ANALYSIS OF BRAZILIAN ORAL HEALTH EPIDEMIOLOGICAL SURVEYS: A METHODOLOGICAL ANALYSIS

LEVANTAMENTOS EPIDEMIOLÓGICOS NA SAÚDE BUCAL BRASILEIRA: UMA ANÁLISE METODOLÓGICA

ENCUESTAS EPIDEMIOLÓGICAS EN SALUD BUCAL BRASILEÑA: UN ANÁLISIS METODOLÓGICO

Lílian de Oliveira Silveira¹
Bruna Oliveira Silva²
Suzely Adas Saliba Moimaz³
Nemre Adas Saliba⁴
Tânia Adas Saliba⁵

DOI: 10.54751/revistafoco.v1n11-044
Recebido em: 09 de Outubro de 2023
Aceito em: 09 de Novembro de 2023

ABSTRACT

Introduction: Epidemiological surveys in oral health seek to assess the health situation and carry out surveillance of health actions. Objective: The objective of this study is to analyze the methodologies utilized in the National Epidemiological Surveys on Oral Health in Brazil, aiming to contribute to its improvement, considering local realities. Methods: This is a descriptive, observational study with an ecological design. The analysis is based on the notable Brazilian epidemiological surveys. Results: The development of instruments and indices guided the structuring of the analysis of community situational injuries, decentralizing the tool as a potential resource for regional diagnoses. The surveys highlighted epidemiological changes in oral health in Brazil in recent years, as well as a review of the World Health Organization's recommendations for epidemiological surveys in oral health. Conclusions: In summary, the comprehensive reflections for constructing national-level oral health diagnoses express the technical-scientific and political maturation of epidemiology and collective oral health.

Keywords: Epidemiological surveys; public health dentistry; epidemiological methods; sampling; data collection.

¹ Master in Collective Health in Dentistry by Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP). Rua José Bonifácio, 1193, Vila Mendonça, Araçatuba, SP, Brasil, CEP: 16015-050. E-mail: lillian.silveira@unesp.br
² Master in Collective Health in Dentistry by Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP). Rua José Bonifácio, 1193, Vila Mendonça, Araçatuba, SP, Brasil, CEP: 16015-050. E-mail: bruna.oliveira05@unesp.br
³ PhD in Preventive and Social Dentistry by Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP). Rua José Bonifácio, 1193, Vila Mendonça, Araçatuba, SP, Brasil, CEP: 16015-050. E-mail: suzely.moimaz@unesp.br
⁴ PhD in Preventive and Social Dentistry by Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP). Rua José Bonifácio, 1193, Vila Mendonça, Araçatuba, SP, Brasil, CEP: 16015-050. E-mail: nemre.saliba@unesp.br
⁵ PhD in Dental Radiology in Legal Dentistry and Deontology by Universidade Estadual de Campinas. Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP). Rua José Bonifácio, 1193, Vila Mendonça, Araçatuba, SP, Brasil, CEP: 16015-050. E-mail: tania.saliba@unesp.br
ANALYSIS OF BRAZILIAN ORAL HEALTH EPIDEMIOLOGICAL SURVEYS: A METHODOLOGICAL ANALYSIS

RESUMO

Palavras-chave: Inquéritos epidemiológicos; odontologia em saúde pública; métodos epidemiológicos; amostragem. coleta de dados.

RESUMEN

Palabras clave: Encuestas epidemiológicas; odontología en salud pública; métodos epidemiológicos; muestreo; recolección de datos.

1. Introduction
Epidemiological surveys play a pivotal role in assessing needs, diagnosing populations, estimating treatment demands, and evaluating the provision of health services and health promotion initiatives. The gathered data facilitates the planning, execution, and assessment of healthcare interventions and enables inferences regarding the overall efficacy of services. Furthermore, it facilitates comparisons of prevalence across distinct timeframes and geographical regions
Data is employed to evaluate oral conditions in specific populations, either locally or globally, to comprehend the present state and monitor trends in oral health-related diseases or occurrences (RONCALLI ET AL., 2012). One of the primary goals of epidemiological surveys is to enable population comparisons and provide support for the formulation of public policies or the assessment of the impacts of healthcare measures (KASSEBAUM ET AL., 2017). The selection of indices and indicators is primarily guided by epidemiological principles and varies based on the objective of the analysis across the lifecycle (RONCALLI ET AL., 2012; SOARES ET AL., 2017; SILVA JUNIOR ET AL., 2021). However, methodological adaptations can be made for specific aims, such as extending the age range under investigation or altering the data collection site, to monitor, diagnose, and manage demand (RONCALLI ET AL., 2012; ANTUNES & PERES, 2013), with the intention of mitigating social disparities in oral health (PERES & ANTUNES, 2015).

Hence, community-oriented diagnostic resources must be practical, reproducible, and cost-effective (RONCALLI ET AL., 2012; PEREIRA, 2009). In the realm of public health, epidemiological knowledge is indispensable for the planning and evaluation of healthcare services (BERNABE ET AL., 2020). The Law 8080 of 1990, as endorsed by the National Oral Health Policy (PNSB) (MINISTRY OF HEALTH, 2004), mandates that the development of health actions and services be informed by "the application of epidemiology for establishing priorities, allocating resources, and providing programmatic guidance" (RONCALLI, 2006; GOLDBAUM, 1996).

The implementation of the Unified Health System (SUS) proposed in the 1988 Constitution (BRAZIL, 1988) presented a significant challenge to conventional models of dental service delivery, which were based on school systems and demand-driven healthcare services (NARVAI, 1994; ZANETTI ET AL., 1996). The utilization of epidemiology aims to underpin the creation of more
efficient, effective, and equitable models, transcending exclusionary and narrow approaches (RONCALLI, 2006).

In Brazil, the principal nationwide data generation endeavors are encapsulated in the three epidemiological surveys on oral health conducted in 1986, 1996, 2003, 2010, and 2020. These undertakings signify the commitments of the federal-level oral health sector to furnish data that contribute as inputs for the formulation and evaluation of public policies, as well as to propose relatively standardized methodological models for Brazil. Each of these experiences reflects the cumulative technical-methodological insights of collective oral health and epidemiology, as well as the political evolution of the oral health sector as a domain of intervention within the national health policy at different junctures (RONCALLI, 2006). The objective of this study is to scrutinize the methodologies employed in the National Epidemiological Oral Health Surveys, with the aim of enhancing them based on local circumstances.

2. Method

Approval from the Research Ethics Committee was deemed unnecessary for the preparation of this article. This study adopts an epidemiological, observational approach with an ecological design and entails a descriptive analytical investigation focused on outlining the methodologies utilized in the epidemiological surveys carried out in 1986, 1993, 1996, 2003, 2010, and 2020, as detailed by the Ministry of Health. The analysis centers on temporal adjustments. A theoretical framework, presented in Table 1, is employed to analyze the temporal modifications and identify factors that potentially influenced the methodology and expansion of oral health among the Brazilian population.

This section deliberates on various factors, encompassing population subgroups, chosen age indices and age groups, and sample size. Noteworthy retroactive modifications and additions to the age groups and age indices are also highlighted (OLIVEIRA ET AL., 1998).

Table 1: Bellow, Historical methodological aspects of Brazilian oral health surveys

<table>
<thead>
<tr>
<th>Survey Year</th>
<th>Sampling Methodology</th>
<th>No. of people</th>
<th>Age Group</th>
<th>Variables Investigated</th>
<th>Calibration</th>
<th>Exam Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>Urban areas of 16 state capitals where FSESP* was available</td>
<td>N= No information</td>
<td>Index Ages 6,7,8,9,10, 11,12 Age Groups 15 to 19 years 35 to 44 years 50 to 59 years</td>
<td>Income Gender, DMFT INDEX and DFT - decayed deciduous teeth index CPI TN Full denture Care Oral hygiene habits</td>
<td>From the supervisor Future multipliers.</td>
<td>Courtyard s and corridors with natural light and some in dental offices</td>
</tr>
<tr>
<td>1993</td>
<td>Urban-zone schools in 114 cities (22 capitals) Population of SESI schools, no information on public schools Estimated sample N= 110640</td>
<td>N=110640 schools N = 58450 from SESI N = 52190 from public schools.</td>
<td>Index ages 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14</td>
<td>DMFT INDEX and DFT index</td>
<td>There is no evidence</td>
<td>Non-clinical setting; usually in the schoolyard.</td>
</tr>
<tr>
<td>1996</td>
<td>Urban area of all capitals (26) and Brasilia Sampling from WHO and Brazilian MS Manual Estimated sample N= 30240</td>
<td>N=30240 school children</td>
<td>Index ages 6, 7, 8, 9, 10, 11, 12</td>
<td>Sex , DMFT INDEX and dft index</td>
<td>Calibration : national, regional, state and municipal, but no report of the concordance calculation and results</td>
<td>The information is not in the report.</td>
</tr>
<tr>
<td>2003</td>
<td>Urban and rural areas in 250 Brazilian</td>
<td>N=10892 1</td>
<td>Index ages 5 years 12 years Age groups 0-</td>
<td>Socio-economic characterizati on, Access,</td>
<td>Calibration : national, regional, state and</td>
<td>Non-clinical environment under</td>
</tr>
<tr>
<td>Year</td>
<td>Municipalities</td>
<td>Estimated Sample</td>
<td>Age Groups</td>
<td>Variables</td>
<td>Calibration</td>
<td>Calculation Method</td>
</tr>
<tr>
<td>------</td>
<td>----------------</td>
<td>------------------</td>
<td>------------</td>
<td>-----------</td>
<td>-------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>2010</td>
<td>150 municipalities drawn among the 5 regions. In all, there are 27 capitals, plus 5 inland municipalities, one for each region, totaling 32 domains. The Primary Sampling Units (PSU) were: (a) municipality, for the interior of the regions; and (b) census sector, for the capitals.</td>
<td>N = 37 thousand individuals</td>
<td>18 months 15 to 19 years 35 to 44 years 65 to 74 years</td>
<td>Self-perception, Sex, Ethnic group, Fluoride in water, DMFT INDEX, DFT INDEX, CPI, PIP, AG, Dean's index, DAI, Malocclusion, Prosthesis need, Treatment need, Soft tissue change.</td>
<td>Municipal; calculation of percent agreement or Kappa</td>
<td>Natural light.</td>
</tr>
<tr>
<td>2020</td>
<td>27 capitals and 395 municipalities</td>
<td>N = 50.8000</td>
<td>index 5 12 years, 15 to 19 35 to 44 years 65 to 74 years</td>
<td>Socioeconomic characteristics, Self-perception, Gender, Ethnic group, Caries, Dental trauma, Fluorosis, Malocclusion, Prosthesis use and need, Treatment need, Referred morbidity, Dental service use and impacts of oral health on daily life.</td>
<td>Calibration: national, regional, state and municipal; calculation of percent agreement or Kappa</td>
<td>Non-clinical environment under natural light.</td>
</tr>
</tbody>
</table>
4. Development

After this stage, a theoretical model was built of the aspects that could potentially influence the oral health conditions of the Brazilian population. And point out how the National Oral Health Policy expanded Brazilians' access to health services.

4.1 Flowchart

![Flowchart Image](Imagem 1. Influence of the National Oral Health Policy Processes on surveys)

4.2 Results

The selection of population groups for the study should consider the various characteristics that oral diseases may present in different contexts, including geographical, socioeconomic, and ethnic differences (OLIVEIRA et al., 1998).
4.3 1986 Survey

This survey was associated with the Cariogenic Prevention Program (PRECAD), influenced by the Sanitary Movement, the VIII National Health Conference, and the establishment of the Brazilian National Oral Health Division (DNSB) (RONCALLI et al., 2012). The initial report on the epidemiological survey with national scope in Brazil was released and published within this context. However, the survey was exclusively conducted in capital cities (16 out of 27) and was considered the primary reliable epidemiological estimation of oral health in Brazil (BRAZIL, 2002; CHECCHI et al., 2021). Dental examinations (utilizing exploratory probes) were carried out in specific private offices and school environments (BRAZIL, 1986). The addressed issues included dental caries, periodontal disease evaluated through the Community Periodontal Index of Treatment Needs (CPITN), prosthetic utilization and needs, along with details about dental service utilization and oral hygiene habits. Nevertheless, the report did not present outcomes regarding the latter aspect (SÃO PAULO STATE DEPARTMENT OF HEALTH, 2002).

The samples consisted of 120 students selected from primary and secondary schools, covering age groups from 6 to 12 years. Examinations for adults and older individuals (ages 15-19, 35-44, and 50-59) were conducted in households and dental clinics, respectively.

4.4 1987 Survey

In the 1987 edition (BRAZIL, 1988), the process of determining the sample size was simplified. According to the manual, "the standardized number of individuals in each age group or index age to be examined ranges from 25 to 50 for each group or sample point, depending on the prevalence and severity of oral disease" (WORLD HEALTH ORGANIZATION, 1997).

4.5 1993 Survey

This survey was a component of the preventive program for oral diseases among children attending schools in inland cities, although not all Brazilian states were included (MARTINS et al., 2005). Only dental caries were assessed using
an exploratory probe. The Industry Social Service (SESI) was responsible for conducting the survey. The selected population comprised children from SESI schools as part of the Program for the Prevention of Oral Diseases. The survey aimed to establish a baseline for evaluating preventive programs funded by the Ministry of Health through an agreement with the National Department (DN - SESI). Financial support from Kolynos do Brasil was also obtained for report publication. The sample involved public schools and focused solely on caries assessment (MARTINS et al., 2005; PINTO, 1996).

4.6 1996 Survey

The second national-based survey, funded by the Ministry of Health, was conducted in collaboration with the Oral Health Coordination (COSAB) of the Ministry of Health, the Brazilian Dental Association (ABO), the Federal Council of Dentistry (CFO), and State Health Departments. Its objective was to assess the prevalence of dental caries in the country, despite facing criticism, including the exclusion of universities from the process (MINISTRY OF HEALTH, 1996). The sampling plan was confined to capital cities, and a prior calibration of examiners was carried out. Only dental caries were assessed using an exploratory probe in non-clinical settings.

In the 1996 survey (MINISTRY OF HEALTH, 1996), the sample size was determined based on information collected from the World Health Organization’s (WHO) Manual of the Epidemiological Survey. In Brazil, where the prevalence ranged from medium to high, a similar approach to the previous survey was adopted. Forty to fifty individuals were selected per age group, which was deemed sufficient for the situational diagnosis of the population.

The study focused on schoolchildren aged 6 to 12 years in at least four schools in each capital city, with peripheral (public) and neighborhood (public) schools being randomly selected, as well as two schools in the city center (one public and one private). This approach resulted in 1,120 individuals per city, totaling 30,240 participants nationwide (MINISTRY OF HEALTH, 1996).

In more complex sampling plans, the logic of representativeness has a direct relationship with the sample size. In other words, larger sample sizes yield
more accurate results. Therefore, the author Pinto considers this simplified model of sample selection (PINTO, 1990).

4.7 Survey 2003

Following the establishment of the National Oral Health Policy (Brazil Smiling) as a public policy, the SB Brazil 2003 survey was conducted (MINISTRY OF HEALTH, 2004). This survey adhered to the principles of the World Health Organization and included subjective aspects such as socioeconomic characteristics, self-perceived oral health, access to, and satisfaction with dental services. The sample was selected through stratified calculations based on macro-regions and population size, encompassing urban and rural areas in all Brazilian states, with the collaboration of dental universities (MINISTRY OF HEALTH, 2004; MINISTRY OF HEALTH, 1999).

The SB Brazil 2003 survey had a larger sample size and stricter methodological rigor compared to previous surveys. It investigated soft tissue alterations not previously analyzed, as well as indices related to periodontal attachment loss (IPC), gingival alterations (AG), dental aesthetics under the Dental Aesthetic Index (DAI), and dental fluorosis under the Dean Index (WORLD HEALTH ORGANIZATION, 1997), as well as the use and need for total prostheses, removable prostheses, and fixed bridges. Examiner calibration and assessment of agreement using the Kappa index were conducted (BRAZIL, 2004). This survey portrayed the Brazilian reality more faithfully, significantly improving the employed methodology. However, it faced some criticism from the academic community due to flaws in crucial steps such as data recording and archiving.

4.8 Survey 2010

In 2010, the National Oral Health Survey - SB Brazil 2010 - was conducted as a follow-up to the national surveys. It was a multicenter cross-sectional study with a qualitative approach, encompassing the entire country and coordinated by the Ministry of Health. State and municipal health departments from the five Brazilian macro-regions participated, along with dental professional
organizations, research institutes, and universities (MINISTRY OF HEALTH, 2010).

This survey was executed with a methodological proposal suggested as a strategy for the development of the health surveillance axis of the National Oral Health Policy (PNSB). It was conducted in 26 state capitals, the Federal District, and 150 municipalities in the interior with different population sizes. There were methodological advancements compared to previous surveys, particularly in the evaluation of prosthesis needs, the Community Periodontal Index (CPI), and the inclusion of additional indices such as dental trauma. The sample included capitals considered as domains, with the inclusion of 150 municipalities in the interior, divided into groups of 30 per region (RONCALLI et al., 2012).

4.9 The Surveys of 2003 and 2010: Methodological Considerations

The surveys conducted in 2003 (MINISTRY OF HEALTH, 2004) and 2010 (MINISTRY OF HEALTH, 2012) shared similar approaches. In the 2003 Brazilian SB survey, a probabilistic sample was designed, involving clusters representative of age groups and the five Brazilian regions. However, it did not incorporate the necessary sample weight calculations to generate estimates for the Brazilian population (QUEIROZ ET AL., 2009).

After making adjustments, a compatibility screening of all variables used in this study was performed, leading to the creation of a unified database. The "year" variable was introduced to differentiate the data from each survey (SOUZA ET AL., 2021). The analyses were then conducted, considering the data as originating from a simple random sample. Consequently, retrieving design information from this survey to incorporate the essential weighting variables was imperative. It's noteworthy that the SB Brazil 2003 database (MINISTRY OF HEALTH, 2004) faced issues related to recording and archiving survey documents (Reifur & Moysés, 2018).

In the SB Brazil 2010 survey (MINISTRY OF HEALTH, 2012), data analysis accounted for sample weights and conglomerate effects. The census sector or municipality served as the primary sampling unit, and the weights were calculated based on the probabilities at each stage (RONCALLI ET AL., 2012).
The surveys conducted in 2003 (MINISTRY OF HEALTH, 2004) and 2010 (MINISTRY OF HEALTH, 2012) encompassed various indices related to significant oral health issues. The index values themselves played a role as significant outcome variables, and in certain instances, the indices were reevaluated, leading to the creation of additional indicators, such as the dental care index (proportion of restored components in relation to the total COD), reflecting the coverage of restorative services (Souza et al., 2021).

Within the scope of this study, the following indicators were selected: D-CPD at 12 years old; D-CPD at 15 to 19 years old; care index at 12 years old; care index at 15 to 19 years old; the need for prosthesis (15-19, 35-44, and 65-74 years old); access to dental services at 15 to 19 years old; healthy sextants at 15 to 19 years old; and the need for endodontic treatment at 12 years old (SOUZA ET AL., 2021).

The changes in variable values between 2003 and 2010 introduced new variables indicating reductions or increases over the observed period. The annual percentage change per year of the survey was calculated for dependent variables related to oral health conditions (SOUZA ET AL., 2021). The formula proposed by Nadanovsky and Sheiham (1995) was utilized and is considered sufficient for expressing changes in oral health variables between the years under study.

\[ \text{Modification percentual anual} = \left( \frac{\text{Média 2º ano}}{\sqrt{\text{Média 1º ano}}} - 1 \right) \times 100 \]

Source: Nadanovsky & Sheiham, 1995; Souza et al., 2021

4.10 SB Brazil 2020: Methodology and Sampling Procedures

The SB Brazil 2020 study, as outlined by the Ministry of Health in 2022, employed a stratified sampling technique involving conglomerates. This approach was conducted in one or two stages, contingent upon geographic
domains. Within each stratum, the selection process involved two stages: the identification of census sectors and subsequent households.

For specific age brackets – 15 to 19, 35 to 44, and 65 to 74 – with reference ages set at 5 and 12-year intervals, the sampling process occurred within a singular stage. This stage encompassed a comprehensive survey of households situated within the selected sectors, aimed at identifying eligible children for subsequent interviews. This particular methodology was chosen due to the infrequent occurrence of individuals within these specific age indices, rendering traditional household selection methods inefficient.

Conversely, for other age groups, the sampling approach necessitated a two-stage process: the initial selection of census sectors followed by household selection. The determination of the number of sample sectors was predicated on the ratio between the intended sample size and the projected average number of individuals to be interviewed within each sector. This methodological framework was established in consonance with previous methodologies (Ministry of Health, 2022; Kish, 1995; Silva, 2015), ensuring the robustness of the data collection and analytical procedures.

5. Discussion

Epidemiological surveys have transcended individual and biological-based analysis and diagnosis, deepening care through the exploration of social determinants intertwined with the health-disease process within a collective framework (SOUZA ET AL., 2021).

To enhance the comprehension of factors associated with oral morbidity, it is imperative to consider elements related to health service accessibility while analyzing structural shifts in care. The National Oral Health Policy (MINISTRY OF HEALTH, 2004) delineates a scientific research agenda aimed at monitoring the oral health profile of Brazilians. This initiative guides oral health actions and services based on epidemiological evidence (BUENO ET AL., 2014).

The surveys conducted in 1986, 1993, and 1996 presented certain methodological limitations. From a technical standpoint, the 1986 survey incorporated research techniques involving schoolchildren aged 6 to 12 years
and employed sample modeling for household surveys among adolescents, adults, and the elderly (MINISTRY OF HEALTH, 1996). Despite this, the survey's impact on shaping oral health surveillance strategies was limited, and data dissemination was constrained to the survey report (Roncalli, 2006). Notably, this survey focused on evaluating oral health conditions from an exclusively professional perspective, overlooking the population's perceptions (BUISCHI, 2000).

The surveys conducted in 1993 and 2003 encompassed inland cities, with coverage extending to all states in 2003. The sample size for these surveys was calculated based on stratification by macro-regions and population size. Additionally, the 2003 survey included examinations in rural areas, distinguishing it from its predecessors. Collaboration with professional entities was realized only in the last two surveys, with universities partnering in the 2003 study. All surveys were conducted in non-clinical settings; however, the 1986 survey conducted some examinations in dental offices (NADANOVSKY & SHEIHAM, 1995; PINTO, 1996; RONCALLI, 1998; MINISTRY OF HEALTH, 2017; MINISTRY OF HEALTH, 2004A). The criteria for examinations varied across the four surveys. In 1996 and 2003, the criteria were less "sensitive," encompassing only cavitated caries lesions and secondary lesions. Calibration practices were reported in the 1996 and 2003 surveys (NADANOVSKY & SHEIHAM, 1995; PINTO, 1996; RONCALLI, 1998; MINISTRY OF HEALTH, 2017; MINISTRY OF HEALTH, 2004A).

The 1996 epidemiological survey (SOUZA, 1996; RONCALLI, 2006) built upon previous experiences but was limited to assessing dental caries among schoolchildren aged 6 to 12 years. The sampling plan suffered from inadequate definition of sample size and composition processes (Roncalli, 2006; Roncalli et al., 2000). Consequently, both investigations shared the limitation of insufficient data collection coverage, leading to compromised diagnostic accuracy and methodological processes. The dissemination of results was fragmented (NARVAI, 2000).

The SB Brazil 2000 project expanded its scope to encompass a greater number of municipalities (250 in total, 50 in each region). This expansion unfolded
through regionalization and decentralized planning, adapting to local contexts. The project evaluated a broader array of oral health aspects, including dental caries, periodontal disease, edentulism, malocclusion, and fluorosis. Age groups spanned the entire life cycle, and a qualitative evaluation was incorporated, considering socioeconomic status, health service accessibility, and self-perceived oral health (RONCALLI ET AL., 2000; RONCALLI, 2006).

5.1 The Evolution of SB Brazil Projects: Contributions to Oral Health Surveillance

The initial action of the SB Brazil project, aligned with the Oral Health Goals set for the year 2000 by the World Health Organization (WHO) (NARVAI, 2000), aimed to diagnose the oral health situation in Brazil. This endeavor addressed previously unanalyzed aspects, establishing a methodological foundation that allowed for international comparability and internal replication and institutionalization. The proposal aimed to construct a model of oral health surveillance through primary data generation, incorporating historical nuances of oral health care models (RONCALLI, CÔRTES, ET AL., 2012).

SB2000, concluded in 2003, employed the methodology proposed by the WHO in the late 1990s (WORLD HEALTH ORGANIZATION, 1997B) as a basis. Although it utilized age groups and indices, it adopted a unique sampling design tailored to the intricate Brazilian territorial context (RONCALLI, CÔRTES, ET AL., 2012). From a policy integration perspective, the data gleaned from the SB Brasil Project proved pivotal in shaping the National Oral Health Policy proposed in 2004, known as "Brasil Sorridente" (MINISTRY OF HEALTH, 2005; RONCALLI, 2006).

These national surveys validated diagnostic instruments and analytical methods, including indicator establishment and their correlation with intervention protocols, definitive clarification of management levels' roles in oral health information production and dissemination, and collaboration with other sectors within the information policy (RONCALLI, 2006).

While the two surveys shared similar methodological approaches, differences emerged in their sampling processes. The SB Brasil 2003 survey (MINISTRY OF HEALTH, 2004), though designed for a probabilistic
conglomerate-based sample, representative of age groups and Brazilian regions, did not provide necessary sample weight calculations for national population estimates (QUEIROZ ET AL., 2009).


The SB Brazil 2020 Project (Ministry of Health, 2022) signifies the continuation and solidification of a longitudinal epidemiological oral health program. This initiative originated from the national survey conducted in 1986 (State Health Department, 1999). The survey employed a household-based approach with a representative urban sample from across Brazil, utilizing questionnaires to gauge major oral diseases’ prevalence, along with socio-economic status, dental service accessibility and utilization, self-perception, and oral health impact.

Modifications were introduced upon the previous methodological foundation (MINISTRY OF HEALTH, 2012). These changes, driven by epidemiological shifts in Brazilian oral health and revisions in World Health Organization (WHO) recommendations for oral health surveys published in 2013 (MOIMAZ ET AL., 2022; WORLD HEALTH ORGANIZATION, 2013), reflect the ongoing evolution of the SB Brazil projects and their substantial contributions to oral health surveillance.

The situational analysis forecasts the necessary health investments to mitigate health disparities. The management of oral diseases incurs substantial costs within the healthcare system, prompting surveys to gauge prevalence intertwined with socio-economic aspects. This accentuates the global prioritization of oral health interventions (PERES ET AL., 2019). National public health programs must integrate oral health promotion and ailment prevention,
underpinned by addressing shared risk factors to shape actionable strategies (PETERSEN AND YAMAMOTO, 2005), while grappling with the imperative to address the diverse and immediate oral health needs on a worldwide scale (MARCENES ET AL., 2013).

The continuity and longitudinality of surveys are pivotal to fortify health policies, outline priorities, mitigate health inequities, and strategize interventions. Consequently, population and territorial analyses must be primarily conducted to inform action and service planning congruent with local contexts. This forms the basis for setting goals to enhance services and broaden access. In essence, the culmination of these surveys contributes to the establishment of nationwide oral health diagnoses, underscoring the technical-scientific and political maturation of epidemiology and communal oral health.

These national surveys validate epidemiology as a vital tool for health planning via situational diagnoses, offering insights into the impact of services and programs on oral health accessibility. The development of instruments and indices guides the framework for community situational injury analysis, extending this tool's potential to regional diagnoses. Longitudinal analysis exposes the evolution of survey methodological techniques, thereby empowering oral health public policies and fostering the expansion of services to sustain health surveillance.

5.2 National Oral Health Policy Guiding Principles of Actions

From the perspective of oral health care, the guidelines aim to promote participatory management in order to democratically define the oral health policy, ensuring the involvement of user representatives, workers, and service providers. The policy advocates for care that embodies universality, ethical health practices, and equity. Patient-centered care directs services to develop actions that consider the patient's bio-psycho-social integrity, organized in a user-centric manner by a multidisciplinary team, in a horizontal approach. Within this model, establishing a bond is crucial for humanizing the relationship between patients and healthcare workers. Professional responsibility implies addressing patients'
demands, respecting their autonomy, and working collaboratively to make them the protagonists of their care.

5.3 Work Process in Oral Health

The team’s role must extend beyond the technical realm and encompass a broader professional scope. Care should be integrated with other healthcare professionals to enhance knowledge, share experiences, and approach patients holistically. This collaborative approach enables the offering of promotion, protection, and health recovery measures, with a focus on interdisciplinary collaboration. To engage various sectors influencing human health in the planning process and maximize the capacity of the service network, intersectoriality is pursued. Additionally, the development of supply policies and their oversight is proposed. Parameters guiding the work process should be deliberated and agreed upon by oral health coordinators, with the aim of ensuring dignified working conditions for professionals and patients, maintaining service quality, and adhering to biosafety protocols.

6. Actions

6.1 Health Promotion and Protection Actions:

Embedded within the broad concept of health, this facet endeavors to construct robust public health policies and formulate strategies aligned with demands. Health protection actions can be executed at both individual and collective levels, prioritizing citizens’ autonomy as an integral aspect of health promotion endeavors.

6.2 Water Fluoridation

Water fluoridation stands as a pivotal measure within public health promotion policies aimed at reducing dental caries. Despite being recognized as a significant public health intervention, the unequal access to water supply networks impedes universal fluoridation implementation in the Brazilian context. Notwithstanding substantial national coverage improvement, substantial regional

6.3 Health Education, Supervised Oral Hygiene, and Topical Fluoride Application

In this realm, acquiring knowledge about the health-disease process, including oral health risk and protection factors, is essential to induce behavioral change. The contents of oral health education must be pedagogically crafted, involving the entire oral health team and community health agents. Dissemination of knowledge can occur through various avenues, such as home visits, schools, daycare centers, nursing homes, and institutional spaces. These activities should align with the family health strategy and utilize university resources for planning, organizing, and implementing effective initiatives.

6.4 Recovery and Rehabilitation Actions

The need for prosthetics diminished in 19 out of the 27 state capitals between 2003 and 2010. While Azevedo’s study lacks standardization of this requirement, literature highlights significant regional variations, with higher prevalence in the Northeast (82.9%) and North (80.6%) regions. These trends correlate with socioeconomic, demographic, and service utilization variables. For instance, higher family income and private service usage were linked to reduced prosthetic needs (AZEVEDO, J. S., ET AL., 2017).

6.5 Expansion and Enhancement of Primary Care

Service expansion occurred via care pathways and living conditions. Since the inception of the National Oral Health Policy, SB Brasil has served as the epidemiological survey in oral health that guides and evaluates public policies. Observing across age groups and care pathways aids in the organization of the Health System. In this context, Roncalli et al. (2015) note that despite an overall reduction in DMFT in 2010, socio-economic disparities endured.

6.6 Expansion and Enhancement of Secondary and Tertiary Care

Roncalli et al. (2014) demonstrated that variables tied to primary or
secondary health care services exhibited negligible impacts on the need for restorative, extraction, and prosthetic treatments. Conversely, these treatment needs were significantly associated with individual socioeconomic status, particularly income and education. Moreover, a city-level contextual effect, represented by the HDI, was noted for restorations and prosthetic needs, but not for tooth extractions.

Within the project for expanding and enhancing specialized dental services, the Ministry of Health directed specialized care through Reference Centers for Dental Specialties (CREO). The Family Health Strategy (ESF) serves as the cornerstone directing care via Primary Health Care, acting as a gateway to the health system. The reorganization, maintenance, and training of specialized care predominantly occur through the establishment of Centers of Dental Specialties (CEO) and Regional Dental Prosthesis Laboratories. The initiative also outlines a scientific research agenda aimed at monitoring the oral health profile of Brazilians, thus informing evidence-based oral health actions and services.

6.7 Linking Oral Health Promotion Strategies and Service Provision

The association between oral health promotion strategies, service delivery, and the oral health care model underscores the dependency of public oral health services’ dynamics on health management models. The implementation of the National Oral Health Policy differs among Brazilian capitals. This dissimilarity in guideline implementation influences the evolution of oral health services and promotion strategies. Enhanced service provision, a more focused approach on health promotion, and the overall improvement of socioeconomic indicators collectively contribute to improving the oral health profiles of Brazilians (SOUZA, G. C. DE A., ET AL., 2021).

6.8 National Policy for Oral Health Implementation

The National Policy for Oral Health continues to exert a more active role in state capitals. State influence affects municipal management concerning oral health care organization within the Unified Health System (SUS). The
municipalities, however, do not always synchronize with the implementation of these propositions in terms of timing, pace, or intensity. It's crucial to recognize that the assumptions of the National Policy for Oral Health are unevenly applied across different locations. While progress has been significant in certain areas, others are yet to fully adopt or even partially implement these principles (SOUZA, G. C. DE A., ET AL., 2021).

7. Conclusion

In summary, these conducted surveys collectively contribute to the formulation of national-level oral health diagnoses, reflecting the technical-scientific and political maturation of epidemiology and collective oral health. The national surveys further legitimized epidemiology as a fundamental tool for health planning through situational diagnosis, highlighting the role of services and program contributions to oral health access. The development of instruments and indices guided the structuring of community situational injury analyses, unlocking its potential as a tool for regional diagnoses. Longitudinal analysis underscored the evolution of survey methodologies, fortifying oral health public policies and expanding services to uphold health surveillance.

REFERENCES


ANALYSIS OF BRAZILIAN ORAL HEALTH EPIDEMIOLOGICAL SURVEYS: A METHODOLOGICAL ANALYSIS


ANALYSIS OF BRAZILIAN ORAL HEALTH EPIDEMIOLOGICAL SURVEYS: A METHODOLOGICAL ANALYSIS


35. RONCALLI, A. G.; CÔRTES, M. I. DE S.; PERES, K. G. Perfis


