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Research Article

A Scoping Review to Improve Universal Health Coverage for Pediatric Dental Services Policies

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Abstract

Background: Poor oral and dental health significantly affects public health, impacting over half the world's population. Dental caries can undermine children's academic success and career prospects. Social inequities result in unequal access to oral healthcare, particularly among populations with lower socioeconomic status (SES). National policies that improve access to oral health can reduce these disparities.

Objectives: This study aims to compile policies implemented by various countries to achieve universal health coverage (UHC) for pediatric dental services.

Methods: This scoping review was conducted according to Arksey and O'Malley's framework and is reported using the preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) guidelines. A systematic search was conducted on databases including Scopus, PubMed, Magiran, SID, Irandoc, Google Scholar, the WHO website, and the databases of Iran's Ministry of Health. The search aimed to identify literature discussing governmental steps taken to achieve UHC for pediatric dental health, published between January 1, 2011, and December 31, 2022. The results were charted and presented in a table.

Results: This review included 22 studies. Six themes were identified based on the roles played by key players in this field, including schools, government policy and support, community-oriented preventive plans, insurance support, parents' awareness, and inequality in accessing dental services.

Conclusions: A comprehensive policy that reduces barriers to access, increases utilization, and engages all stakeholders—including parents, schools, and community centers—can effectively achieve UHC for pediatric dental health.

Keywords: Universal Health Coverage; Utilization; Access; Pediatric Dentistry; Dental Care for Children

1. Background

Oral and dental health is widely recognized as a crucial public health concern (1). Dental diseases, particularly untreated dental caries, represent the most common health issue worldwide (2). These conditions significantly diminish quality of life and life expectancy, and they escalate healthcare costs, imposing both personal and societal financial burdens. Oral and dental disorders impact individual and social well-being by reducing children's academic performance and hindering future career opportunities. They also interfere with essential functions such as speech, swallowing, and chewing, as well as sleep and breathing. Severe dental caries can compromise personal appearance and self-confidence, leading to embarrassment, social isolation, and anxiety. Additionally, it contributes to school absenteeism, attention difficulties in class, and various behavioral and social challenges due to pain (3, 4).

Dental caries, the most common chronic disease in children and adolescents, is influenced by multifactorial social factors and is notably prevalent in underprivileged and low-income families affected by adverse social determinants (5, 6). The prevalence of early childhood caries (ECC), which impacts children under six, is often driven by systemic socioeconomic disparities. Such social injustices underpin the unequal access to oral and dental healthcare. The socioeconomic status (SES) of an individ-

ual, access to services, and overall inequality reflect their lifetime oral and dental health (7).

Globally, the cost of dental diseases amounted to $544.41 billion in 2015, with treatment expenses making up 65% of this sum (equivalent to 4.6% of global health expenditure), and productivity losses accounting for the remainder. From 2010 to 2015, the cost of dental services rose alongside the general increase in healthcare expenditures (8). According to a systematic analysis for the global burden of disease study (2017), oral and dental disorders were the most prevalent diseases globally, ranking among the top three for incidence across all ages and both sexes. Furthermore, from 1990 to 2017, the incidence of oral and dental disorders surged by more than 35%, and the average number of years lived with disability (YLDs) rose by about 60%. Thus, in 2017, individuals worldwide endured over 18 million years of disability from these largely preventable and treatable conditions (9).

Oral and dental diseases impact over half the world's population, disproportionately affecting those with lower SES. Thus, oral and dental health is essential for achieving health equity (10). In Iran, disparities in income and family financial resources significantly influence the utilization of dental services and the achievement of universal coverage (10, 11). Individuals from disadvantaged backgrounds often require more extensive treatment due to the advanced progression of their dental issues, which can lead to increased absences from school or work. Consequently, it is vital to provide preventive care to these groups (4).

Since most oral and dental diseases are largely preventable, preventive measures are crucial for reducing both the economic burden and the health impacts of untreated dental caries. Hence, implementing national policies to enhance access to oral and dental health services is a fundamental strategy to lessen disparities (12).

2. Objectives

This study aims to identify initiatives to achieve global coverage for children's dental services.

3. Methods

This scoping review was conducted using Arksey and O'Malley's framework as guided by the systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR) checklist. The process involved identifying the research question, searching for relevant studies in trustworthy databases, selecting pertinent studies from the initial findings, extracting and collating data, summarizing and reporting the findings, and consulting experts when necessary to discuss the results (13).

3.1. Research Question

The primary question of this study was: What steps have governments and insurance organizations taken to achieve universal health coverage (UHC) for pediatric dental services, particularly for families from socioeconomically deprived backgrounds worldwide?

3.2. Identification of Related Studies

Searches were conducted across multiple databases including Scopus, PubMed, and three Iranian databases: Magiran, SID, and IRANDOC. To broaden the scope of our research, we also employed a 'snowball' search technique, which involved both backward and forward searches. This was done by reviewing the reference lists of publications eligible for full-text review and utilizing Google Scholar to identify and screen studies that cited them. Additionally, to ensure a thorough review, we searched the World Health Organization (WHO) website and key databases maintained by Iran's Ministry of Health and Medical Education that are specific to this research field. Table 1 outlines the basis for our search queries.

Table 1. The Foundation for Search Queries

Concept 1	AND	Concept 2	AND	Concept 3
Pediatric OR Child OR Preschool		Dent*		Coverage OR Access OR UHC OR affordable OR Insurance OR "Patient protection" OR "Health Benefit" OR Policy OR Plan OR Reform

3.3. Inclusion and Exclusion Criteria

We included original articles and reports that focused on UHC for pediatric dental services, specifically those discussing policy development for children's dental services, the role of schools and parents in enhancing children's dental health, and the financing and accessibility of these services. Consistent with the WHO's 2010 report advocating for UHC and subsequent national commitments, we included studies published from January 1, 2011, to December 31, 2022. There were no language restrictions. Letters to the editor were excluded from the selection process. Two authors independently selected articles based on these criteria, resolving any disagreements through consultation with a third author. Titles and abstracts of all retrieved articles were reviewed, and duplicates and irrelevant articles were removed.

3.4. Data Charting Process

To ensure consistent and comprehensive data extraction, two reviewers independently created a data extraction form aligned with the study's objectives and research questions. The form was discussed and iteratively refined to capture essential information such as authors, publication year, country, developmental status of the country, scope of study, study population, and a summary of the proposed and implemented actions.

3.5. Summarizing and Reporting the Findings

After data extraction and summary table preparation, the study's data was analyzed with respect to the roles of various stakeholders involved. Ethical considerations, such as ensuring the researchers' personal opinions did not influence the data collection, analysis, or reporting phases, were rigorously observed throughout the review process.

4. Results

4.1. Selection of Sources of Evidence

A comprehensive search across various databases initially yielded 361 articles, which were narrowed down to 273 after removing duplicates. These articles were then screened based on pre-defined inclusion and exclusion criteria, primarily evaluating titles and abstracts. This process resulted in the selection of 164 articles related to the study's topic, of which 19 were deemed relevant after a full-text review. Subsequently, through a thorough examination of these articles' sources, three additional articles were included, culminating in a total of 22 articles for the final review. Figure 1 displays the PRISMA 2020 flow diagram illustrating the article selection process for this scoping review.

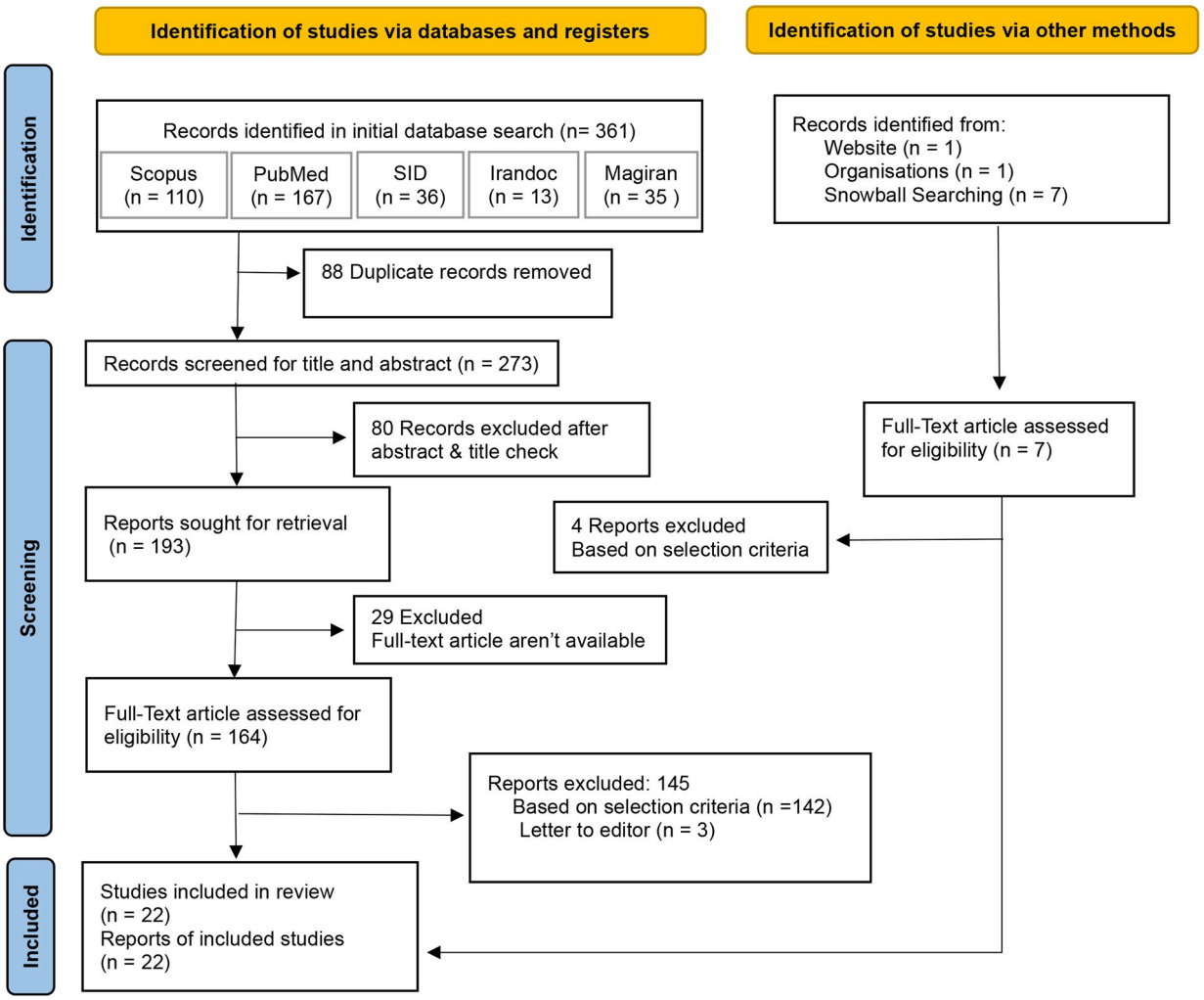

Figure 1. PRISMA 2020 flow diagram depicting the process of article selection for the scoping review.

4.2. Characteristics of Sources of Evidence

Out of the 22 studies included, 54% were conducted in 2014, 2015, and 2017, with four studies each year (18.2%). Three studies were conducted in 2011 (13.6%), and in 2012, 2016, 2019, and 2020, there were one, two, one, and two studies conducted, respectively (27% total). The majority, 80%, of the studies were from the USA (17 studies), with one study each from the Netherlands, South Korea, European countries, and Israel (in collaboration with the USA), each accounting for 4%. All studies were conducted

in developed and high-income countries. Seventy-seven percent of the studies (17 studies) focused on children, 18% on the general population (4 studies), and 4% on individuals aged 50 years or older. A majority, 72.7% (16 studies), were conducted at the national level, while 22.7% (5 studies) took place at the local (state) level.

4.3. Synthesis of Results

Upon reviewing the full texts of selected articles, several key themes emerged based on the roles of the stakeholders involved in pediatric dental health:

A. "The role of schools and the provision of school-based services" (14-17)

B. "The role of government policy and support" (18-25)

C. "Community-oriented preventive plans" (15, 20, 26)

D. "The role of insurance support, including the development of public insurance and strengthening of private insurance" (5, 22-28)

E. "The role of parents and their awareness" (16, 17)

F. "Inequality in accessing and benefiting from dental services and the role of SES" (29, 30)

Five articles addressed multiple themes (15-17, 20, 22).

The most frequently discussed themes in the articles were D and B, each mentioned eight times. Themes A and C were next, cited four and three times, respectively. The least frequently discussed themes were E and F, each mentioned twice. Table 2 provides a summary of these articles.

Table 2. A Summary of the Evaluated Articles

Author(s)	Year of Publication	Country	State of Development	National or Local Status	Study Population	Summary	Theme
Dee Devlin (14)	2011	USA	Developed	National	Children	School-Based dental sealant programs can help reduce or eliminate barriers to accessing preventive dental services by increasing the number of children who receive dental sealants.	A
Michelle L Gross-Ppanico (18)	2012	USA	Developed	National	Children up to 18	1. The cost of preventive dental services is a more significant concern for this population than the convenience of appointment times or the distance traveled. As the cost of preventive dental services rises, this population's usage of such services decreases. 2. Funding efforts, reimbursement mechanisms, and legislative policies should support this dental care delivery model to provide care to underserved children.	B
Karen G. Duderstadt (27)	2014	USA	Developed	National	Children	1. Children's oral health care services are included in the affordable care act (ACA), which lists them as one of the ten essential benefits. This aims to reduce disparities in access to dental care services for children living in low- and moderate-income families and to improve oral health outcomes. 2. Fluoride varnish is recommended for children up to age 5. 3. The importance of providing oral and dental services and improving access to these services, especially for families with low and medium incomes, is emphasized.	D

Keri Discepolo (15)	DAVID A. NASH (31)	Jaffer A. Shariff (5)	Ashley M. Kranz (20)	Genevieve M. Kenney (19)
2011	2015	2016	2014	2011
USA	USA	USA	North Carolina	States of Idaho and Kentucky
Developed	Developed	Developed	Developed	Developed
National	National	National	Local	Local
All people	Children	Children	Babies & children up to 3	Children
A summary of the major PPACA provisions affecting dental care includes. 1. Each state may permit insurance companies to offer a children's dental benefit package that includes essential dental health benefits required by HHS. 2. The Payment and Access Commission is responsible for reviewing and updating payments to specialist doctors. 3. More payment in Medicare advantage plans should be applied towards cost-sharing reductions, wellness, preventive care, and extra benefits not available in Fee-For-Service plans, including dental coverage. 4. Allocation of funds for "Oral Healthcare Prevention Activities". 5. Implementation of school-oriented dental sealant programs. 6. Grants for school-based health centers to follow up on oral health services. 7. Creation of new health training programs.	Barriers to oral and dental care, particularly among economically disadvantaged children, stem from insufficient access. Economic barriers are mitigated through the expansion of government insurance coverage. However, other obstacles, such as a lack of skilled labor, parental values, family stress, and transportation issues, must also be addressed.	Individualized risk-based care, which includes assessing children's risk of dental caries and adopting tailored care pathways based on the diagnosed risk level, as well as developing value-based incentives and managed care, is associated with improved oral health outcomes. Despite efforts to equalize access, disparities in the utilization of public and private Medicaid services by insured individuals persist.	Strong advocacy and bold leadership at national and state levels are necessary to enhance preventive oral health services. Emphasizing doctor-based preventive oral and dental health services can effectively increase geographic access and the feasibility of providing these services to young children.	The children's health insurance program (CHIP) in every state offers incentives to families and providers to promote preventive care services. While increased reimbursement rates for well-child visits were associated with a slight increase in the receipt of preventive care in Idaho, no consistent effect was observed in Kentucky.
A, C	D	D	B and C	B

	C. Ashley Orynich (22)	Melissa A. Romaire (26)	Burton L. Edelstein (21)
	2015	2012	2017
	USA	USA	USA, Israeli
	Developed	Developed	Developed
	National	National	National
	Children	Children up to 17	All people
	Allocating a subsidy share from the tax base for children's dental package requires effort and support at the national level. 1. Oral health policy change in the area of pediatric dentistry requires support for mandatory purchase of coverage through the exchange, tax subsidies for pediatric dental benefits, and strengthening commercial insurance and provider reimbursement systems efficiency. 2. Advocacy for policy change requires consideration of what level (national or local) action should be taken: Policy change to mandate the purchase of dental coverage for children requires support at the local level. A policy change to tax-subsidize pediatric dental benefits requires support at the national level. Finally, policy change for insurer transparency should include advocacy efforts at both the national and local levels. 3. Achieving policy change requires the formation of a single dental organization that operates at the national and local levels.	Children included in the home medical plan experienced more preventive and dental visits and fewer emergency visits compared to children not included in this plan.	When improving oral health is rewarded, dental teams caring for children are expected to prioritize high-risk children who can demonstrate the benefits of oral health measures, rather than focusing on low-risk children.
	B, D	C	B

Bo-Mi Shin (33)	**Ashley M. Kranz (32)**	**Natalia I. Chalmers (23)**	**Verlinden DA (16)**
2020	2019	2017	2019
South Korea	USA	USA	Netherlands
Developed	Developed	Developed	Developed
National	National	National	National
Children from 6 up to 18	Children	Children	Children up to 18
The policy of extended coverage should maintain a focus on disadvantaged populations and young children. The expansion of National Health Insurance Scheme (NHIS) coverage for dental care positively impacts the overall dental health of children and adolescents, with younger children experiencing greater benefits in terms of reduced inequality. Strategies to increase access to preventive dental services should consider the differential effects on vulnerable populations by SES and age from the onset of the policy.	Children with dental coverage visit the dentist more frequently and have fewer unmet dental needs. However, policies promoting dental coverage will only be effective if entire families have dental coverage and understand its benefits. Parents need to be informed about how to purchase and utilize pediatric dental coverage; otherwise, they may be less likely to take their children to the dentist. New federal regulations offer states greater flexibility in defining essential health benefits, potentially allowing them to opt-out of including children's dental care coverage.	Previous studies indicate that Medicaid reimbursement rates influence access by increasing dentist participation. In states with a high density of dentists, the relationship between Medicaid reimbursement rates, access to care, and the proportion of dentists accepting Medicaid was relatively weak. In states with low dentist density and low Medicaid participation, higher reimbursement rates were linked to better access to dental care. Conversely, in states with low dentist density but high Medicaid participation, reimbursement rates did not significantly impact access to care.	In systems with comprehensive coverage of pediatric dentistry, disparities in caries experience due to socioeconomic status (SES) still exist. Oral health care providers and primary school teachers should collaborate to promote oral health at the community level, especially for families with low SES. Elementary school programs can effectively enhance caries prevention. Community-based interventions aimed at reducing socioeconomic disparities and improving oral health may include increasing oral health literacy and enhancing parental self-efficacy in preventive oral health behaviors. Improved collaboration between parents and schools is beneficial in the primary care and preventive dental care of elementary school children.
D	D	B	A, E

F. Schwendicke. Dörfer (29)	Cheryl Zlotnick (17)	Zhou J. Yu (28)	Nan Qiao (34)	Kamyar Nasseh (24)
2015	2017	2017	2018	2015
	California	USA	USA	Connecticut, Maryland and Texas
	Developed	Developed	Developed	Developed
	Local	National	National	Local
Children & adults	Children	Children	Children	Children
Low SES is associated with a higher risk of tooth decay, particularly in developed countries. Beyond income, the education levels of parents and families influence health literacy, health-oriented behaviors, proper diet, tooth cleaning habits, and the pattern and frequency of dental service use. Social status, as a determinant of social participation, positively affects health and healthy behaviors.	Implementing a national policy of mandatory dental visits for all children entering public schools will reduce disparities in dental care visits. Effective changes in health policies, including preventive dental care for children, should extend beyond legislation, and families should be better informed about policy changes and implementations. The critical role of schools in enhancing parents' awareness and ensuring compliance with dental health policies is evident.	Dental insurance status positively correlates with the use of dental health services and inversely relates to the level of unmet needs, regardless of the insurance type. At the patient level, factors such as parental education, SES, behavioral beliefs, perceived power, and subjective norms are crucial. Children whose parents have lower education levels experience greater disparities in oral health status and access to care. Despite having the highest rates of dental insurance coverage through Medicaid, children from low-income families tend to have the fewest dental visits and twice as many decayed teeth. Other sociodemographic factors like ethnicity, region of residence, and caregivers' psychosocial factors also impact dental care utilization and unmet needs.	To enhance children's access to dental care, the government could consider subsidizing premiums for dental insurance plans to boost insurer participation in the market. The entry of a new insurer into the market tends to reduce premiums by one dollar and increase enrollment in independent dental programs.	Fee-for-service dental fees significantly influence the preventive use of dental care. Lower dental costs may lead providers to limit services but should not prevent the treatment of urgent needs. Increasing Medicaid dental costs may encourage more dentists to provide treatment.
F	A, E	D	D	B

Laia Palencia (30)	2014	Austria, Belgium, Denmark, France, Germany, Greece, Italy, the Netherlands, Spain, Sweden and Switzerland	Developed	National	individuals aged ≥ 50	In services where the private sector plays a crucial role, especially in preventive care, financial crises and family impoverishment, particularly in economically and socially deprived classes, exacerbate the inequality in accessing benefits. It is essential to monitor the benefits of health services in economically and socially deprived classes.	F
Tryfon Beazoglou (25)	2015	Connecticut	Developed	Local	All people	A fundamental solution to reducing significant disparities in access to dental services during a recession is to increase Medicaid payments to competitive levels. This increase in payment rates boosts dentist participation in Medicaid, thereby raising the number of children's dental visits. By increasing the number of visits per patient per year, the cost per visit decreases.	B

4.3.1. The Role of Schools and the Provision of School-Based Services (Theme A)

Article 1 discusses Theme A, noting that school-based dental sealant programs diminish barriers to access by increasing the number of children receiving dental sealants (14). Article 8 highlights that providing school-based dental sealant services and awarding grants for referrals and follow-up of school-based oral health services to health centers are components of the PPACA impacting oral health (15). Article 12 emphasizes the need for collaboration among dental health specialists, childcare nurses, general practitioners, and primary school teachers to improve oral and dental health among children from low socioeconomic backgrounds (16). Caries prevention programs in elementary schools can mitigate socioeconomic disparities and enhance oral and dental health. Community-based interventions can boost oral health literacy and enhance parents' knowledge, skills, and self-efficacy regarding preventive oral and dental health behaviors. Article 19 advocates for a national policy mandating dental visits for all children enrolled in public schools to lessen disparities in dental care utilization (17).

4.3.2. The Role of Government Policy and Support, Including Tariff Regulation, Payment Systems, and Tax Subsidies (Theme B)

Article 2 underlines the theme of "government policy and support," highlighting that the cost of preventive dental services is more significant to service recipients than the ease of access to dental visits (18). As costs increase, the use of preventive dental services decreases. Financing, reimbursement systems, and regulatory policies should be aligned to ensure dental care accessibility for children in underprivileged areas. Article 4 explores the connection between dentist reimbursement rates and the uptake of preventive dental care (19). It revealed that while an increase in the reimbursement rate for well-child visits led to a slight increase in preventive care in Idaho, no consistent effect was observed in Kentucky. Article 5 argues that robust advocacy and bold leadership are essential at both national and local levels to enhance the provision and use of preventive oral health services (20).

Article 8 details several key provisions of the PPACA affecting dental care, including the flexibility for insurance companies within state regulations to offer children's dental coverage either as a standalone plan or combined with a health plan, provided it covers essential dental services (15). Additionally, the Payment and Access Commission is responsible for reviewing and updating professional payments. Article 9 notes that dental teams caring for children should prioritize high-risk children who can clearly demonstrate the benefits of care, over low-risk children whose improvements in oral and den-

tal health are less measurable (21).

Article 11 discusses the necessity of understanding the appropriate level (national or local) for advocating specific policy changes (22). Mandating children's dental coverage purchase requires state support, while allocating a portion of tax subsidies to dental benefits for children needs national approval. Similarly, policy changes for insurance accountability transparency require both national and local backing, underscoring the need for a unified dental organization that operates at both levels.

Article 13 investigates the impact of Medicaid reimbursement rates on access by increasing dentist participation (23).

The study's findings indicated that there was no significant relationship between Medicaid reimbursement rates, access to care, and the participation rate of dentists in Medicaid in states with high dentist densities. However, in states with a low density of dentists and low Medicaid participation, higher reimbursement rates were associated with improved access to dental care. In states with low dentist density but high Medicaid participation, reimbursement rates did not influence access to care. Article 16 highlights that increasing the tariff for dental services significantly impacts the utilization of preventive oral and dental care (24). Lower rates might compel providers to restrict their services to emergency treatments only. Raising Medicaid dental reimbursements could encourage more dentists to treat additional patients under exceptional circumstances. Furthermore, Article 22 suggests that one of the primary methods to reduce substantial disparities in dental service access during economic downturns is to elevate Medicaid payments to competitive levels (25). This adjustment enhances the number of dentists accepting Medicaid, thereby increasing the number of dental visits for children. It also shows that increasing the frequency of visits per patient annually decreases the overall cost per visit.

4.3.3. Community-Oriented Preventive Plans (Theme C)

In the context of this theme, Article 5 posits that prioritizing doctor-based preventive oral and dental health services can effectively enhance geographic access and the feasibility of providing these services to young children (20). A provision of the PPACA, as discussed in Article 8, relevant to oral health care includes funding for a national public education program aimed at preventing oral and dental diseases (such as periodontal diseases and caries) targeting vulnerable groups like the elderly, pregnant women, children, disabled individuals, and minorities, as well as a dental caries management program based on research for community-based providers (15). Additionally, Article 10 investigates the relationship between having a "medical home" plan and the utilization of health services and their costs, finding that children enrolled in the medical home plan, with local access to health services, are more likely to attend preventive and dental visits and less likely to visit emergency departments compared to children not enrolled in this plan (26).

4.3.4. The Role of Insurance Support, Including Developing Public Insurance and Strengthening Private Insurance (Theme D)

Article 3 discusses the insurance program for children's oral health care services as one of the ACA plan's ten essential benefits (27). This program is designed to reduce disparities in access to dental care services and enhance oral health outcomes for children from low- and moderate-income families. It recommends fluoride varnish for children under five to improve preventative care. The article emphasizes the importance of providing oral and dental services and improving access for low- and moderate-income families.

Article 6 notes that shifting Medicaid programs toward preventive care will help implement fundamental changes in Medicaid oral and dental program policies (5). These changes, aimed at improving oral health outcomes, include:

- Offering personalized care based on an individual's risk level.
- Assessing the risk of dental caries in children and adopting appropriate care pathways.
- Developing value-based incentives and applying managed care principles to broaden the provision of oral and dental services.

Despite efforts to achieve equal access to services, disparities remain between public and private Medicaid-insured individuals, according to the article. Article 7 highlights the importance of expanding government insurance and identifies barriers to oral and dental care, particularly among economically disadvantaged children (31). It suggests that economic barriers decrease as government insurance coverage expands, but other obstacles such as a lack of specialized and adequate workforce, parental values, family stress, and transportation issues remain.

Article 11 underscores the importance of strengthening commercial insurance to increase the utilization of dental services (22). It proposes policies to enhance children's oral and dental health, including mandatory insurance coverage purchases through exchanges, tax subsidies for children's dental services, and establishing coherent and consistent regulatory standards for financial debt settlement and provider reimbursement.

Article 14 indicates that children with dental insurance are more likely to visit the dentist regularly and have fewer unmet dental needs (32).

On the other hand, policies promoting oral and dental insurance coverage for children will be effective only if all family members have dental insurance and understand its benefits. Parents who lack knowledge about the service package and how to purchase children's dental services may be less likely to take their children to the

dentist. Education on how to select and pay for an insurance plan is essential. New federal regulations for 2020 plans allow states greater flexibility in defining the essential health benefits package. Article 15 explores the relationship between dental caries, sealant usage, and income quartile (33). It recommends maintaining a policy of extensive insurance coverage, especially focusing on underprivileged populations and young children. This study also found that expanding NHIS dental coverage positively affects dental health among children and adolescents. However, the benefits are more pronounced in younger children, indicating that preventive dental care access strategies should consider the diverse needs of vulnerable populations based on their age and SES from the outset. Article 17 suggests that to enhance children's access to dental care and health, the government could subsidize the payment of insurance premiums for independent dental plans to encourage more insurers to enter the market (34). The introduction of a new insurer tends to reduce premiums by one dollar and increase enrollment in independent dental plans. Finally, article 18 states that dental insurance significantly influences children's utilization of dental services and their unmet dental needs (28). Regardless of the type of insurance, dental insurance status is positively associated with the use of dental health services and inversely related to the level of unmet needs. Another factor influencing access to dental services is the parent's level of education. Children of less educated parents face greater disparities in oral and dental health status and access to care. Despite having the highest rate of dental insurance coverage due to Medicaid, children from low-income families have the lowest rate of dental visits and twice the prevalence of decayed teeth. Other socio-demographic factors, such as ethnicity, region of residence, and caregiver psychosocial factors, are also noted as influencing dental care utilization and unmet needs.

4.3.5. The Role of Parents and Their Awareness (Theme E)

In terms of "the role of parents and their awareness," Article 12 emphasizes that when the primary care system for children, primary schools, and parents work together, parental motivation to enhance their children's dental care can improve (16). This collaboration can encourage children to brush their teeth twice daily and modify their eating habits by increasing water intake and reducing consumption of processed and carbohydrate-rich foods. Such measures are crucial for families with weak SES. Article 19 discusses the importance of improving parents' knowledge about policy updates and the implementation of oral and dental health programs. It is essential for effective oral and dental policies, including the promotion of preventive care for children (17). Schools play a significant role in raising parents' awareness of these programs.

4.3.6. Inequality in Accessing and Benefiting from Dental Services and the Role of Socioeconomic Status (Theme F)

With respect to theme F, Article 20 reports that low SES is associated with a higher risk of dental caries prevalence, especially in developed countries (29). Parental education and family members' education levels influence health literacy, health-related behaviors, proper diet, tooth cleaning habits, and the frequency and pattern of using dental services. As a determinant of social participation, social status positively influences health and healthy behaviors. Article 21 notes that financial crises and poverty can hinder access to health services and exacerbate inequality, particularly regarding preventive services offered by the private sector. This underscores the importance of monitoring the benefits of health services among economically and socially disadvantaged groups (30).

5. Discussion

This scoping review sought to identify measures implemented worldwide to achieve UHC for pediatric dental services. The most frequently mentioned themes in the reviewed studies were D (insurance support) and B (government policy and support).

Regarding theme A, "the role of schools and the provision of school-based services," our findings indicate that integrating dental care services in schools can enhance oral and dental health and increase service accessibility (1, 8, 12, 19). For example, another study highlighted that expanding primary preventive measures from birth in public settings such as family health centers, schools, preschools, and kindergartens could effectively reduce the prevalence of dental issues (35). In the United States, integrating dental care into school programs was found to improve oral health and increase access for disadvantaged children (36). A study in California evaluated a comprehensive oral and dental health program within schools. It recommended that services should be localized and school-based to enhance oral health in children and eliminate access barriers. The service package provided by this program includes examinations, educational sessions, dental sealants, fluoride treatments, increasing parental awareness, and restorative care. It also focuses on promoting self-care education, reducing access barriers such as language and geographical distance, and developing a national infrastructure for consistent leadership and coordination (37).

Regarding theme B, Article 22 suggests that raising Medicaid reimbursement rates to competitive levels during an economic downturn enhances dentist participation, leading to increased dental visits. Yet, adjustments to the reimbursement rate for well-child visits did not influence preventive care in Kentucky and had a minor effect in Idaho, as noted in study 4. In states with low

dentist density and low participation, increasing dental reimbursement rates improved access to dental care, as indicated in Article 13. Higher Medicaid payments to dentists were associated with increased rates of dental care receipt among children and adults in a study from the United States (38). Another study indicated that aligning Medicaid reimbursement with private sector rates directly affects care access; however, this increase in Medicaid reimbursement was linked to higher costs from additional visits, which contradicts study 22's finding that the total cost per visit decreases as the number of patient visits per year increases (39). This suggests a need for policy differentiation at national and local levels, underpinned by strong leadership and support (5, 11). Effective policies should not only increase service access but also manage the rising demand to alleviate service wait times. Prioritizing patients based on clinical urgency could expedite necessary interventions (40). A study in Ireland highlighted that reforming the oral and dental health system requires genuine engagement from all stakeholders (12).

Concerning theme C, results indicate that enhancing public health education, providing community-level preventive dental care, and increasing local access to dental services improve overall health outcomes and dental care accessibility (5, 8, 10). A U.S. study projected that dental insurance reforms under the affordable care act (ACA) could increase children's dental care utilization by 56% by 2026, as the focus shifts from surgical and restorative treatments to preventive care and broadens the scope of community preventive exams (41). Another study demonstrated that distributing toothbrushes and fluoride toothpaste quarterly to low-income families significantly reduces the incidence of oral and dental diseases among young children (5).

Regarding theme D, studies (3), (7), and (15) have highlighted the critical importance of providing insurance coverage for economically and socially vulnerable groups. A study conducted in Western Australia identified a strong correlation between the lack of insurance coverage and residing in rural and remote areas. Thus, it is vital to design programs tailored to children's SES, ensuring that disadvantaged groups receive more comprehensive insurance benefits, which is essential for improving the oral health of Australian children (42). Study 14 asserts that effective insurance coverage must encompass all family members, including parents and children, to enhance children's access to oral and dental care services. This is supported by another study indicating that parental decisions regarding their children's dental service use are influenced by their perceptions of the accessibility and affordability of quality services. The study advocates for government policies that enhance the quality and affordability of both public and private insurance coverage to improve access to oral and dental care services for children (43). Additionally, another study found that while expanding Medicaid coverage prevents children from lacking emergency dental care, without insurance, they remain unable to access these services (44). The significance of broadening both public and private insurance coverage to enhance access to dental services is underscored in studies (11, 14, 15). Study (17) reports that children of less-educated parents face greater disparities in oral and dental health and access to care, despite having insurance coverage.

Regarding theme E, the findings underscore the importance of parents' understanding of oral and dental care programs, associated costs, and fundamental principles of oral and dental health as critical factors in utilizing health services and promoting oral and dental health (12, 19). Another study indicates that the effectiveness of oral and dental protection interventions heavily relies on parents' awareness of the risks of tooth decay and preventive measures (5).

Regarding theme F, the current study's findings indicate that a family's SES, education level, and parental health literacy significantly influence health behaviors. This underscores the importance of monitoring the benefits derived from dental services, especially among economically disadvantaged groups (20, 21). Research in Serbia has shown that children with ECC often reside in low-income areas with a GDP per capita below 122 euros, social and health care spending per capita under 4 euros, a higher population density of nine people per square kilometer, and an unemployment rate marginally higher by 0.6% (45). A study from Nova Scotia, Canada, where children are covered by universal dental insurance, found that the average number of decayed, missing, and filled surfaces (dmfs) was significantly higher among children whose parents lacked a college education compared to those whose parents were college-educated. In Nova Scotia, UHC for pediatric dental services funded through the public budget did not achieve as low a level of dental caries among children as seen in other regions (46). Another study demonstrated that Medicaid expansion did not correlate with an increase in providing preventive dental services for adults and children concurrently. This suggests that factors other than parental access to dental benefits through Medicaid might play a more significant role in the utilization of preventive dental care among low-income children (47). In Spain, a study observed a decrease in children's lack of access to a dentist from 1987 to 2011. While access to dental care improved, socioeconomic disparities persisted. The likelihood of children not visiting a dentist was twice as high in families involved in manual labor compared to those in non-manual professions, and this disparity remained relatively unchanged despite improved dental access (48). In Australia, the expansion of the oral and dental health program has improved the percentage of children under 18 visiting a public dental clinic within a reasonable timeframe. Individuals from the most disadvantaged socioeconomic backgrounds in densely populated areas have better access to public dental clinics than their less disadvantaged counterparts, although access still requires im-

provement for children living in very remote areas (49). A study in Milwaukee, USA, involving insured individuals from three racial groups—white, African-American, and Hispanic—revealed that white children received twice as many preventive dental services as children from other racial groups, highlighting significant racial disparities in the types of dental procedures received (50).

The practical measures for universal coverage of children's dental services were explored in this study. Future research might beneficially examine the role of electronic dental health records and management dashboards in monitoring health status and delivering these services at national and local levels to enhance policies for universal coverage of children's dental services.

5.1. Conclusions

As demonstrated, the literature on establishing UHC for pediatric dental services worldwide considers various factors, contingent on the specific conditions, locales, and resources of each country's health system. This study underscores the necessity of providing dental insurance for children, especially those from vulnerable and low socioeconomic backgrounds, to achieve universal coverage. Policies that enhance dentist participation in insurance or government programs are advantageous. It is crucial to offer preventive services and eliminate physical and financial obstacles to accessing dental care to improve children's oral health and reduce the economic burden on governments and families. Additionally, addressing social determinants of health and offering extensive support to disadvantaged socioeconomic groups are essential. Globally, effective policies have included increasing parental awareness about oral and dental health care principles and delivering a comprehensive package of essential services in schools. Implementing a national program that provides free dental visits at least once a year in schools or local community centers, with considerations for geographic and temporal accessibility, would be advantageous.

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