is a major source of human suffering, with negative impacts on people's daily performance and quality of life [10]. Subjective self-assessment is an indicator increasingly used in epidemiological studies and is considered a legitimate measure of general health status, as well as a valid, reliable and cost-effective health assessment tool for use in population groups. There is a large amount of evidence pointing to associations between this indicator and other health measures such as socioeconomic, psychological and demographic characteristics. However, little research has been conducted among specific ethnic groups, minority or Indigenous populations. Indigenous and minority population groups typically assess their health less favorably than their respective majority or dominant population groups [10].

During this review, there was difficulty in finding articles that addressed the researched topic, evidencing the scarcity of studies about this subject. The researches of the two articles were conducted in specific ethnic groups, with different age groups and methodologies, precluding comparisons between the studies and demonstrating the importance of further scientific research on dental pain, to better understand the oral problems in this population and thus facilitate the planning of strategies to improve the oral health conditions and quality of life of these people.

The formulation of a national policy for Indigenous health has been discussed more specifically since the 1st National Conference on the Protection of Indigenous Health, which took place in 1986. The paths pointed out by the I and II National Health Conferences for Indigenous People were consolidated only in 1999, with the creation of Special Indigenous Health Districts (DSEIs). This proposal determines that the model adopted for the health care of Indigenous communities should be based on a differentiated and global approach, contemplating aspects of health care, basic sanitation, nutrition, housing, environment, land demarcation, health education, and institutional integration. In addition, it foresees that the state must provide the necessary means for Indigenous communities to improve and control their health, rather than simply providing medical services [13].

However, there is a notable lack of data that allows, even in a general manner, an approximation of the oral health conditions of Indigenous people in Brazil. It is fundamental to minimally characterize the local conditions for the implementation of an oral health program. Without prior knowledge on the oral health situation, it is not possible to establish goals for the programs and consequently it is not possible to evaluate their effectiveness [13].

A fundamental issue for the implementation of oral health programs in the DSEIs is the need to prioritize the preventive dimension, which must be closely integrated with educational actions. To be successful, community health and education programs should consider the sociocultural, political, and economic context of each community, something that requires careful planning and continuity of actions over time [13].

The health conditions of Indigenous people around the world tend to be precarious. There are many problems in the access to health services, such as: low levels of education and economic status, marginalization, and social inequalities that lead to greater social vulnerability, which is expressed in worse health indicators than in non-Indigenous populations [11]. Ethnic and cultural patterns in the utilization of oral health services are associated with perceptions of treatment needs and self-evaluation of oral health, thus improvements in oral health conditions among Indigenous people require health policies to reduce barriers and increase the availability of health promotion and disease prevention services.

In Brazil, the structuring of primary care services for the Indigenous population should follow the guidelines of the National Policy for Indigenous People's Health, which establishes institutional policies and mechanisms for differentiated health care. This does not assume a mechanical incorporation of traditional practices into health services, but favors the strengthening of links between primary care services and existing Indigenous self-care practices [10].




■ Conclusion

This review demonstrated that there are few studies on the researched topic, which highlights the need to develop more research in this area to allow comparisons and obtain the best scientific evidence on the researched topic. Therefore, the conclusion of this review must be interpreted with caution due to its fragility related to the small number of publications found on the researched topic.

Nearly one third of the Indigenous population in Midwest Brazil has already experienced toothache, which demonstrates a very unequal situation related to Indigenous oral health, since the percentage of people who have experienced toothache in the non-Indigenous population is lower.

It was observed that fewer adolescents in Indigenous communities are caries-free when compared to adolescents in the general population, and toothache is more frequent in individuals with more dental caries experience. Toothache was associated with self-perceived poor oral health, and the authors also found that toothache and reported difficulty in speaking were more relevant than chewing for self-evaluation of oral health in the sample.

■ Authors' Contributions

DBV	 https://orcid.org/0000-0002-8750-0782	Conceptualization, Methodology, Validation, Formal Analysis, Investigation, Writing - Original Draft and Writing - Review and Editing.
MVC	 https://orcid.org/0000-0001-5936-7534	Conceptualization, Methodology, Investigation and Writing - Review and Editing.
MHMB M	 https://orcid.org/0000-0002-3227-7608	Conceptualization, Methodology, Validation, Formal Analysis, Investigation, Writing - Original Draft, Writing - Review and Editing and Supervision.
All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.		

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None.

■ Conflict of Interest

The authors declare no conflicts of interest.

■ Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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