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Oral healthcare management practices in Brazil: systematic review and metasummary

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Universal health coverage is a global target included in the United Nations Sustainable Development Goals agenda for 2030. Healthcare in Brazil has universal coverage through the Unified Health System (SUS), which guarantees health as basic right to the Brazilian population. Considering the principles of SUS, public oral healthcare management is a huge challenge. **Aim:** To identify good management practices for quality care adopted by local public oral healthcare managers and teams around Brazil. **Methods:** This study was registered with PROSPERO (CRD42017051639). Five databases (PubMed, Embase, Web of Science, Scopus and Lilacs) as well as the reference lists and citations of the included publications were searched according to PRISMA guidelines. **Results:** A total of 30,895 references were initially found, which were evaluated according to the defined eligibility criteria. Twenty qualitative studies, eight surveys and two mixed-model studies were selected. The practices (codes) were organized into three main groups (families), and the Frequency of the Effect Size (FES) of each code was calculated. Among the 20 codes identified, the most relevant ones were: *Diagnosis and Health Planning* (FES=80%) and *Family Health Strategy* (FES=66,7). The Intensity of the Effect Size of each study was also calculated to demonstrate the individual contribution of each study to the conclusions. **Conclusion:** The evidence emerging from this review showed that healthcare diagnosis, planning, and performance based on the family health strategy principles were the most relevant practices adopted by public oral healthcare managers in Brazil. The widespread adoption of these practices could lead to improved oral healthcare provision and management in Brazil.

Keywords: Public health. Dentistry. Policy making. Health policy. Practice management.

Introduction

Health is a valuable resource for sustainable human development. It contributes to national social equality, justice and peace, and increased quality of life. The importance of health in global development is exemplified in the Sustainable Development Goals (SDGs) agenda for 2030 proposed by the United Nations[1]. Specifically, the third SDG seeks to "ensure a healthy life and promote well-being for all, at all ages".

The public health system in Brazil is aligned with this broad SDG, and has been described as a reference model for neighbouring countries[2]. For over 30 years, public healthcare has been enshrined in the Brazilian Constitution as an inalienable right of all members of the population. Brazil operates a Unified Health System (SUS - *Sistema Único de Saúde*, in Portuguese) that was created on the core principles of equity, integrality, and universality of healthcare provision. Under SUS, every person in the country is entitled to free healthcare, and are invited to take part in the formulation, evaluation and control of health policies[3].

Because oral health is inherent to a healthy life, the Brazilian National Oral Health Policy (BNOHP - *Política Nacional de Saúde Bucal,* in Portuguese), a program also known as "Smiling Brazil", was created and incorporated into SUS. This policy has steadily been implemented by stakeholders at various levels, such as consumer protection agencies, public health professionals, and oral health professional[4]. Over the last decade, newer links have been forged between the BNOHP and non-dental actors within SUS such as health workers, managers, and the community. To further integrate oral healthcare within the universal system provided by SUS, practice transformation, and the introduction of new concepts, contents, and forms of organization are required with the overarching intent of improving the oral health of the population[5].

However, managing SUS presents various levels of challenges. The complexity of a universal system in association with the fragmentation of health policies and programs, lack of management qualification and social control, and a hierarchical, regionalized network structure are some of the issues that encumber health actions and services[6]. Under such circumstances, unqualified management can become a critical leadership bottleneck, impairing the implementation of health policies[7]. Furthermore, the role of managers in the public sector is dependent on regulations that sometimes limit their autonomy. Indeed, difficulties experienced by managers in promoting healthcare integration at all levels of the public service have created barriers to full access to proper healthcare[8]. Hence, the combination of inadequate management qualification and the organizational complexities of a health system that is intended to be universal can compromise the very foundational principles of SUS[7].

SUS management has become a major public health issue in Brazil[3], and more effective and efficient public management is required to facilitate the implementation of oral healthcare actions in line with the principles and guidelines of the national healthcare system. Yet, insufficient attention has been given to the role of managers and the qualification they require as a way to achieve SUS objectives.

A possible approach to the problem is to highlight health management models employed in different parts of the country, which have the potential to face the challenges and change the predominant traditional practices that are not in accordance with the BNOHP[9]. Therefore, the aim of this systematic review and metasummary was to identify good management practices for quality care adopted by local public oral healthcare managers and teams around Brazil.

Materials and Methods

Protocol and Registration

This systematic review was conducted in accordance with the Preferred Reporting items for Systematic Review and Meta-Analyses (PRISMA) Statement[10] and was registered with the International Register of Prospective Systematic Reviews (PROSPERO) under the registration number CRD42017051639.

Literature search

The research question that guided this systematic review, according PICOS, was: "What practices have been adopted by local managers and teams within the public health service in Brazil aimed at improving oral healthcare management?". To answer this question, a search was performed in the following electronic databases: PubMed, Embase, Web of Science, Scopus and Lilacs. A search was conducted until September 2021. For the search in the databases, no terms related to the type of study were used, since the term "qualitative research" was introduced only in 1988 in the Embase database and in 2003 as a MeSH term in PubMed.

Search strategy

It was used the PICOS strategy, following terms that were used in the final search strategy: Patient (P) *"policymaker", "policy making", "public health",* Intervention (I) *"dentistry"*. "MeSH terms" (PubMed), "entry terms" (EMBASE) and "Decs" (Lilacs) were also used to "construct" a highly sensitive search strategy. Some initial keywords were selected. Different strategies were tested in the databases, and key words were added or rejected according to the results obtained. Terms related to study type were not used because the term "qualitative research" was only introduced in EMBASE in 1988, and as a MeSH term in PubMed in 2003[11].

Eligibility Criteria

The inclusion criteria were as follows: qualitative studies, surveys, or mixed-model (qualitative-quantitative) articles that indicated the practices adopted by local public health managers to improve oral healthcare management in the Brazilian public sector. No limits were imposed on the date, language, or type of study. Moreover, no study was excluded a priori for reasons of quality. According to Supplementary Guidance for Inclusion of Qualitative Research in Cochrane Systematic Reviews of Interventions[12], this is a strategy that allows that potentially valuable themes remain included.

Study selection, quality assessment, and data extraction followed a similar procedure. Two reviewers (THU and USGS) initially performed the task independently, and then met with a third reviewer (MF) for consultation and consensus.

Study Selection

All titles and abstracts of the articles retrieved were independently assessed by two reviewers (THU and USGS). These reviewers held weekly meetings for 18 weeks in the presence of a third reviewer (MF) with experience in public management, qualitative research and systematic reviews. Abstracts that did not provide sufficient information in relation to the eligibility criteria were maintained for full text evaluation. Afterwards, manual searches were performed in the references of the included articles, and citations were analyzed using Google Scholar. The authors of the included studies were contacted by e-mail for the identification of possible additional studies.

Study Quality Assessment

Qualitative studies were evaluated according to quality items adapted from the Critical Appraisal Skills Program (CASP)[13]; Surveys were assessed based on quality items adapted from Bennett et al.[14] (2010), while mixed-model studies were analyzed according to O'Cathain et al.[15] (2008).

Quality items were assessed and classificated as being present (yes) or absent (no). Studies which presented a prevalence of "yes" (>60% of the evaluated items) in the quality evaluation were considered as presenting low risk of bias. Studies with 40% - 60% of "yes" were considered moderate risk of bias. And studies with a prevalence of "no" (<40% of the items) were classified as presenting high risk of bias.

Data extraction

The following general data were collected from the studies: authors, year of publication, and geographic region of the first author. Additionally, the following specific characteristics were also retrieved: study objective, type of study, place of research, intervention, number of participants in the sample, inclusion and exclusion criteria, participant characteristics, data collection methods, data analysis, main results, and conclusions.

Data analysis

Data analysis was conducted through a metasummary of the retrieved data. This is a quantitatively oriented aggregation approach for the synthesis of both qualitative studies and surveys. The methodology involves extracting, grouping and formatting the results to allow the calculation of the frequency of the effect size (FES) of each practice, and the intensity of the effect size (IES) of each study[16].

After extracting the results of the included studies, and grouping the relevant findings, major topics (concise but comprehensive representations) termed "Families" were created referring to the practices adopted by oral healthcare managers for

quality care. In each Family, individual practices, termed "codes", were grouped based on similarity.

For the coding step, the software ATLAS.ti 8.0 – Qualitative Data Analysis (Atlas.ti® Scientific Software Development, Berlin, Germany) was used. FES was calculated in order to evaluate the magnitude of the extracted results. It consisted on verifying the number of times a particular code emerged from all included articles. To do so, the number of studies that presented an individual code was divided by the total number of studies included, and the result was presented as a percentage.

The IES of each study was calculated by checking the number of times codes emerged in each of the included articles. The calculation was performed to indicate which codes with FES > 25% contributed to answering the research question. In order to do this, the number codes contained in one study was divided by the total number of codes in all the studies. With this calculation, the articles were considered "stronger" or "weaker" based on their contribution to answering the research question. Thus, the number of codes with FES > 25% in one particular study was divided by the number of codes with FES > 25% across all studies[11]. This information assisted in interpreting the data in the metasummary, determining the individual contribution of studies to the conclusions of this systematic review[17].

Results

Study selection

Figure 1 show the flowchart of the study selection process. The initial search in the electronic databases yielded 30,895 references. After the removal of duplicates (3,485 references); title and abstract evaluations (27,385 references), 25 articles were considered potentially eligible. Full texts were retrieved and analyzed by applying the eligibility criteria. After the analysis of the references of these articles, quotes in Google Scholar, and studies indicated by the authors of the selected texts, 35 new articles were included for further eligibility evaluation.

Of the 60 articles selected, 23 were excluded for the following reasons: 3 studies were non-scientific research; 19 articles did not present any practices to improve oral healthcare management; 2 articles were not on Dentistry; and in 6 studies, the subject interviewed could not be clearly identified. In the end of the evaluations, 30 articles were included in the systematic review and metasummary: 20 qualitative studies, 8 surveys and 2 mixed model studies.

Study characteristics

Table 1 presents information on the included studies (number of participants, setting, context of the study). The total number of participants was 1,010, among whom 498 were dentists and 512 were managers. The geographical distribution of the studies was as follows: Amazonas (1 study); Bahia (5 studies); Ceará (2 studies); Minas Gerais (2 studies); Paraíba (2 studies); Paraná (4 studies); Pernambuco (1 study); Rio Grande do Norte (2 studies); Santa Catarina (6 studies); São Paulo (4 studies). Only 1 study was multicentric, involving the states of Paraná and São Paulo.

Most of participants were enrolled in the Family Health Strategy (FHS - *Estratégia Saúde da Família,* in Portuguese), and most health managers held Municipal or State positions (Table 1).

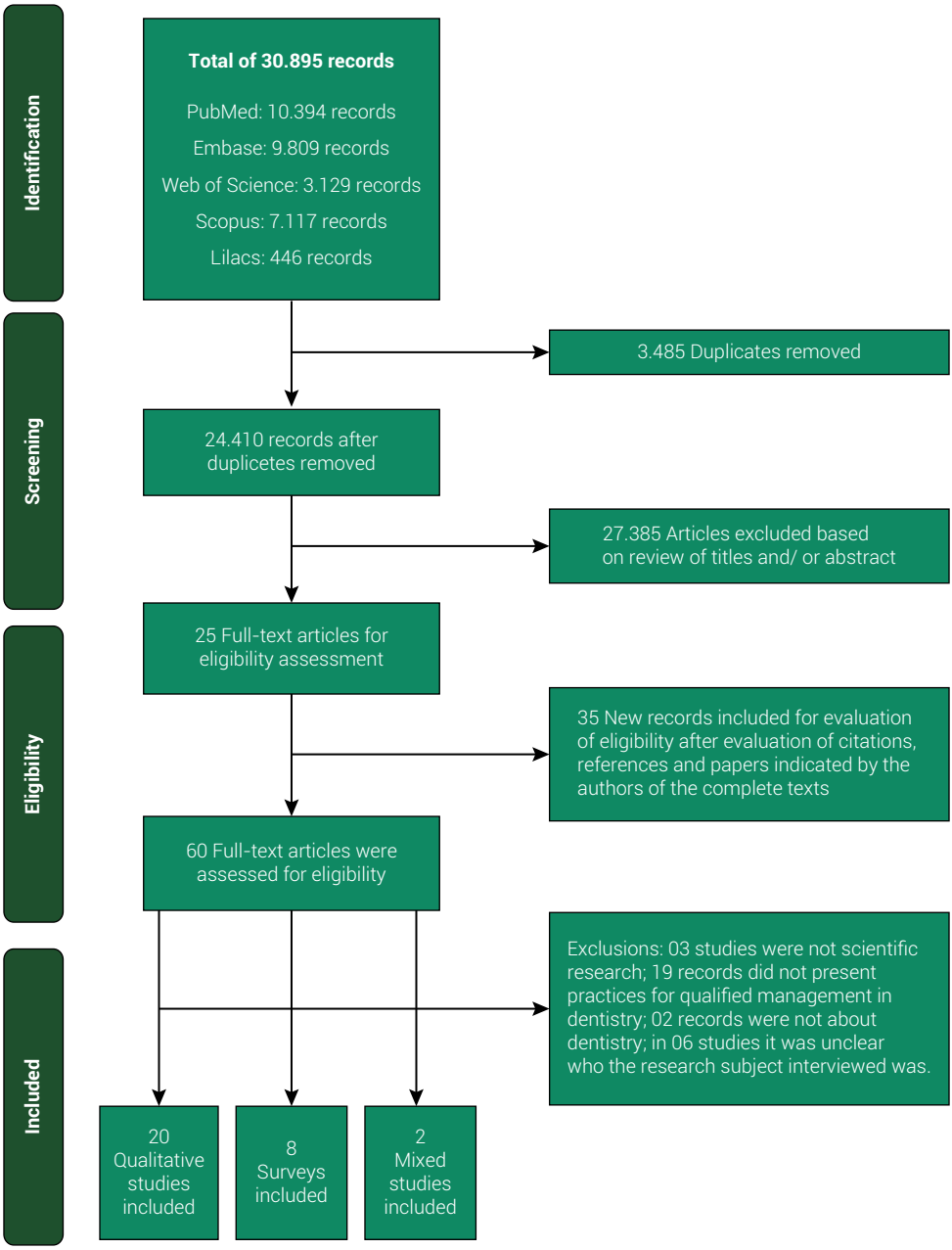

Figure 1. Flowchart of the study selection process.

Table 1. Study characteristics and risk of bias (N = 30).

Study	Number of Participants		Setting	Context of the Study
	Dentists	Managers		
Aguilera et al.[18] (2013)	0	17	Paraná	Municipal Health Office
Aquilante and Aciole[19] (2015)	38	11	São Paulo	Regional Department of Health of São Paulo
Araújo and Dimenstein[20] (2006)	21	0	Rio Grande do Norte	Dentists from the Family Health Strategy (FHS)
Cavalcanti et al.[21] (2012)	17	0	Paraíba	Basic Health Unit (BHU)
Chaves and da Silva[22] (2007)	9	0	Bahia	Dentists in the primary healthcare systems
Correa et al.[23] (2010)	6	2	Amazonas	Dentists inserted in the FHS, Municipal Health Department and Oral Health Coordinator at FHS
Fernandes et al.[24] (2015)	11	0	Santa Catarina	Dentists inserted in the FHS
Lippert et al.[25] (2020)	14	0	Paraná	Dentists from the Basic Health Units (BHU) and Dental Specialties Centers
Mello et al.[26] (2014)	0	10	Santa Catarina	SUS managers
Moimaz et al.[27] (2008)	0	3	São Paulo	Regional Department of Health
Nascimento et al.[28] (2009)	58	0	São Paulo and Paraná	Dentists worked in the ESF
Padilha et al.[29] (2005)	74*		Paraíba	Dentists worked in the FHS and as managers
Pimentel et l.[30] (2010)	3	12	Pernam-buco	FHS Health District VI
Rodrigues et al.[31] (2011)	31*		Bahia	FHS
Rossi and Chaves[32] (2015)	8	5	Bahia	Oral Health Management Team
Sá et al.[33] (2015)	23	1	Santa Catarina	FHS
Santos et al.[34] (2007)	4	0	Bahia	FHS
Santos and Assis[35] (2006)	11*		Bahia	FHS
Silva Junior et al.[36] (2020)	0	9	Ceará	State Health Managers
Vieira et al.[37] (2013)	8	0	São Paulo	Public Sector
Baldani et al.[38] (2005)	105	0	Paraná	Oral health team (OHT) at the FHS
Colussi and Calvo[39] (2011)	0	207	Santa Catarina	Municipal Health Managers
Godoi et al.[40] (2013)	0	1	Santa Catarina	Municipal Health Managers
Godoi et al.[41] (2014)	0	12	Santa Catarina	Municipal Health Managers
Lessa and Vettore[42] (2010)	0	3	Ceará	Municipal Health Office
Lourenço et al.[43] (2009)	278**	166	Minas Gerais	OHT at the FHS
Mattos et al.[5] (2014)	43	14	Minas Gerais	OHT at the FHS
Souza and Roncalli[44] (2007)	25	19	Rio Grande do Norte	OHT at the FHS
Aquilante and Aciole[45] (2015)	38	11	São Paulo	Regional Department of Health of São Paulo
Moretti et al.[46] (2010)	67	9	Paraná	OHT
TOTAL	498	512		

* Subjects excluded from the total sum, since it was not clear in the methodology how many were dentists and how many were managers.
** Subjects excluded from the total sum, because it was not clear in the methodology how many were dentist.

Quality assessment

The overall risk of bias of the selected studies is presented in Table 1. Of the 20 qualitative articles, 20 (100%) presented high risk of bias (Table 2). Among the 8 surveys included in this systematic review, 2 (25%) had low risk of bias, 4 (50%) had moderate risk of bias and 2 (25%) high risk of bias (Table 2). The 2 mixed-model studies (100%) presented high risk of bias (Table 2).

Frequency of the Effect Size (FES)

Twenty practices (codes) were identified after analysis and coding of the 30 included articles. Similar codes were grouped into three families: "Oral Healthcare Structure", "Oral Healthcare Provision", and "Staff Management" (Table 3).

Codes belonging to the family "Oral Healthcare Structure" with highest FES values, showed that the main practices adopted by managers to achieve qualified management were: *Care Diagnosis and Planning* (80%), *Healthcare Networks* (63,3%), *Infrastructure and Materials,* and *Information Systems and Evaluation* (30%).

As for the family "Oral Healthcare Provision", the following codes stood out: *Family Health Strategy* (66,7%), *Expanded Clinical Service* (56,7%), and *Intersectoriality* (46,7%).

Codes within the family "Staff Management" with the highest FES were: *Interprofessional Teamwork* (40%), *Continuing Education* (26,7%), *Creativity, Initiative, Motivation* and *Innovation* (10%)*, and University-Health Service Integration* (6,7%).

Intensity of the Effect Size (IES)

The IES was calculated to verify the individual contribution of each study to the conclusions of this systematic review. All the qualitative studies, surveys and mixed-model studies contributed significantly to the practices for the qualification of oral healthcare management (Table 4). The study that presented the highest IES was Vieira et al. 2013 with 55%, followed by Aquilante and Aciole 2015 with 50%, Baldani et al. 2005 with 45%, and Lourenço et al. 2009 with 40%. Among the other 24 selected studies, 8 had scores between 5% and 15%, and 24 studies presented scores between 25% and 35%.

Ten codes: *Care Diagnosis and Planning*, *Family Health Strategy*, *Healthcare Networks*, *Expanded Clinical Service*, *Intersectoriality*, *Interprofessional Teamwork*, *Ongoing Health Education*, *Infrastructure and Materials*, *Information Systems and Evaluation* and *Continuing Education* presented FES > 25%, which resulted in IES > 25% in all included studies.

Table 2. Quality assessment of included studies.

Qualitative studies according CASP (N=20)											
Included articles	Quality variables assessment*										Risk of bias assessment
	Clarity of purpose	Qualitative methodology appropriateness	Justification for the qualitative methodology	Participant recruitment strategy	Data collection	Relationship between researcher and participants	Ethical issues	Data analysis	Clarity of results	Study relevance	
Aguilera et al.[18] (2013)	+	+	+	−	−	−	−	−	−	−	High
Aquilante and Aciole[19] (2015)	+	+	+	−	−	−	−	−	−	−	High
Araújo and Dimenstein[20] (2006)	+	+	+	−	−	−	−	−	−	−	High
Cavalcanti et al.[21] (2012)	+	+		−	−	−	−	−	−	−	High
Chaves and da Silva[22] (2007)	+	+	+	−	−	−	−	−	−	−	High
Correa et al.[23] (2010)	+	+	−	−	−	−	−	−	−	−	High
Fernandes et al.[24] (2015)	+	+	−	−	−	−	−	−	−	−	High
Lippert et al. [25] (2020)	+	+	−	−	−	−	−	−	−	−	High
Mello et al.[26] (2014)	+	+	−	−	−	−	−	−	−	−	High
Moimaz et al.[27] (2008)	−	+	−	−	−	−	−	−	−	−	High
Nascimento et al.[28] (2009)	−	+	+	−	−	−	−	−	−	−	High

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Continuation

Padilha et al.[29] (2005)	−	+	−	−	−	−	−	−	−	−	High
Pimentel et al.[30] (2010)	−	+	−	−	−	−	−	−	−	−	High
Rodrigues et al.[31] (2011)	+	+	−	−	−	−	−	−	−	−	High
Rossi and Chaves[32] (2015)	+	+	−	−	−	−	−	−	+	−	High
Sá et al.[33] (2015)	+	+	+	−	−	−	−	−	−	+	High
Santos et al.[34] (2007)	+	+	+	−	−	−	−	−	−	−	High
Santos and Assis[35] (2006)	−	+	−	−	−	−	−	−	−	−	High
Silva et al.[36] (2020)	+	+	−	−	−	−	−	−	−	−	High
Vieira et al.[37] (2013)	−	+	−	−	−	−	−	−	−	−	High

Surveys according Bennett (N=8)

Quality variables assessment*	**Included article**							
	Lourenço et al.[43] (2009)	**Baldani et al.[38] (2005)**	**Mattos et al.[5] (2014)**	**Godoi et al.[41] (2014)**	**Souza and Roncalli[44] (2007)**	**Lessa and Vettore[42] (2010)**	**Colussi and Calvo[39] (2011)**	**Godoi et al.[40] (2013)**
Justification of the research question	+	+	+	−	+	+	+	−
Explicit research question	+	+	+	−	+	−	−	−
Clarity of purpose	+	+	+	+	+	+	+	+

Continue

Continuation

Description of methods used for data analysis	+	+	+	+	+	−	+	+
Method of administering the questionnaire	+	−	+	+	−	+	+	+
Location and date	+	+	+	+	+	+	+	+
Methods sufficiently described for replication	+	+	−	−	−	−	−	−
Evidence of reliability	+	+	−	−	−	−	−	−
Evidence of validity	+	+	+	+	+	+	−	−
Use of encoding	+	+	+	−	+	+	+	+
Sample size calculation	−	−	−	−	+	−	−	−
Representativeness of the sample	+	+	−	−	+	−	−	−
Sample selection method	+	+	+	+	+	+	−	−
Description of the sample population	+	+	+	−	−	+	−	−
Description of the search tool	+	+	−	+	−	−	−	−
Description of tool development	−	−	−	−	−	−	−	−
Pre-test instrument	+	+	+	+	−	+	−	−
Reliability and validity instrument	−	−	−	−	−	−	−	−

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Continuation

Consent	+	−	−	+	−	−	−	−
Ethical approval	+	−	+	+	+	+	+	+
Evidence of ethical treatment of research participants	+	−	−	+	−	−	−	−
Risk of bias assessment	Low	Low	Moderate	Moderate	Moderate	Moderate	High	High

Mixed-model studies according O'Cathain (N=2)

Included articles	Quality variables assessment*						Risk of bias assessment
	Assessment of study success	Assessment of study design	Assessment of the quantitative component	Assessment of the qualitative component	Assessment of study integration	Assessment of study inferences	
Aquilante and Aciole[45] (2015)	−	−	−	−	−	−	High
Moretti et al.[46] (2010)	−	−	−	−	−	−	High

* Adapted from Cochrane's Collaboration: + Yes − No

Table 3. Families (Oral Healthcare Structure, Oral Healthcare Provision, and Staff Management) and codes with their respective frequency of the effect size (FES).

STRUCTURAL MANAGEMENT		CARE MANAGEMENT		MANAGEMENT OF THE WORK	
Codes/ References	**Effect size frequency (%)**	**Codes/ References**	**Effect size frequency (%)**	**Codes/ References**	**Effect size frequency (%)**
Healthcare networks Aguilera et al.[18] (2013), Aquilante and Aciole[45] (2015), Cavalcanti et al.[21] (2012), Chaves and da Silva[22] (2007), Colussi and Calvo[39] (2011), Fernandes et al.[24](2015), Lippert et al.[25] (2020), Godoi et al.[40,41] (2013, 2014), Lessa and Vettore[42] (2010), Lourenço et al.[43] (2009), Mattos et al.[5] (2014), Mello et al.[26] (2014), Padilha et al.[29] (2005), Pimentel et al.[30] (2010), Rossi and Chaves[32] (2015), Silva et al.[36] (2020), Souza and Roncalli[44] (2007), Vieira et al.[37] (2013)	63,3	*User satisfaction* Cavalcanti et al.[21] (2012)	3,3	*Autonomy of management* Vieira et al.[37] (2013)	3,3
Care Diagnosis and Planning Aguilera et al.[18] (2013), Aquilante and Aciole[19,45] (2015), Baldani et al.[38] (2005), Cavalcanti et al.[21] (2012), Correa et al.[23] (2010), Fernandes et al.[24] (2015), Godoi et al.[40,41] (2013, 2014), Lessa and Vettore[42] (2010), Lourenço et al.[43] (2009), Mattos et al.[5] (2014), Mello et al.[26] (2014), Moimaz et al.[27] (2008), Moretti et al.[46] (2010), Nascimento et al.[28] (2009), Padilha et al.[29] (2005), Rossi and Chaves[32] (2015), Sá et al.[33] (2015), Santos et al.[34] (2007), Santos and Assis[35] (2006), Silva Junior et al.[36] (2020), Souza and Roncalli[44] (2007), Vieira et al.[37] (2013)	80	*Expanded Clinical Service* Aquilante and Aciole[19,45] (2015), Baldani et al. (2005)[38], Chaves and da Silva[22] (2007), Colussi and Calvo[39] (2011), Correa et al. [23] (2010), Fernandes et al.[24] (2015), Godoi et al.[41] (2014), Mattos et al.[5,26] (2014), Moretti et al.[46] (2010), Nascimento et al.[28] (2009), Pimentel et al.[30] (2010), Santos et al.[34] (2007), Santos and Assis[35] (2006), Souza and Roncalli[44] (2007), Vieira et al.[37] (2013)	56,7	*Individual performance* Chaves and da Silva[22] (2007)	3,3
Budget and Funding Lourenço et al.[43] (2009), Moimaz et al.[27] (2008), Rossi and Chaves[32] (2015), Vieira et al.[37] (2013)	13,3	*Social Control* Aquilante and Aciole[45] (2015), Baldani et al.[38] (2005), Cavalcanti et al.[21] (2012), Colussi and Calvo[39] (2011), Moimaz et al.[27] (2008), Nascimento et al.[28] (2009), Santos et al.[34] (2007)	23,3	*Creativity, initiative, motivation and innovation* Aquilante and Aciole[19] (2015), Chaves and da Silva[22] (2007), Correa et al.[23] (2010)	10

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Continuation

Infrastructure and materials Aguilera et al.[18] (2013), Baldani et al.[38] (2005), Correa et al.[23] (2010), Lourenço et al.[43] (2009), Mello et al.[26] (2014), Souza and Roncalli[44] (2007), Rossi and Chaves[32] (2015), Santos et al.[34] (2007), Vieira et al.[37] (2013)	30	*Ongoing Health Education* Aquilante and Aciole[19,45] (2015), Baldani et al.[38] (2005), Cavalcanti et al.[21] (2012), Fernandes et al.[24] (2015), Godoi et al.[40,41] (2013, 2014), Lourenço et al.[43] (2009), Moretti et al.[46] (2010), Nascimento et al.[28] (2009), Santos and Assis[35] (2006), Souza and Roncalli[44] (2007), Vieira et al.[37] (2013)	43,3	*Continuing Education* Aguilera et al.[18] (2013), Aquilante and Aciole[45] (2015), Chaves and da Silva[22] (2007), Lourenço et al.[43] (2009), Nascimento et al.[28] (2009), Rodrigues et al.[31] (2011), Santos and Assis[35] (2006), Vieira et al.[37] (2013)	26,7
Information systems and evaluation Aquilante and Aciole[45] (2015), Baldani et al.[38] (2005), Cavalcanti et al.[21] (2012), Colussi and Calvo[39] (2011), Godoi et al[40,41] (2013, 2014), Moimaz et al.[27] (2008), Pimentel et al.[30] (2010), Souza and Roncalli[44] (2007)	30	*Family Health Strategy* Aguilera et al.[18] (2013), Aquilante and Aciole[19,45] (2015), Araújo and Dimenstein[20] (2006), Baldani et al.[38] (2005), Cavalcanti et al.[21] (2012), Chaves and da Silva[22] (2007), Fernandes et al.[24] (2015), Godoi et al[40,41] (2013, 2014), Lessa and Vettore[42] (2010), Lourenço et al.[43] (2009), Mattos et al.[5] (2014), Moretti et al.[46] (2010), Nascimento et al.[28] (2009), Padilha et al.[29] (2005), Pimentel et al.[30] (2010), Santos and Assis[35] (2006), Souza and Roncalli[44] (2007), Vieira et al.[37] (2013)	66,7	*Auxiliary Team (Oral Health Technician and Oral Health Assistant)* Baldani et al.[38] (2005), Correa et al.[23] (2010), Fernandes et al.[24] (2015),	10
		Intersectoriality Aquilante and Aciole[19,45] (2015), Baldani et al.[38] (2005), Chaves and da Silva[22] (2007), Colussi and Calvo[39] (2011), Godoi et al.[41] (2014), Mattos et al.[5] (2014), Mello et al.[26] (2014), Moretti et al.[46] (2010), Padilha et al.[29] (2005), Pimentel et al.[30] (2010), Santos and Assis[35] (2006), Souza and Roncalli[44] (2007), Vieira et al.[37] (2013)	46,7	*Qualified Manager* Aquilante and Aciole[45] (2015), Fernandes et al.[24] (2015), Rossi and Chaves[32] (2015)	10
				University-Health Service Integration Godoi et al.[40,41] (2013, 2014), Mello et al.[26] (2014)	6,7
				Interpersonal relationship Vieira et al.[37] (2013)	3,3
				Interprofessional teamwork Aquilante and Aciole[19,45] (2015), Baldani et al.[38] (2005), Cavalcanti et al.[21] (2012), Chaves and da Silva[22] (2007), Colussi and Calvo[39] (2011), Fernandes et al.[24] (2015), Lourenço et al.[43] (2009), Mello et al.[26] (2014), Moretti et al.[46] (2010), Nascimento et al.[28] (2009), Padilha et al.[29] (2005), Pimentel et al.[30] (2010)	40

Table 4. Intensity of the effect size (IES) for all codes and codes with FES > 25%.

Article	IES % all codes (n = 20)	IES % codes > 25% (n= 10)
Aguilera et al.[18] (2013)	15	30
Aquilante and Aciole[19] (2015)	35	60
Aquilante and Aciole[45] (2015)	50	90
Araújo and Dimenstein[20] (2006)	10	20
Baldani et al.[38] (2005)	45	80
Cavalcanti et al.[21] (2012)	30	40
Chaves and da Silva[22] (2007)	35	50
Colussi and Calvo[39] (2011)	15	30
Correa et al.[23] (2010)	25	30
Fernandes et al.[24] (2015)	30	50
Godoi et al.[40] (2013)	30	40
Godoi et al.[41] (2014)	35	60
Lessa and Vettore[42] (2010)	15	30
Lippert et al.[25] (2020)	5	20
Lourenço et al.[43] (2009)	40	70
Mattos et al.[5] (2014)	25	50
Mello et al.[26] (2014)	15	20
Moimaz et al.[27] (2008)	15	10
Moretti et al[46]. (2010)	25	50
Nascimento et al.[28] (2009)	35	60
Padilha et al.[29] (2005)	35	70
Pimentel, Moura and Acioli[30] (2010)	30	60
Rodrigues et al.[31] (2011)	5	10
Rossi and Chaves[32] (2015)	25	30
Sá et al.[33] (2015)	5	10
Santos et al.[34] (2007)	25	30
Santos and Assis[35] (2006)	25	40
Silva et al.[36] (2020)	10	10
Souza and Roncalli[44] (2007)	25	50
Vieira et al.[37] (2013)	55	80

Discussion

A total of 20 specific practices (codes) were identified in the metasummary of the retrieved data and allocated into three families: "Oral Healthcare Structure", "Oral Healthcare Provision" and "Staff Management".

Adequate structure, including not only the physical structure itself, but also the knowledge about health system organization, is a basic requirement to address

the demands of universal health coverage. Apart from oral health clinical care, the involvement of the community, other health professionals, and other sectors of society are of great value to amplify habit changing and health promotion[47]. Additionally, healthcare staff motivation, interprofessional integration and continuing qualification are also important characteristics to improve working processes through individual contribution, and to strengthen interpersonal relationships. Although all the 20 specific practices were not applied at the same time in the same place, it seems that their widespread implementation could place oral healthcare managers/teams onto a more progressive path to promote a healthier population in long-term practice.

In all the included studies, samples were composed by dentists and/or oral health managers. The majority of the participants were oral health managers, who directly contributed to the implementation of oral healthcare practices within SUS. Dentists emerged as important protagonists, either working at Basic Health Units (BHUs), leading Oral Health Teams (OHTs), or occupying management positions. However, the evidence also shows that good management is not only dependant on qualified managers, but also on the efficient performance of OHT members. Among the 20 codes identified in the metasummary, three main practices emerged as being the most relevant: *Care Diagnosis and Planning* (FES = 82%), *Family Health Strategy* (FES = 71%), and *Interprofessional teamwork* (FES = 46%).

In the family "Oral Healthcare Structure", the code *Care Diagnosis and Planning* emerged from 23 of 28 studies included in the metasummary, clearly indicating that situational diagnosis based on the epidemiological status of care provision along action planning are essential for a quality service[45]. This finding is in agreement with the BNOHP guidelines, which indicate that epidemiology and information about the geographic area covered by the OHTs should be used to subsidize action planning[30]. Planning has been considered the instrument to consolidate the foundational principles of SUS (universality, integrality and equity), and promote health improvements[32]. In several studies, the authors registered the need for managers to structure and organize oral healthcare provision based on action planning to increase access and ensure the continuity of treatment[19,27,32,33,42-46]. Moreover, proposed actions need to be permanently evaluated to ensure that improvements in the healthcare system and in the general health of the population are implemented step by step. The practices conducted by managers in municipalities with no water fluoridation and high prevalence of dental caries is a good example. OHT members should be guided on the need to perform fluoridated mouthwashes or distribute sachets with fluoride to the local population[23,30,41,45]. Therefore, OHT professionals should be responsible for planning, organizing, developing and evaluating actions according to the requirements of their local community, seeking articulation with the most varied social actors involved in health promotion[48].

In the family "Oral Healthcare Provision", the code *Family Health Strategy* emerged as the most important practice. Most of the studies analyzed proposed that OHTs should be more closely integrated into the FHS through group activities, regular home visits, and seeing the patient in a more holistic sense[22,29,43,46,49]. The FHS has been designed to renew the rationale of care, which must go beyond interventions directed to the cure of the individual[34]. The FHS philosophy involves the reorgani-

zation of care practices, by replacing the traditional model oriented to the treatment of diseases, to focusing on how families live and their immediate needs[49]. The FHS is responsible for monitoring a defined number of families, located in a defined geographical area, with focus on health promotion, prevention, recovery, and rehabilitation of more frequent diseases[50]. The FHS endeavours to redirect the work flow through the interaction of multiprofessional teams, aiming at implementing the most resolutive and integral practices within the perspective of health surveillance. Hence, primary care organization based on FHS principles has been deemed as essential to the development of the service. Managers have reported on the importance the FHS and community health agent programs, in addition to specific programs for women's and children's health, control of systemic diseases such as diabetes and hypertension, and oral health programs[24,30,42].

In the family "Staff Management", the code *Interprofessional Teamwork* highlights the importance of teamwork for the improvement of the FHS, emphasizing the integrality aspect of healthcare provision[3]. Thus, OHTs is the way to break away from more conventional models, by incorporating the expanded concept of health and sharing the burden of oral healthcare provision among different professional[30]. OHTs should not only assist in dealing with health issues, but also motivate the population to be engaged in selfcare. Moreover, OHTs are required for the collective construction of health actions. When difficulties arise, these can be the subject of discussion before they are eventually overcome. Thus, the presence of OHTs allows for the exchange of information and search of more adequate therapeutic plans for the user[21,29,45]. The evidence arising from this systematic review shows that the integration of the OHT members within the FHS has been occurring through the development of activities designed to draw stakeholders together and integrate health actions in an interprofessional manner[19,29,43]. For instance, the inclusion of dentists in vaccination campaigns, ludic-educational activities, supervised brushing, and children's diet evaluation[30].

The evidence emerging from the three families of codes indicate that care diagnosis, health planning, OHT/FHS integration, and interprofessional teamwork were the most relevant adopted practices. As a result, oral healthcare managers tend to perform well when: 1. They know the legislation, and SUS and BNOHP guidelines; 2. Their OHT members participate in ongoing health education; 3. They stimulate intersectionality within their local communities; and 4. They put into effect their leadership role. Thus, qualified oral healthcare managers provide support and guidance, foster cooperation while implementing government health policies, involve all healthcare stakeholders collectively, and are in close contact with the community. Reliable situational diagnosis, establishment of coherent goals, and optimization of physical and financial resources are fundamental requirements for reorganizing and strengthening basic oral healthcare. Action planning, appropriate to the needs and priorities of the population in question through the FHS, can allow the provision of higher quality care and more comprehensive and resolute attention to SUS users.

Concerning the relevance of individual studies to the outcome of this review, four studies stood out with the higest IES, two qualitative studies[37,45] and two surveys[38,43]. Qualitative studies showed codes that surveys and mixed-model studies did not, rein-

forcing the importance of the qualitative methodology as a powerful tool for in-depth research in Dentistry. While all the 20 codes emerged from qualitative studies, 5 of them (*User satisfaction*, *Management Autonomy*, *Individual Performance*, *Qualified Management* and *Interpersonal Relationship*) appeared exclusively in qualitative studies. The advantage of qualitative studies resides in its design, which may permit a deeper insight into the perceptions, feelings and opinions that are sometimes difficult to be captured by surveys[11]. Nonetheless, surveys can also make an important contribution when they are adequately designed.

The quality of the included studies was evaluated by assessing the risk of bias, which considers the characteristics of individual studies that contributed to the outcome[51]. Overall, most studies presented low risk of bias. Important quality limitations were observed in the majority of the selected studies. For instance, many qualitative studies did not mention the type of relationship between researchers and participants; did not present an adequate sample description; did not disclose the criteria used to select research subjects or the way data were analyzed; some results lacked clarity; and the relevance of the study and ethical issues were also absent. Therefore, future qualitative studies in the area should make use of the Confidence in the Evidence from Reviews of Qualitative research (CERQual) and the Consolidated Criteria for Reporting Qualitative Research (COREQ). CERQual provides a clear method for assessing confidence in the synthesis of qualitative findings[52]. COREQ is an instrument that defines verification criteria to help researchers to report important aspects related to research teams, methods, context, findings, analysis and interpretations[53].

Although most of the surveys (62%) included in this systematic review was identified as having low risk of bias, none of the selected studies presented any type of questionnaire validation. The use of a validated instrument would have significantly contributed to increasing the quality of the evidence, since the validation process shows the reliability and veracity of the questionnaire applied to research subjects. The two mixed-model studies also showed a high risk of bias. None of the items evaluated by the instrument were found in the included studies, with weaknesses in both the quantitative and qualitative evaluation. In relation to the quantitative component, not enough information on the methodological outline could be found. On the other hand, in the qualitative component, there was no information on items related to sampling, methodology and the presence an experienced researcher.

In relation to the metasummary, an important limiting factor concerns the absence of a quality assessment instrument to integrate qualitative studies, surveys and mixed-model studies. In conclusion, the evidence emerging from this systematic review and metasummary demonstrate that oral healthcare diagnosis, planning, and basic care based on the FHS principles were the most relevant practices adopted by public oral healthcare managers in Brazil to provide quality care. Although most studies included in this systematic review presented a high risk of bias, the emerging evidence makes a significant contribution to the improvement of oral healthcare management within SUS in Brazil. Other countries with universal health systems, as well as those seeking to follow the United Nations SDGs, may also benefit from the present findings.

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