Impact of oral comorbidities on incarcerated women: an integrative review

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ABSTRACT

Introduction: Oral health care directly impacts the well-being of incarcerated women. It is related to the quality of life, social and economic discrepancies and lack of access to programs that offer free dental services and health promotion for this population.

Objectives: This work aimed to understand oral health challenges faced by women incarcerated in Brazil and worldwide.

Material and method: The following databases were selected: EMBASE, (Virtual Health Library=LILACS+BDENF), Scielo, Scopus, Cochrane-Library and the PubMed search engine. These databases were searched until the closing date of October 2021 with no time limit for the searches. The key words used in the searches were “incarceration”, “prison”, “woman”, and “oral health”.

Results: Caries, periodontal disease, tooth pain, and the use of dental prostheses were the most prevalent oral health conditions amongst incarcerated women in Brazil and worldwide. Regarding the level of scientific evidence, the included articles fit level III, according to Melnyk and Fineout.

Discussion: Bearing in mind the limitations of the study, oral diseases in the global context showed that the quality of life related to oral and systemic health of women during and after incarceration was negatively affected. It is also essential for further clinical and follow-up studies to be carried out on incarcerated women that address their actual oral health needs.

Key words: oral health; women; prisons; review.
periodontal disease, and high rates of tooth loss have been observed amongst prisoners.\textsuperscript{7,8} However, the incidence and prevalence of oral diseases in the incarcerated population has not yet been fully assessed, and the unsatisfactory oral conditions reported may come from situations of abandonment and social vulnerability experienced by inmates prior to incarceration, but further research is needed to confirm this hypothesis.\textsuperscript{6,9,10}

It is known that incarcerated women have a history of neglect and unmet needs, while incarceration also contributes significantly to the development or worsening of oral conditions (Soares et al.)\textsuperscript{11}. Activities to encourage oral health promotion and prevention for this group are therefore needed. According to Fadel et al.,\textsuperscript{5} this context is also an obstacle for health professionals, who have to deal with social imbalances, problems and the unwillingness of the State to fulfill its obligations.

Thus, based on the assumption that oral health is essential for maintaining quality of life and the fact that its consequences can have an impact on systemic health, this study aimed to understand the oral health challenges of incarcerated women in Brazil and worldwide. For this, an integrative review of the scientific literature available on the subject was carried out.

MATERIAL AND METHODS

This integrative review followed the methodological rigor described by Hermont et al.,\textsuperscript{12} which provides support for new research, clinical resolutions in dentistry, and gaps in knowledge that need to be filled. The following methodological steps were followed:

1. Elaboration of the central question of this research.
2. Determination of the exclusion/inclusion criteria.
3. Searches in several databases.
4. Extraction of the selected data.
5. Analysis of the information obtained.
6. Discussion of the hypotheses raised.
7. Synthesizing the knowledge from the study.

Integrative review research question

The objective proposed by this integrative review was to address the following guiding question: “What are the oral health conditions of incarcerated women in Brazil and worldwide?” To this end, it followed the PICo approach (Population= Incarcerated women; Interest= Oral health conditions during incarceration)

Oral health conditions and Context= Oral conditions identified by dentists amongst incarcerated women).\textsuperscript{13}

Data sources and search strategy

Strategic searches were performed in the databases: Excerpta Medica database (EMBASE), Virtual Health Library= Latin American and Caribbean Literature in Health Sciences + Nursing Database (BVS= LILACS+BDENF), Scientific Electronic Library Online (Scielo), Scopus, Cochrane Library and the PubMed search engine. The included studies were published until October 2021, without the use of time restrictions for the search. The keywords used in the search were: “incarceration”, “prison”, “woman”, and “oral health” separated by the Boolean algorithm “AND” between words as shown in the diagram below. The term “incarceration” is commonly used to denote the correctional facility and the terms “incarceration,” “jail,” and “prison” are frequently joined in the American English language as described in Dumont’s et al.\textsuperscript{14} study and applied by Baker et al.\textsuperscript{15} in his integrative review. The references were exported to the EndNote™ Program version X7 (Thomson Reuters, New York, NY, USA) and duplicates were removed.

Eligibility criteria

Articles published in full that exclusively addressed the theme of oral health conditions of incarcerated women and in the English language were included. Review articles, letters to the editor, brief communications and publications in proceedings were excluded.

Selection and summarization of studies

The Rayyan selection platform was used to carry out the inclusion/exclusion of the articles and the included studies were critically analyzed in four important steps:

1. Reading of the title and abstract.
2. Full, systematized and critical reading of the selected information.
3. Summarization of the data by two calibrated and independent researchers (co-authors M.T.M.L. and R.U.O.S.), and in conflicting situations of the information, a third evaluator was selected (co-author F.I.D.C.).
4. Categorization of information was conducted according to the levels of evidence described by Melnyk and Fineout-Overholt\textsuperscript{16}:
   - Level 1: Meta-analysis of multiple controlled studies.
• Level 2: at least one randomized controlled-trial.
• Level 3: Study with quasi-experimental design.
• Level 4: Experimental studies study with non-experimental design such as correlational and qualitative descriptive research or case studies.
• Level 5: Case report or systematically obtained data of verifiable quality or program evaluation data.
• Level 6: Qualitative studies and
• Level 7: Opinion of reputable authorities based on clinical competence or expert committee opinion, including interpretations of non-research based information.

The selected articles were summarized according to the instrument described by URSI16, identifying the author’s name, year, country, sample number, paper title, study objective, research conclusion, and the level of scientific evidence as shown in Table 117,18.

RESULTS

115 publications were initially identified in the selected databases. Of these, 28 articles were in duplicity and 83 articles were excluded for not answering the guiding question. Thus, 4 original articles that evaluated the oral health conditions of incarcerated women were retained (Figure 1).

The articles in this study were classified as scientific evidence level III, according to the classification of Melnyk and Fineout-Overholt (Table 1).

Table 2 shows the oral health conditions identified in the studies. Only one study reported periodontal disease and caries in incarcerated women (Soares et al.)11. There was no statistical difference among dental pain, tooth loss, and the use of prosthesis (Rodrigues et al.)19. On the other hand, significant differences regarding the impacts of oral health conditions on incarcerated women were pointed out by Soares et al.11 and Moraes et al.20. In addition, Brazil was the country that predominantly reported the oral health conditions of incarcerated women (n=3-75%).

DISCUSSION

This integrative review allowed us to determine which oral health conditions affect incarcerated women in Brazil and in the World. Determining these comorbidities is important to outline public health policies for this segment of the population, since the prison system has structure deficiency, rarely presenting an ideal environment for humanized treatment.

Thus, the demographic profiles of these populations will be discussed, as well as their relationship to oral health conditions, such as caries, periodontal disease, dental pain, tooth loss, and the need for dental prostheses.

Demographic profile of incarcerated women

The analysis of the sociodemographic profile of female inmates reveals that the predominant age group is between the second and third decade of life21, which matches the study conducted by Soares et al.11 in Paraná, in which 42.9% of the women had an average age of 47.5 years and 47.5% were black.

In this context, the sociodemographic profile of prisoners is mostly young, poor, black and/or brown women, single mothers, with low education levels and who have committed crimes related to drug use or trafficking, according to Monteiro et al.21.

Dental caries in incarcerated women

Given the various clinical conditions recorded amongst incarcerated women, it was possible to identify that caries is highly prevalent in this segment of the population. A study conducted in Brazil analyzed oral health conditions and their consequences in 305 women inmates at the prison of Paraná11. It was observed that 256 (83.9%) of them had cariogenic lesions in their oral cavity. Similar results were observed in Karnataka, India22 and Malmo, Sweden23 in which 97.5% and 66% of the prison population had at least one carious tooth in their oral cavity.

According to Walsh et al.24 the high rate of caries occurs because the prison population is more inclined to practice habits deleterious to health, a strictly cariogenic diet and poor oral hygiene. Therefore, it can be seen that dental caries is a prevalent oral condition in the prison system in Brazil and in the world.

Periodontal disease in incarcerated women

Periodontal disease is characterized as a dysbiotic disease that affects the supporting tissues of the oral cavity. Like caries, periodontal disease is also influenced by poor oral hygiene25.

Soares et al.11, found significant values for periodontal disease parameters. As such, imprisoned women had 66.9% gingival bleeding and 17.7% perio-
Table 1. Studies included in the integrative review.

| Name/Year | Country | Sample (n) | Title of the paper | Study objectives | Conclusion of investigation | Level of Scientific Evidence |
|-----------|---------|------------|--------------------|-----------------|----------------------------|-----------------------------|
| Moraes et al. | Brazil | 99 | Self-Perceived Impact of Oral Health on the Quality of Life of Women Deprived of Their Liberty | Measure the self-perceived impact of oral health on the quality of life of Brazilian women in detention. | Our study revealed the self-perceived impact of oral health on the quality of life of female inmates in a prison unit in Minas Gerais. The results show the need for greater investment in the prison system, in the sense of expanding and qualifying oral health services to allow access to vulnerable groups and reeducate them, and it is also expected that the findings of this research may support health strategies for women: incarcerated women not only in the municipality of Juiz de Fora but also for the entire female prison population. | Cross-sectional |
| Rodrigues et al. | Brazil | 65 | Locked Mouths: Tooth Loss in a Women’s Prison in Northeastern Brazil | Locked Mouths: Tooth Loss in a Women’s Prison in Northeastern Brazil. | Given this context, there is need for better organization of the prison system in order to improve dental services and allow greater resolution and efficiency of the dental assistance aimed at this population. Therefore, there is a need for the implementation of actions intended to inform and promote oral health and prevent further tooth loss and prosthetic rehabilitation in order to restore the oral health of these women and thus to contribute to their social reintegration. | Cross-sectional |
| Soares et al. | Brazil | 305 | Impact of oral conditions on the quality of life of incarcerated women in Brazil | Analyze the impact of oral health conditions on the quality of life | Based on these findings, we advocate that health assistance of imprisoned populations should be guided not only by the mitigation of oral health problems and oral rehabilitation, but mainly by the empowerment of detainees regarding self-care, prevention, and well-being, based on comprehensive care practices and health promotion. | Cross-sectional |
| Treadwell et al. | United States | 98 | Implications for Improving Oral Health Care Among Female Prisoners in Georgia’s Correctional System | The purpose of this study was to assess the barriers that impact female inmates’ access to oral health care prior to incarceration within Georgia’s prison and this study sought to determine the need for improved comprehensive oral care programs within Georgia’s prison and the community at large and identify service and policy gap in the oral health network in Georgia to assist incarcerated women and those re-entering society with oral care needs. | Women, specifically those who reside within correctional settings, represent only a fragment of the total unserved population. Despite the overwhelming plurality of respondents understanding the need for care, cost and dental insurance status still hindered care attainment. Dentists, dental hygienists, organized dentistry, and policymakers must be engaged to support the development of policies and practices needed to reduce oral health disparities and advance oral health equity. Moreover, comprehensive solutions should be created that address the systemic challenges associated with establishing or maintaining an oral health home, providing quality oral health services, and reducing the costly burden of episodic care. | Cross-sectional |
dental pockets. In the study by Testa and Fahmy, incarcerated persons in the United States showed poor results regarding periodontal disease.

In addition to insufficient oral hygiene associated with the lack of preventive measures and inefficient treatment for oral diseases, habits such as smoking are closely related to periodontal disease. The high rate of smokers has a considerable impact on high rates of periodontal disease in the incarcerated population. Therefore, it is inferred that women deprived of liberty are more likely to acquire unfavorable habits to both systemic and oral health, which significantly affects the quality of life.

Dental pain and tooth loss amongst incarcerated women

Dental pain can be caused by both odontogenic and non-odontogenic factors. Added to this, tooth loss, as described in the prospective longitudinal study by Velden et al., is related to caries, periodontal disease, education, gender, and smoking. Of these, caries was the most relevant factor. In this integrative review, the work of Soares et al. and Rodrigues et al. showed results regarding tooth loss (57% and 50%) and toothache (72% and 64.7%), as well as, a 40% association between these two variables. Thus, there is an evident relationship between these results and the poor dental care offered to incarcerated women, since quick and conclusive treatment for pain is extraction.

Oral rehabilitation amongst incarcerated women

According to Bansal et al., prosthetic rehabilitation has the ability to reduce and or eliminate deficits

| Name/ Year | Oral conditions | Sample (n) | Yes n (%) | No n (%) | Significance/ p value |
|------------|-----------------|------------|-----------|----------|----------------------|
| Soares et al. (2019) | Dental Caries | 305 | 256 (83.9) | 49 (16.1) | Sig. |
| Soares et al. (2019) | Periodontal Disease | 305 | 204 (66.9) | 101 (33.1) | Not sig. |
| Rodrigues et al. (2014) | Dental Pain | 24 | 12 (50.0) | 12 (50.0) | Not sig. |
| Soares et al. (2019) | Tooth loss | 305 | 174 (57.0) | 131 (43.0) | Sig. |
| Rodrigues et al. (2014) | Prosthesis | 65 | 19 (29.2) | 46 (70.8) | No information |
| Soares et al. (2019) | | 305 | 39 (12.8) | 266 (87.2) | Sig. |

Note. Significant: p< 0.05; Not significant: p> 0.05.
attributable to tooth loss\textsuperscript{28}. In the studies of Rodrigues et al.\textsuperscript{19} and Soares et al.\textsuperscript{11} these needs were also identified in 29.2\% and 12.8\% of incarcerated women. The use of prostheses is extremely low in relation to the needs for their use in prison systems, going beyond problems related to the lack of dental elements, since deep changes in biological and biopsychosocial behavior are present in these segments of the population\textsuperscript{28,29}.

Partial study limitation

A partial limitation of this study is the lack of literature when the issue is the oral health of women in the context of the prison system. The lack of studies in other populations, as well as the low number of research articles that longitudinally associate the impact of oral diseases and the influence on quality of life during and after incarceration. Despite this, the articles included in the sample allowed us to delineate what oral comorbidities exist amongst incarcerated women in Brazil and abroad.

CONCLUSION

The incarceration of women is an important social condition and determinant of their oral health conditions and may, consequently, jeopardize their well-being. Prison conditions and lack of adequate health care result in unfavorable health conditions for incarcerated women.

These results and the lack of studies related to the oral health of incarcerated women suggest the urgent need to know more about the oral health conditions of these women, so that health actions can be planned, both from a preventive and curative point of view. In addition, interest-based action and activities with other health stakeholders may contribute to improving the oral health conditions of this population.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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