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# The influence of modern culture on children's oral health: a systematic review

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Dissertação conducente ao Grau de Mestre em Medicina Dentária (Ciclo Integrado)

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systematic review**

Trabalho realizado sob a Orientação da Mestre Aline dos Santos  
Gonçalves e coorientação da Engenheira Francisca Monteiro

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## Abstract

**Introduction:** Cultural beliefs and practices, significantly influence children's oral health behaviors and impact access to dental care across diverse communities.

**Objectives:** To explore the impact of modern culture on various aspects of children's oral health.

**Materials and methods:** This systematic review was conducted according to PRISMA 2020 guidelines. An electronic search for pertinent articles was held on PubMed and ScienceDirect databases, and it targeted articles published since 2010. Only manuscripts written in English were selected for review.

**Results:** Twenty-one articles were selected for synthesis and analysis. This review examines the cultural factors that may impact the adolescent's dental care, highlighting behavioral, and perceived health factors, as well as the significant influence of acculturation on pediatric oral health among minorities, with higher maternal acculturation linked to better oral health outcomes. This review also emphasizes the importance of traditional and cultural approaches in preventing early caries and addresses the barriers faced by diverse cultural backgrounds in accessing oral health services. Additionally, it discusses the negative impact of traditional practices on children's dental health.

**Discussion:** This review reveals the impact of cultural norms and acculturation on dental care practices and access. Also, it highlights the need for targeted approaches, while community-based efforts suggest promising solutions for promoting oral health equity.

**Conclusions:** The review emphasizes the intricate connection between culture and child oral health, underscoring the necessity of culturally sensitive interventions to improve oral health equity and outcomes for children from diverse backgrounds.

**Keywords:** culture, children, odontology, oral health.





## Resumo

**Introdução:** As crenças e práticas culturais influenciam significativamente os comportamentos de saúde oral das crianças e têm impacto no acesso aos cuidados dentários em diversas comunidades.

**Objetivos:** Explorar o impacto da cultura moderna em vários aspetos da saúde bucal infantil.

**Materiais e métodos:** Esta revisão sistemática foi realizada de acordo com as recomendações PRISMA 2020. Foi realizada uma pesquisa eletrónica nas bases de dados da PubMed e ScienceDirect, a qual procurou artigos publicados desde 2010. Apenas manuscritos publicados em inglês foram selecionados para revisão.

**Resultados:** Vinte e um artigos foram selecionados para síntese e análise. Esta revisão examina os fatores culturais que podem impactar o atendimento odontológico do adolescente, destacando fatores comportamentais e de saúde percebidos, bem como a influência significativa da aculturação na saúde bucal pediátrica entre as minorias, com maior aculturação materna ligada a melhores resultados de saúde oral. O estudo também demonstra a importância das abordagens tradicionais e culturais na prevenção da cárie precoce e aborda as barreiras enfrentadas por diversas origens culturais no acesso aos serviços de saúde oral. Além disso, discute o impacto negativo das práticas tradicionais na saúde bucal das crianças.

**Discussão:** Esta revisão revela o impacto das normas culturais e da aculturação nas práticas e no acesso aos cuidados odontológicos. Além disso, destaca a necessidade de abordagens específicas, enquanto os esforços baseados na comunidade sugerem soluções promissoras para a promoção da equidade na saúde oral.

**Conclusões:** A revisão fala da íntima ligação entre a cultura e a saúde oral infantil, sublinhando a necessidade de intervenções culturalmente sensíveis para melhorar a equidade e os resultados da saúde oral para crianças de diversas origens.

**Palavras-chave:** Crianças, cultura, odontologia, saúde oral.



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## LIST OF ABBREVIATIONS

**BTT:** Baby Teeth Talk study

**CALD:** Culturally and linguistically diverse

**CBE:** Canin Bud Extraction

**CI:** Confidence intervals

**IOM:** Infantil Oral Mutilation

**OD:** Odds Ratio

**PICOS:** Population, Intervention, Comparison, Outcomes, and Study design

**PRISMA:** Preferred Reporting Items for Systematic Reviews and Meta-Analyses

**UTD:** Unable To Determinate



## 1. INTRODUCTION

In recent decades, significant changes in lifestyle, dietary habits, and cultural practices have emerged, shaping the landscape of oral health among children worldwide. The intersection of modern culture with traditional beliefs and practices has prompted a critical examination of its influence on children's oral health outcomes (1,3). This thesis seeks to explore and analyze the multifaceted impact of modern culture on various aspects of children's oral health, including dental caries, oral hygiene practices, and access to dental care.

Modern culture encompasses a wide range of factors, including dietary patterns, technological advancements, socio-economic disparities, and cultural norms, all of which play a pivotal role in shaping children's oral health behaviors and outcomes (2). The globalization of food industries has led to increased consumption of sugary and processed foods, contributing to the rise in dental caries prevalence among children (2). Moreover, the proliferation of digital media and sedentary lifestyles has resulted in decreased physical activity levels, further exacerbating oral health issues.

Cultural beliefs and practices also significantly influence children's oral health behaviors (4,5,6,7,8). Traditional practices such as infant oral mutilation and canine bud removal, prevalent in certain communities, pose unique challenges to oral health promotion efforts. Additionally, cultural perceptions of oral health and healthcare-seeking behaviors impact access to dental care services among children from diverse cultural backgrounds (9).

To address these complex issues, this thesis will draw upon a comprehensive review of existing literature, incorporating insights from epidemiological studies, qualitative research, and intervention evaluations. By synthesizing findings from diverse disciplines, this study aims to provide a nuanced understanding of the mechanisms through which modern culture shapes children's oral health outcomes. However, this research seeks to inform the development of culturally sensitive oral health interventions and policies aimed at improving children's oral health in an increasingly diverse global society.

Thus, this integrative systematic review aims to investigate the impact of modern cultural influences on children's oral health practices and outcomes.



## 2. MATERIALS AND METHODS

### 2.1. Registration and protocol

This review was conducted according to PRISMA 2020 guidelines (10).

### 2.2. Eligibility criteria

Aiming at defining the eligibility criteria for the current review, the PICO (Population, Intervention, Comparison, and Outcome) strategy was used:

**Table 1** – PICO strategy applied to this review.

<u>PICO's domains</u>	<b>Targets</b>
<b>Population (P)</b>	Children or teenagers (up to 19 years old).
<b>Intervention (I)</b>	Influence of modern culture.
<b>Comparison (C)</b>	Traditional cultural practices or no specific influence.
<b>Outcome (O)</b>	Oral health status or outcomes.

From this, the guiding question of this review was defined: “How does the influence of modern culture impact the oral health behaviors, practices, and outcomes of children and teenagers?”

Hence, the following eligibility criteria were considered for selecting the articles:

#### Inclusion criteria

- Original articles and reviews that describe the influence of cultural features on children's oral health
- Research articles and systematic reviews that describe the impact of different cultural habits on children's oral health
- Article written in English

Exclusion criteria:

- Articles not fully available in English
- Articles that do not discuss cultural influences on oral health

### 2.3. Information sources and search strategy

The bibliographic research was performed using the PubMed (via the National Library of Medicine) and ScienceDirect databases in April 2024. Only studies published in English since 2010 were considered for this analysis. A list of keywords and Mesh terms was established: (influence OR impact OR consequences OR effect OR repercussion) AND (culture OR civilization OR tradition OR habits OR convention) AND (child OR teenager OR young OR adolescent OR juvenile) AND (“oral health” OR “dental health” OR “buccal health” OR teeth). From this list, the following search strategies were used (**Table 2**).

**Table 2** – Results obtained from the electronic search.

Database	Research strategy
PubMed	(influence) AND (culture) AND (child) AND (“dental health”)
	(culture) AND (child) AND (“dental health”)
ScienceDirect	(influence) AND (culture) AND (child”) AND (“dental health”)

### 2.4. Study selection

**First step:** Two databases were researched: PubMed and ScienceDirect. A double filter has been applied to the research to restrict the period and the language, respectively between 2010 and 2024, and fully available in English. Duplicate articles were eliminated.

**Second step:** After eliminating duplicate articles, the initial stage of study selection was carried out by reading the titles and abstracts of the articles. Studies that were not relevant to this review were discarded. After full-text reading, the articles that did not meet the eligibility criteria were removed, resulting in the final studies selected for analysis.



**Third step:** A full assessment of the information in each article was conducted, and the relevant data was extracted. This information was then systematically collected and structured into a table.

## **2.5. Data collection and synthesis methods**

When all the studies were evaluated, the most pertinent and uniform data was inserted in a systematized and synthetic table (**Table 3**). Information on the publication data, type of study, objective or materials and methods, and results were extracted. The studies were disposed in chronological order.

## **2.6. Study risk of bias assessment**

The risk of bias of the studies reviewed was assessed using the Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for randomized studies (23). Each study was given a final methodological quality rating based on the scores obtained in the various risk of bias domains. An overall rating of "Strong" is given if it has a low risk of bias in all domains except one, "Moderate" if it has a domain rated "Low", and "Weak" if it is considered to have a high risk of bias in two or more domains. The complete quality assessment data, including the criteria defined, the results of each study, and their categorization, are provided in **Appendix A1**.

## **2.7. Effect measures and certainty of evidence**

The effect measures of the main outcomes of each study were summarized in a table (**Table 4**) in order to ascertain the comparability of the included studies.

## **2.8. Synthesis methods**

To allow a clear and systematized analysis of the collected data, relevant information was organized in **Table 4**. This table includes information on the author, year of publication, type of study, characteristics of the population, and results.



### 3. RESULTS

#### 3.1. Article selection

The initial search resulted in the identification of 149 articles (**Table 2**). Out of these, 12 were eliminated due to duplicity using Excel. Of the 137 remaining articles, 75 were eliminated by reading the title, 4 were eliminated because they were not fully available in English. Then, 22 studies were eliminated after screening the title and abstract, as they were not relevant to this review. Only 36 articles were selected for full-text assessment. Among these, only 21 articles met the eligibility criteria, being therefore selected for this review. The complete selection process is depicted in **Figure 1**.

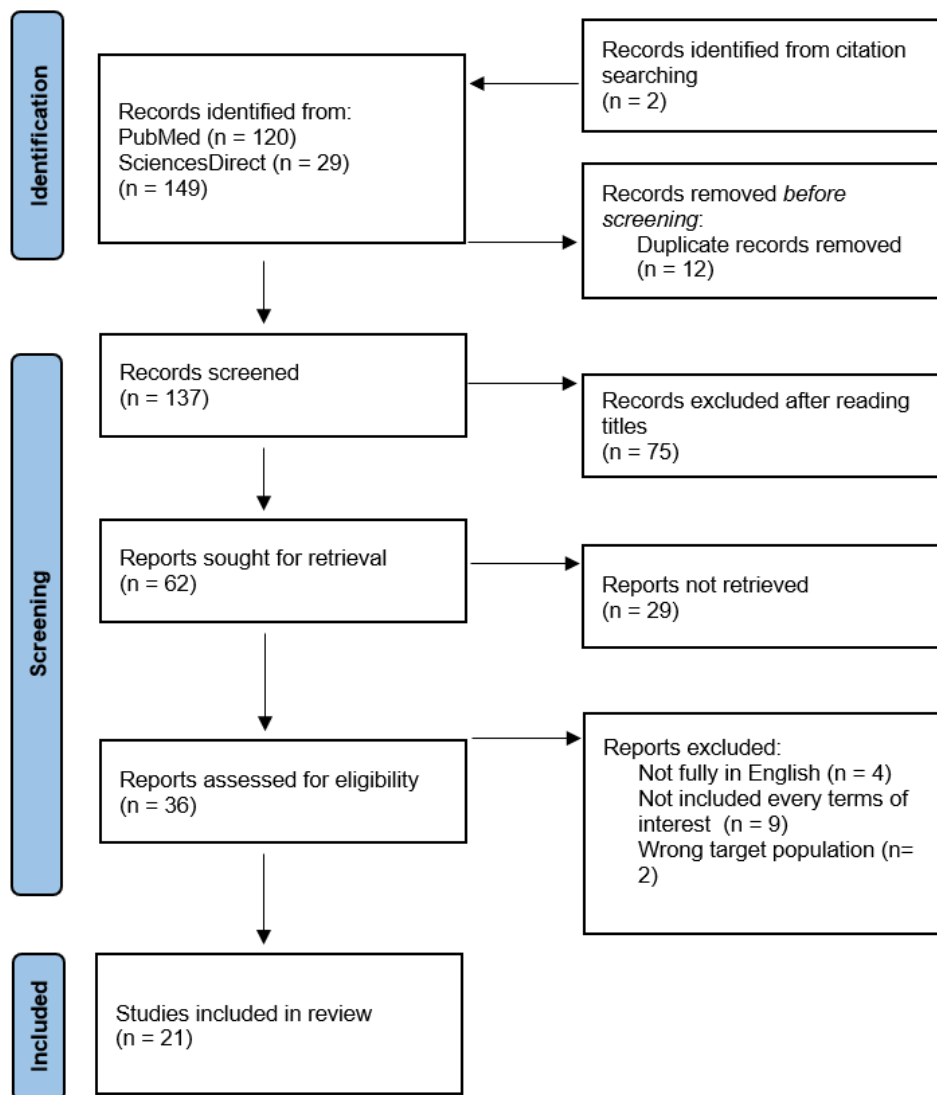
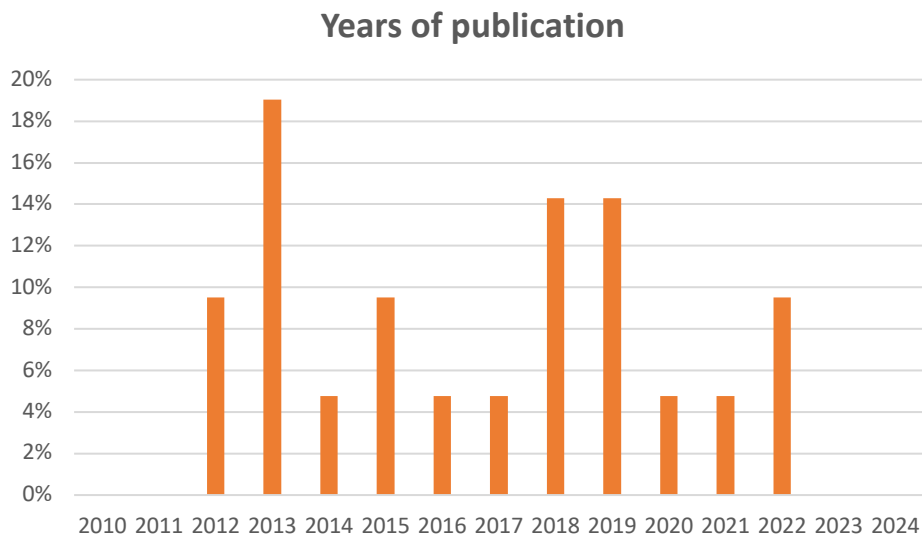


Figure 1 – Flowchart of the selection process (10).

### 3.2. Study characteristics

#### Year of publication

After analysis, during the year 2013, was published about four articles about the topic discussed in this paper (19.00%), followed by 2018 and 2019, with three articles each (14.00%). The years 2014, 2016, 2017, 2020, and 2021 were periods when only one study was published (5.00%). **Figure 2** represents the percentage of publication between 2010 and 2024.



**Figure 2** – Percentage of publications over the years.

#### Study design

Among the studies selected for this review, 24% studies were observational studies, 33% were mixed studies, 9% were Cohort studies, 29% were correlation studies and 5% experimental (**Figure 3**).

### Type of articles

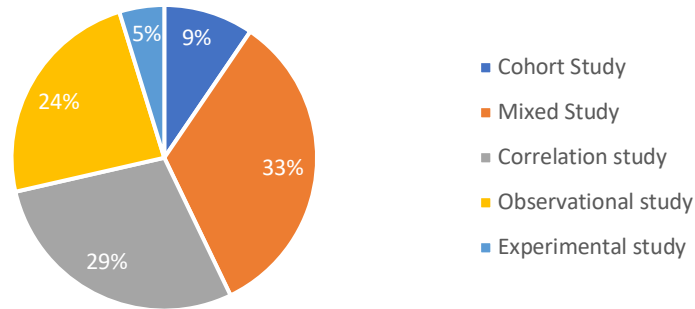


Figure 3 – Graphic representation of the type of articles.

### Study origin

Regarding the country in which the studies were carried out, one of them is from Brazil (12), two were developed in Australia (3,13), five were performed in the United States (2,14,15,16,17), another one was conducted in Canada (18), one in the Netherlands (19), two in Uganda (4,6), one in Singapore (9), one in Norway (20), one in New Zealand (21), one in Sweden (22), two in Ethiopia (8,7), one in Japan and in the United Kingdom (1), one in India (23), and finally one in Sudan (5) (Figure 3).

### Study origin

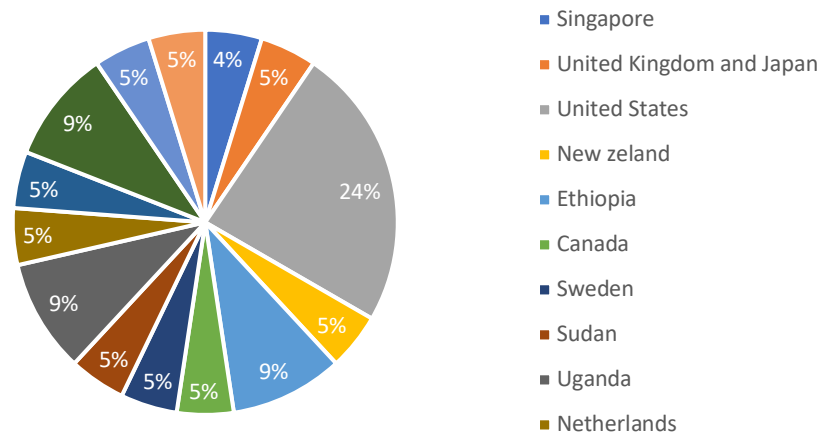


Figure 4 – Graphic representation of the country of publication/analysis.

### 3.3. Qualitative synthesis

The relevant data extracted from each of the included studies was compiled in a table to facilitate study analysis and comparison.

**Table 3.** Results obtained from the articles.

<u>Publication data</u>	<u>Objectives &amp; Type of study</u>	<u>Materials and methods</u>	<u>Results</u>
<p><i>Promoting positive health behaviours - 'tooth worm' phenomenon and its implications</i></p> <p><b>Gao et al. (2012)</b></p> <p>(9)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To characterize the impact of parental 'tooth worm' belief on their children's caries experience and its psycho-behavioural mechanisms.</li> <li>• <b>Type of study:</b> Observational study</li> </ul>	<ul style="list-style-type: none"> <li>• Participants: 1,782 preschoolers aged 3-6 years. Each child received an oral examination and microbiological tests. Parents completed a self-administered questionnaire on their socio-demographic background, oral health knowledge/attitude and child's oral health habits.</li> <li>• Location: Singapore.</li> </ul>	<ul style="list-style-type: none"> <li>• "High caries rate" (defined as having more than 2 affected teeth) among children whose parents believed in the existence of the "tooth worm".</li> <li>• Children with parents holding this belief tended to brush their teeth more frequently (<math>p = 0.042</math>).</li> <li>• Parental belief in the "tooth worm" phenomenon is associated with children developing regular toothbrushing habits early on and experiencing a reduction in dental caries, highlighting the significance of incorporating cultural beliefs into oral health education efforts.</li> </ul>
<p><i>A cross-sectional survey investigating care of the primary dentition by paediatric dental specialists in Japan and the UK</i></p> <p><b>Fukai et al. (2012)</b></p> <p>(1)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To investigate the practices related to the care of primary dentition among pediatric dental specialists in Japan and the UK.</li> <li>• <b>Type of study:</b> Cross-sectional survey</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Population:</b> The participants consisted of 104 Japanese and 115 UK-based paediatric dental specialists.</li> </ul> <p>Four clinical scenarios involving a 6-year-old boy to gather the clinical opinions of participants. These scenarios included various dental conditions such as single distal cavity, distal occlusal cavity, and large distal occlusal cavity with different characteristics like vitality and pain.</p> <ul style="list-style-type: none"> <li>• <b>Location:</b> Japan and United Kingdom</li> </ul>	<ul style="list-style-type: none"> <li>• Differences in treatment preferences between Japanese and UK specialists in pediatric dental care across different clinical scenarios.</li> <li>• Japanese specialists showed a preference for traditional restorative care in scenarios involving vital or non-vital pulp involvement, while UK specialists leaned towards vital pulpotomy with a stainless steel crown in the first scenario and non-vital pulpotomy with a stainless steel crown in the third scenario.</li> <li>• These findings underscore variations in clinical decision-making practices between the two countries.</li> </ul>
<p><i>Reducing Alaska Native paediatric oral health disparities: a systematic review of oral health interventions and a case study on multilevel strategies to reduce sugar-sweetened beverage intake</i></p> <p><b>Chi (2013)</b></p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To reduce Alaska Native pediatric oral health disparities through a systematic review of oral health interventions and a case study on multilevel strategies to reduce sugar-sweetened beverage intake.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Participants:</b> Based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement, the terms "Alaska Native", "children" and "oral health" were used to search Medline, Embase, Web of Science, Google Scholar, and health foundation websites</li> </ul>	<ul style="list-style-type: none"> <li>• three interventions: education for families and communities to reduce pediatric tooth decay. While these interventions have potential benefits, challenges regarding their acceptability, reach, and sustainability within the Alaska Native population were noted.</li> <li>• Additionally, the study presented a case study and conceptual model for implementing multilevel strategies to reduce sugar-sweetened beverage intake among Alaska Native children.</li> </ul>

<u>Publication data</u>	<u>Objectives &amp; Type of study</u>	<u>Materials and methods</u>	<u>Results</u>
(2)	<ul style="list-style-type: none"> <li>• <b>Type of study:</b> Systematic review and a case study.</li> </ul>	<p>(1970–2012) for relevant clinical trials and evaluation studies.</p> <ul style="list-style-type: none"> <li>• <b>Location:</b> Alaska</li> </ul>	
<p><i>Reducing disease burden and health inequalities arising from chronic disease among indigenous children: an early childhood caries intervention in Aotearoa/New Zealand</i></p> <p><b>Broughton et al. (2013)</b></p> <p>(21)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To reduce disease burden and health inequalities stemming from chronic disease, specifically early childhood caries, among indigenous children in Aotearoa/New Zealand.</li> <li>• <b>Type of study:</b> Randomized controlled trial</li> </ul>	<ul style="list-style-type: none"> <li>• This trial It applies the principles of kaupapa Māori research</li> <li>• <b>Population:</b> focuses on Māori women expecting a child in the Waikato-Tainui tribal area. It involves clinical and self-reported data collection during pregnancy and at 24 and 36 months postpartum.</li> <li>• All participants will receive early childhood caries intervention benefits, with the intervention delayed by 24 months for the control group.</li> <li>• <b>Location:</b> New Zealand</li> </ul>	<ul style="list-style-type: none"> <li>• The anticipated outcomes include the development and evaluation of oral health interventions rooted in the principles of this specific cultural community.</li> <li>• These interventions aim to address early childhood caries (ECC) among Māori children, potentially leading to a reduction in oral health disparities in this population.</li> </ul>
<p><i>The traditional practice of canine bud removal in the offspring of Ethiopian immigrants</i></p> <p><b>Davidovich et al. (2013)</b></p> <p>(8)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To investigate the traditional practice of removing canine buds in the offspring of Ethiopian immigrants.</li> <li>• <b>Type of study:</b> Observational or descriptive study</li> </ul>	<ul style="list-style-type: none"> <li>• Population: 477 children of Ethiopian descent and 317 offspring of native Israeli parents, from 21 nursery schools and kindergartens. For purposes of analysis, children were classified into two age groups: younger (ages 18–48 months) and older (ages 49–82 months).</li> <li>• Location: Ethiopia</li> </ul>	<ul style="list-style-type: none"> <li>• Dental examinations aimed to determine the presence or absence of primary canines and of developmental enamel defects on adjacent teeth to the primary canines.</li> <li>• A higher proportion of Israeli children had canines compared to Ethiopian children, and Ethiopian children had a higher prevalence of dental defects, particularly missing primary canines, compared to Israeli children.</li> <li>• Offspring of Ethiopian immigrants who had emigrated 15–20 years earlier had a greater prevalence of dental defects compared to native Israeli children living in similar socioeconomic neighborhoods.</li> </ul>
<p><i>Predictors of dental care use: findings from the national longitudinal study of adolescent health</i></p> <p><b>Okunseri et al. (2013)</b></p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To examine longitudinal trends and associated factors in dental service utilization by adolescents progressing to early</li> </ul>	<ul style="list-style-type: none"> <li>• The study analyzed data from the National Longitudinal Study of Adolescent Health across four waves spanning from 1994 to 2008.</li> </ul>	<ul style="list-style-type: none"> <li>• It found that dental service utilization peaked at age 16 and gradually declined until age 21, remaining stable thereafter.</li> <li>• Whites and Asians had higher utilization rates compared to Blacks and Hispanics.</li> <li>• Baseline utilization strongly predicted subsequent utilization, even after adjusting for socioeconomic factors.</li> </ul>



<u>Publication data</u>	<u>Objectives &amp; Type of study</u>	<u>Materials and methods</u>	<u>Results</u>
(14)	adulthood in the United States. • <b>Type of study:</b> Observational study	It conducted a retrospective analysis to understand how adolescents transitioned into early adulthood and utilized dental services over time. • <b>Location:</b> United States	• Blacks were consistently less likely to report having a dental examination compared to Whites.
<p><i>Traditional and cultural approaches to childrearing: preventing early childhood caries in Norway House Cree Nation, Manitoba</i></p> <p><b>Cidro et al. (2014)</b></p> <p>(20)</p>	• <b>Aim:</b> To explore traditional and cultural approaches to childrearing within the Norway House Cree Nation community and their potential impact on preventing early childhood caries. • <b>Type of study:</b> Qualitative research study	• Intervention-based project called the Baby Teeth Talk Study (BTT). • In discussions on the interim findings of the study, participants discussed traditional cultural approaches practiced in the community for healthy infant feeding and oral health. • Using a participatory research approach, the authors engaged in a partnership with the community partner who assisted with the development of research questions as well as identifying research • <b>Population:</b> Grandmothers in the community were recruited to participate in a total of 20 interviews and four focus groups. • <b>Location:</b> Norway	• Respondents discussed the importance of feeding infants country food (such as fish, mouse, and rabbit) at a young age for the overall health of the infant. • Related to this was the use of traditional medicine to address oral health issues such as teething and thrush with salves made from tree bark rubbed on the gums of the infant. • The role of swaddling and other thermal regulation techniques was identified as directly linked to oral health, particularly the development of healthy deciduous teeth.
<p><i>Dental pain and self-care: a cross-sectional study of people with low socio-economic status residing in rural India</i></p> <p><b>Jaiswal et al. (2015)</b></p> <p>(23)</p>	• <b>Aim:</b> To find out the prevalence of dental pain and the type of self-care remedies utilized for pain relief by people with low socio-economic status residing in Kollipara mandal, Guntur district, Andhra Pradesh • <b>Type of study:</b> Cross-sectional study	• <b>Population:</b> This survey included 630 individuals with a mean age of 32.8 ± 16.7 years, with 44.1% male and 55.9% female participants. A questionnaire, which consisted of sections on socio-economic and demographic variables, dental pain, pain characteristics and self-care remedies utilized to combat dental pain, was used to collect data.	• This study reveals a dental pain prevalence of 28.3% in the past 6 months. • Among those experiencing dental pain, 49.6% utilized over-the-counter medication as a self-care method for relief, highlighting various self-care practices for dental pain management. • This study provides an insight into the type and usage of self-care in relief of dental pain. Pain sufferers used a variety of self-care methods to deal with their problems.

<u>Publication data</u>	<u>Objectives &amp; Type of study</u>	<u>Materials and methods</u>	<u>Results</u>
<p><i>Exploring child dental service use among migrant families in metropolitan Melbourne, Australia</i></p> <p><b>Christian <i>et al.</i> (2015)</b></p> <p>(3)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To describe and explore factors related to dental service use among migrant children.</li> <li>• <b>Type of study:</b> Cross-sectional analysis</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Location:</b> Rural India</li> <li>• <b>Population:</b> 600 families with 1–4 year old children from Iraqi, Lebanese, and Pakistani backgrounds residing in Melbourne. Exploratory trial implementing a community-based child oral health promotion intervention.</li> <li>• <b>Location:</b> Melbourne, Australia</li> </ul>	<ul style="list-style-type: none"> <li>• Results showed that a large majority (88%) of the children had never visited the dentist, with an average age of 3.06 years.</li> <li>• The variable most significantly associated with children visiting the dentist was the parent-reported 'no reason for child to visit the dentist.'</li> <li>• Among children whose parents reported no reason for dental visits, 22% experienced dental caries, with 8% at the level of cavitation.</li> <li>• The study highlighted a misalignment between perceived dental need and actual dental service utilization.</li> </ul>
<p><i>Maternal perception of the occurrence of traumatic dental injuries in children: a cohort study of south Brazil</i></p> <p><b>Costa <i>et al.</i> (2016)</b></p> <p>(12)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To investigate various aspects of oral health among adolescent mothers and their children in Pelotas, Brazil.</li> <li>• <b>Type of study:</b> Cohort study</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Participants:</b> The study included 871 teenage mothers between 11 and 19. They gave birth to 508 children aged 24–36 months.</li> <li>• <b>Location:</b> Pelotas, Brazil</li> </ul>	<ul style="list-style-type: none"> <li>• Dental Trauma in Children: 12.6% of the children had experienced some type of dental trauma.</li> <li>• Maternal Perception of Child's Oral Health: 86.4% of the mothers perceived their child's oral health as good/excellent.</li> <li>• Seeking Care for Dental Trauma: Among mothers who sought care for dental trauma, the majority (73.9%) went to basic health-care units, followed by emergency rooms (10.1%), dental offices (10.1%), and doctor's offices (5.9%).</li> <li>• Factors Associated with Dental Trauma: Lower socioeconomic status was associated with a higher incidence of dental trauma reported by mothers.</li> </ul>
<p><i>Acculturation and Pediatric Minority Oral Health Interventions</i></p> <p><b>Tiwari MPH <i>et al.</i> (2017)</b></p> <p>(15)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To discuss various intervention strategies aimed at improving oral health outcomes among pediatric minority populations.</li> <li>• <b>Type of study:</b> Research study.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Participants:</b> Teenagers</li> <li>• <b>Location:</b> United States</li> </ul>	<ul style="list-style-type: none"> <li>• Cultural Sensitivity: Effective oral health interventions for pediatric minority populations should take into account cultural beliefs, values, and practices related to oral health. Culturally sensitive approaches may involve incorporating cultural traditions into intervention programs and providing language-appropriate education materials.</li> <li>• Pediatric Minority Oral Health: Children from minority backgrounds often face disparities in oral health outcomes</li> <li>• Access to oral health care services, cultural beliefs about oral health, and socioeconomic factors all play a role in these disparities.</li> </ul>
<p><i>Association between maternal acculturation and health beliefs related to oral health of Latino children</i></p> <p><b>Tiwari <i>et al.</i> (2018)</b></p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> to investigate the association between maternal acculturation and health beliefs related to oral health among Latino children.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Participants:</b> 100 mother-child pairs.</li> <li>• <b>Location:</b> Children's Hospital Colorado, University of Colorado.</li> </ul>	<ul style="list-style-type: none"> <li>• Oral Health Knowledge and Behaviors: English-speaking mothers had higher mean scores in various aspects related to oral health knowledge, behaviors, knowledge on dental utilization, self-efficacy, and Oral Health Locus of Control compared to Spanish-speaking mothers.</li> </ul>

<u>Publication data</u>	<u>Objectives &amp; Type of study</u>	<u>Materials and methods</u>	<u>Results</u>
(16)	<ul style="list-style-type: none"> <li>• <b>Type of study:</b> Cross-sectional survey</li> </ul>		<ul style="list-style-type: none"> <li>• Language Preference Associations: Univariate analysis revealed significant associations between preference for the Spanish language and several factors, including maternal self-efficacy, perceived susceptibility, and perceived barriers.</li> </ul>
<p><i>Barriers and opportunities to oral health in Dutch-Moroccan children in the Netherlands: a narrative report</i></p> <p><b>Nes et al. (2018)</b></p> <p>(19)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To explore cultural factors involved in poorer oral health of Dutch-Moroccan children by identifying knowledge, attitudes and behaviour of their mothers concerning their children's oral health.</li> <li>• <b>Type of study:</b> Report case</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with mothers of Dutch-Moroccan preschool children in two cities.</li> <li>• <b>Population:</b> The mothers were interviewed either in two focus groups (with 16 participants) or through individual semi-structured interviews (with 13 participants).</li> <li>• <b>Location:</b> Netherlands</li> </ul>	<ul style="list-style-type: none"> <li>• Despite this, most mothers felt empowered in making dental care decisions for their children.</li> <li>• The research highlighted a gap between knowledge of preventive strategies and their implementation in the daily lives of Dutch-Moroccan mothers.</li> <li>• Further qualitative research is recommended to gain a deeper understanding of the cultural values, knowledge, and practices related to oral health care in this population.</li> </ul>
<p><i>Agony resulting from cultural practices of canine bud extraction among children under five years in selected slums of Makindye: a cross-sectional study</i></p> <p><b>Atim et al. (2018)</b></p> <p>(4)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To investigate the cultural practice of canine bud extraction (CBE) and its impact on children under the age of five in selected slums of Makindye Division, Kampala. Specifically, the study aimed to understand the prevalence and implications of "false teeth" resulting from CBE, as well as the decision-making process behind this practice among caretakers of young children.</li> <li>• <b>Type of study:</b> Cross-sectional study</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Population:</b> 298 respondents who consented to be interviewed, utilizing both qualitative and quantitative data collection methods.</li> <li>• The study focused on households with children under 5 years who had experienced "false teeth" due to cultural practices of canine bud extraction (CBE) in selected slums of Makindye Division, Kampala.</li> <li>• The households had to have children under 5 years as the practice of CBE is prevalent in this age group.</li> <li>• <b>Location:</b> Makindye Division, Kampala, Uganda.</li> </ul>	<ul style="list-style-type: none"> <li>• 298 respondents with children who had experienced "false teeth," finding that 56.7% had multiple children under 5 and 31.9% were from the central region.</li> <li>• A high proportion (90.3%) practiced CBE, primarily by traditional healers (69.8%) or trained health workers (12.1%).</li> <li>• Factors significantly associated with CBE included number of children and belief in its harmfulness.</li> <li>• Beliefs that CBE treats diarrhea and fever were independent predictors of its practice.</li> <li>• Over half of respondents were aware of CBE's side effects, with 31% mentioning death as one potential consequence.</li> <li>• Highlights the widespread practice of canine bud extraction (CBE) driven by myths, emphasizing the need for collaborative efforts among healthcare providers, policymakers, and the community to dispel misconceptions and promote awareness of the associated risks.</li> </ul>
<p><i>Infant oral mutilation (IOM) related to traditional practices among inner city pre-school children in Sudan</i></p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To assess the prevalence of Infant Oral Mutilation (IOM) among inner-city preschool children in Sudan and</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Population:</b> 212 randomly selected children from twelve government pre-schools in Khartoum were examined for the presence of IOM.</li> </ul>	<ul style="list-style-type: none"> <li>• The mean age of the sample was 4.7 years, with a prevalence of clinical Infant Oral Mutilation (IOM) at 10.8%.</li> <li>• Analysis identified associations between clinical IOM and children experiencing diarrhea during teething (7.15 times more likely) and</li> </ul>

<u>Publication data</u>	<u>Objectives &amp; Type of study</u>	<u>Materials and methods</u>	<u>Results</u>
<p><b>Elgamri <i>et al.</i> (2018)</b></p> <p>(5)</p>	<p>explore the associated traditional practices.</p> <ul style="list-style-type: none"> <li>• <b><u>Type of study:</u></b> Cross-sectional observational study</li> </ul>	<ul style="list-style-type: none"> <li>• Socio-demographic, feeding and teething-related data were collected by self-administered questionnaires.</li> <li>• <b><u>Location:</u></b> Khartoum, Sudan.</li> </ul>	<p>mothers with education below elementary school level (2.69 times more likely).</p> <ul style="list-style-type: none"> <li>• The present study showed that the practice of IOM is common among inner city children. Certain teething-related symptoms especially diarrhea and maternal education could be strong determinants of the malpractice of IOM.</li> </ul>
<p><i>Prevalence and dental effects of infant oral mutilation or Ebiino among 3–5 year–old children from a rural district in Uganda</i></p> <p><b>Musinguzi <i>et al.</i> (2019)</b></p> <p>(6)</p>	<ul style="list-style-type: none"> <li>• <b><u>Aim:</u></b> To study is to assess the prevalence and dental effects of infant oral mutilation, known as Ebiino, among 3–5 year-old children in a rural district of Uganda.</li> <li>• <b><u>Type of study:</u></b> Experimental study</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>Population:</u></b> Involved 432 children aged 3–5 years All participants, comprising 230 males and 202 females</li> </ul> <p>They were recruited through a stratified random sampling procedure, and their caregivers provided written informed consent.</p> <ul style="list-style-type: none"> <li>• <b><u>Location:</u></b> Nyakagyeme Sub-county, Rukungiri District, Uganda.</li> </ul>	<ul style="list-style-type: none"> <li>• Prevalence of 8.1% for missing teeth not due to caries or trauma, with the primary canine being the most commonly absent tooth. This absence was attributed to the traditional practice of Ebiino.</li> <li>• Chi-square tests indicated no statistically significant association of Ebiino with gender (<math>p = 0.352</math>) or age (<math>p = 0.909</math>).</li> <li>• Additionally, enamel hypoplasia or damage was observed in some primary canines, primary lateral incisors, and first primary molars, along with displacement of adjacent teeth, which was associated with the practice of Ebiino.</li> </ul>
<p><i>The dental complications of canine tooth bud removal in 2–12 years old children in Northwest Ethiopia</i></p> <p><b>Teshome <i>et al.</i> (2019)</b></p> <p>(7)</p>	<ul style="list-style-type: none"> <li>• <b><u>Aim:</u></b> To assess the dental complications resulting from the removal of canine tooth buds in children aged 2 to 12 years in Northwest Ethiopia.</li> <li>• <b><u>Type of study:</u></b> Retrospective observational study</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>Population:</u></b> children aged 2–12 years who visited the dental clinic of the University of Gondar hospital in the study period.</li> <li>• The children not included in the study were, under 2 and above 12 years, those who failed to provide the consent, acutely sick on the day of the examination.</li> <li>• <b><u>Location:</u></b> Northwest Ethiopia</li> </ul>	<ul style="list-style-type: none"> <li>• 355 children aged 2–12 years and found a high prevalence (86.8%) of canine tooth bud removal, particularly among children aged 6–9 years (54.87%) and first-born children (40.26%).</li> <li>• The most common dental complications observed were malformed enamel (hypoplastic) canines (48.5%) and missed/unerupted canines (38.6%).</li> <li>• The study investigated canine tooth bud removal (CTBR) practices in children aged 2–12 in Northwest Ethiopia, finding a high prevalence of CTBR (86.8%).</li> <li>• This rate was notably higher than in other regions, potentially due to deep-rooted beliefs and lack of awareness. Malformed or missed canines were common post-CTBR, with infections and bleeding being frequent complications, highlighting the need for increased awareness and access to dental care to address the adverse effects of this cultural practice.</li> </ul>
<p><i>Acculturation and the oral health of a nationally representative sample of Hispanic children in the United States: an analysis of 2011–</i></p>	<ul style="list-style-type: none"> <li>• <b><u>Aim:</u></b> To investigate the association between acculturation and oral health in Hispanic children aged 1 to 17.</li> </ul>	<ul style="list-style-type: none"> <li>• <b><u>Participants:</u></b> The analysis focused on Hispanic children aged 1 to 17 who live in United States, excluding those with missing data on relevant</li> </ul>	<ul style="list-style-type: none"> <li>• Significant associations were found between household acculturation and oral health.</li> <li>• In unadjusted analyses, the prevalence of dental caries was higher in children from low acculturation households compared to those from moderate or high acculturation households.</li> </ul>

<u>Publication data</u>	<u>Objectives &amp; Type of study</u>	<u>Materials and methods</u>	<u>Results</u>
<p><i>2012 National Survey of Children's Health data</i></p> <p><b>Kabani <i>et al.</i> (2020)</b></p> <p>(17)</p>	<ul style="list-style-type: none"> <li>• <b>Type of study:</b> Analysis of data</li> </ul>	<p>variables. Information is obtained through telephonic interviews with a parent or guardian knowledgeable about the child's healthcare use and health status.</p> <ul style="list-style-type: none"> <li>• <b>Location:</b> United States</li> </ul>	<ul style="list-style-type: none"> <li>• There was a dose-response relationship observed, indicating that as household acculturation increased, the likelihood of children experiencing dental caries decreased.</li> <li>• These findings suggest that interventions aimed at reducing oral health disparities in Hispanic children should consider the acculturation levels of their households.</li> </ul>
<p><i>Early childhood oral health promotion for First Nations and Métis communities and caregivers in Manitoba</i></p> <p><b>Kyoon-Achanet <i>et al.</i> (2021)</b></p> <p>(18)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To evaluate and improve oral health promotion initiatives targeting First Nations and Métis communities.</li> <li>• <b>Type of study:</b> Experimental study</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Participants:</b> Eight groups of purposively sampled participants (n = 59) in four communities</li> <li>• <b>Location:</b> Manitoba, Canada</li> </ul>	<ul style="list-style-type: none"> <li>• They recommended sharing culturally appropriate oral health information through community and prenatal programs, workshops, schools, and day care centers.</li> </ul>
<p><i>Dental diaspora: oral health care attitudes and experiences in culturally and linguistically diverse mothers in Australia</i></p> <p><b>Marcus <i>et al.</i> (2022)</b></p> <p>(13)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To investigate the oral health care attitudes and experiences of culturally and linguistically diverse (CALD) mothers living in Australia.</li> <li>• <b>Type of study:</b> Case report</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Participants:</b> CALD mothers were included if they were foreign-born, from a non-English speaking country, conversed in a language other than English, and had at least one child under 12 years old.</li> <li>• <b>Location:</b> Australia.</li> </ul>	<ul style="list-style-type: none"> <li>• Emphasizing the need for transdisciplinary collaboration between dental and primary healthcare providers to promote equitable oral health outcomes across diverse population groups.</li> </ul>
<p><i>Acculturation and 4-year caries increment among children of foreign-born mothers in Sweden: a register-based cohort study</i></p> <p><b>Granlund <i>et al.</i> (2022)</b></p> <p>(22)</p>	<ul style="list-style-type: none"> <li>• <b>Aim:</b> To investigate the relationship between acculturation and dental caries increment over four years among children born to foreign-born mothers in Sweden.</li> <li>• <b>Type of study:</b> Register-based cohort study</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Population:</b> included all children born in 2000–2003 who resided in Stockholm County, Sweden, at age 3 years and who were followed up at age 7 (n = 63,931).</li> <li>• <b>Location:</b> Stockholm, Sweden</li> </ul>	<ul style="list-style-type: none"> <li>• Children of foreign-born mothers, regardless of the maternal country's Human Development Index (HDI), showed a higher risk of caries increment between ages 3 and 7 compared to children of Swedish-born mothers.</li> <li>• Children whose mothers were born in low HDI countries and had resided in Sweden for 19 years or less had about 1.5 times higher risk of caries increment compared to those whose mothers had lived in Sweden for more than 20 years.</li> <li>• Caries increment in the children of foreign-born mothers was associated with the age of their mother when she arrived in Sweden and was lower when the mother had arrived before age 7 years.</li> </ul>



### 3.4. Results of individual studies

This study of Christopher Okunseri *et al.* Speak about the predictors of adolescent dental care who use include socioeconomic, behavioral, and perceived health factors (14).

Acculturation significantly influences the effectiveness of pediatric oral health interventions among minorities. Higher maternal acculturation is associated with more positive oral health beliefs and practices among Latino children (15,16).

Higher acculturation is associated with better oral health outcomes among Hispanic children in the United States (17).

The acculturation of foreign-born mothers in Sweden is associated with a four-year increase in caries in their children (22).

The study of John R. Broughton *et al.* illustrates traditional and cultural approaches to child-rearing play a key role in preventing early caries among children in the Norway House Cree Nation in Manitoba (20).

Early intervention for dental caries in Indigenous children in New Zealand can reduce disease burden and health inequalities (21).

According to Costa VP *et al.*, mothers perceive traumatic dental injuries in their children as frequent, with risk factors related to gender and physical activity (12).

Multilevel interventions, including reducing sugary beverage consumption, can decrease oral health disparities among Alaska Native children (2).

Traditional cultural approaches are essential to promoting the oral health of young children in First Nations and Métis communities in Manitoba. (18).

In fact, Mothers from diverse cultural and linguistic backgrounds in Australia encounter considerable difficulties in accessing and using oral health services (13).

Dutch-Moroccan children experience significant barriers to oral health, but opportunities exist to improve their oral health outcomes (19).

Christian B *et al.* exposed that the use of dental services among children from migrant families in Melbourne is influenced by several socio-economic and cultural factors. (3)

The "tooth worm" phenomenon illustrates traditional beliefs that can be barriers to positive oral health behaviors in Singapore (9).

According to Jaiswal AL *et al.*, people of low socioeconomic status in rural India experience frequent dental pain and often engage in inadequate self-care practices (23).

Care of primary dentition by pediatric dental specialists varies considerably between Japan and the United Kingdom (1).

According to Okunseri C *et al.*, childhood oral mutilation (Ebiino) is common among children aged 3 to 5 years in a rural district of Uganda, with significant negative dental effects (6).

Four other articles speak about oral mutilation in Africa. The first one evocating traditional practice of canine bud extraction in children of Ethiopian immigrants has significant dental consequences (8).

The second and the third illustrate the canine bud extraction in Makindye slums causes significant pain and dental complications in children under five years old and extraction of canine buds in children aged 2 to 12 years in northwest Ethiopia leads to various dental complications.

Finally, the fourth relate the childhood oral mutilation linked to traditional practices is common among preschool children in central city neighborhoods in Sudan (4,5,7).

### **3.2. Reporting biases**

According to the assessment of the risk of bias in randomized studies using the EPHPP method (11), seven articles were classified as “Weak”, eleven were classified as “Moderate” and three as “Strong”. The results of this assessment were tabled in **Appendix A1**.

Bias in the measurement of outcomes can be considered the lowest-scoring factor in the context of the studies reviewed. Bias introduced by small sample sizes, non-randomized selection of participants, and data quality or evolution of cultural practices, may compromise the comparability and generalizability of results.

### **3.5. Effect measures and certainty of evidence**

For more analysis, were defined for all the articles the main outcome, the effect measures, and the certainty of the evidence, all summarized in **Table 4**.

**Table 4** – Effect measure of the main outcome of each article.



Articles	Main outcome	Effect measures	Certainty of evidence
X L Gao <i>et al.</i> (9)	Prevalence of belief in the "tooth worm" phenomenon	Proportion (%)	(Odds Ratio = 0.41; 95% Confidence Interval = 0.19-0.89)
Kakuhiro Fukai <i>et al.</i> (1)	Preferences for Treatment Modalities in Japan and the UK	Proportion (%)	UTD
Donald L. Chi (2)	Prevalence of dental caries among Alaska Native children	Proportion (%)	$p < 0.001$
John R Broughton <i>et al.</i> (21)	Prevalence of Early Childhood Caries (ECC)	Proportion (%)	Results will be presented as differences and 95% CI.
Esti Davidovich <i>et al.</i> (8)	Prevalence of Canine Bud Removal (CBR)	Proportion (%)	Chi square test , $p \leq 0.05$
Christopher Okunseri <i>et al.</i> (14)	Dental Care Utilization Among Adolescents:	Odds Ratio (OR)	Odds ratio = 10.7, 2.4, and 1.5
Jaime Cidro 1 <i>et al.</i> (20)	Prevalence of Early Childhood Caries (ECC)	Proportion	UTD
Ashish K. Jaiswal <i>et al.</i> (23)	Prevalence of Dental Pain	Prevalence (%)	Response rate (RR) of 0.8
Christian <i>et al.</i> (3)	Use of Dental Services Among Migrant Families:	Prevalence (%)	Odds Ratio in STATA 12.1, using the Survey command.
Costa <i>et al.</i> (12)	Prevalence of Traumatic Dental Injuries (TDIs)	Proportion (%)	Associations between variables were tested using the chi-square test. In the multivariable analysis, we used Poisson regression with robust variance to estimate the prevalence ratio (PR) and 95% confidence interval (95% CI). Adjusted analysis was performed using all variables. PRs and 95% CIs were assessed.
Tamanna Tiwari MPH <i>et al.</i> (15)	Prevalence of Oral Health Issues in Pediatric Minority Populations	Proportion or percentage	12-item Marin Short Acculturation Scale
Tamanna Tiwari <i>et al.</i> (16)	Association between Maternal Acculturation and Oral Health Beliefs:	Odds Ratio (OR) and Confidence Intervals (CI)	A significance level of 0.05 was used in all hypotheses testing and confidence intervals
K. A. van Nes <i>et al.</i> (19)	Barriers to Oral Health:	Qualitative descriptions and thematic analysis	The full transcripts were entered into MAXQDA 10® (Verbi Software,

			Marburg, Germany, 2010), a software program for qualitative data analysis,
<b>Fiona Atim <i>et al</i> (4)</b>	Prevalence of Canine Bud Extraction (CBE)	Proportion or percentage	p-value = 0.036
<b>Alya Isam Elgamri <i>et al.</i> (5)</b>	Prevalence of Infant Oral Mutilation (IOM)	Prevalence (%)	P = 0.0369
<b>Norman Musinguzi <i>et al</i> (6)</b>	Prevalence of Infant Oral Mutilation (IOM) or Ebiino:	Prevalence Rate (%)	a 95% confidence level being considered and 5% degree of accuracy
<b>Amare Teshome <i>et al</i> (7)</b>	Prevalence of Canine Tooth Bud Removal (CTBR)	Proportion	p = 0.016517
<b>Faizan A. Kabani <i>et al</i> (17)</b>	Prevalence of Oral Health Issues in Hispanic Children:	Proportion or percentage	Pearson's chi-square tests. assessed significance at the p < 0.05 level
<b>Grace Kyoong-Achan, PhD <i>et al</i> (18)</b>	Effectiveness of Oral Health Promotion Programs:	Qualitative Themes and Categories	UTD
<b>Kanchan Marcus <i>et al</i> (13)</b>	Attitudes Toward Oral Health Care:	Qualitative descriptions and thematic analysis	UTD
<b>Anna Granlund <i>et al.</i> (22)</b>	Caries Increment Between Ages 3 and 7	Incidence Rate Ratio (IRR)	p < 0.05

The table shows that most of the included studies evaluate using a statistical test for independent samples, such as the t-student test or the ANOVA test, for a level of significance of 5%.

### 3.6. Risk of bias

The articles are evaluated by the assessment of the risk of bias using the EPHPP method, which considers several areas of potential bias, including participant selection, study design, control for confounders, data collection methods, withdrawals and drop-outs and blinding (11). Seven articles were classified as "Weak", eleven were classified as "Moderate" and three as "Strong". The complete methodological quality assessment data is presented in **Appendix A1**.





## 4. DISCUSSION

The intricate relationship between culture and child oral health is evident in the diverse array of studies examined in this review. Cultural practices, beliefs, and socioeconomic factors intersect to shape oral health behaviors and outcomes among children from varying ethnic and socio-demographic backgrounds.

The study by Fukai et al. sheds light on the nuanced differences in pediatric dental care practices between Japan and the UK, highlighting the importance of understanding and respecting cultural norms in oral health service delivery. Such cross-cultural disparities underscore the need for culturally sensitive approaches to dental care provision (1).

Acculturation, as explored in some of the studies, emerges as a key determinant of oral health outcomes among immigrant populations. The process of cultural adaptation following migration influences dental health behaviors and access to care, emphasizing the importance of tailored interventions for diverse cultural groups (15,22,17).

Traditional cultural practices, such as infant oral mutilation (IOM), present unique challenges to child oral health. These studies underscore the detrimental impact of cultural traditions on children's oral health, emphasizing the need for culturally sensitive interventions that respect cultural beliefs while addressing harmful practices (4,5,13).

Moreover, socioeconomic status plays a significant role in shaping child oral health outcomes. Disparities in dental pain, self-care practices, and service utilization highlight the importance of targeted interventions to address oral health inequities among disadvantaged populations (23,3).

Community-based interventions offer promising avenues for promoting oral health equity, particularly among indigenous communities. Culturally tailored approaches empower communities to take ownership of their oral health and address systemic barriers to care (21,20).

This systematic review explored the influence of modern culture on children's oral health, examining a variety of studies conducted in different cultural and geographic contexts. Results show recurring themes regarding oral health perceptions and practices, challenges in accessing care, and the impact of traditional cultural practices.

### 4.1. Oral Health Perceptions and Practices

Oral health perceptions and practices among children are largely influenced by cultural and linguistic factors. Marcus et al. identified that mothers from culturally and linguistically diverse backgrounds in Australia experience significant challenges in accessing oral health services. These challenges include the language barrier, lack of awareness of available services, and distrust of the health system. These barriers can prevent parents from seeking preventative care for their children, leading to worse oral health. Additionally, Costa et al. showed that maternal perceptions of traumatic dental injuries are influenced by children's gender and physical activity, with increased recognition of injuries in more active boys (13,12).

Cultural beliefs also play a crucial role. Gao et al. discussed the “tooth worm” phenomenon, a traditional belief that worms are responsible for dental caries. This belief can prevent the adoption of modern and effective oral health practices. Similarly, studies by Davidovich et al. and Musinguzi et al. reveal that traditional practices such as canine bud extraction and infant oral mutilation have significant negative impacts on children's oral health (9,8,6).

#### **4.2. Acculturation and Oral Health**

Acculturation, or the process by which individuals adopt the values, behaviors and norms of a culture different from their own, plays a key role in children's oral health. Tiwari *et al.* showed that acculturation influences the effectiveness of pediatric oral health interventions among minorities. More acculturated parents are more likely to adopt oral health practices consistent with modern medical recommendations (15).

Tiwari *et al.* explored this issue further by demonstrating that more acculturated Latina mothers have more positive oral health beliefs and practices for their children. These mothers are more inclined to understand the importance of prevention and to follow recommendations for their children's dental care. Kabani *et al.* found similar results among Hispanic children in the United States, where higher acculturation is associated with better oral health outcomes (16,17).

Granlund *et al.* studied the impact of acculturation in Sweden, revealing that children of foreign-born mothers show an increase in caries over four years. This highlights that even in well-established health systems, acculturation plays a crucial role in the adoption of positive health behaviors (22).

### **4.3. Healthcare Access Challenges**

Challenges in accessing oral health care are recurrent among the populations studied. It was demonstrated that the use of dental services among children from migrant families in Melbourne is influenced by several socio-economic and cultural factors. Economic barriers, limited availability of services, and cultural differences in perceptions of health care are major obstacles to accessing care (3).

Van Nes *et al.* identified similar barriers among Dutch-Moroccan children in the Netherlands. Challenges include distrust of healthcare professionals, fear of dental treatments, and limited knowledge of prevention practices. The authors suggest that cultural awareness programs and targeted educational interventions could help overcome these barriers (19).

### **4.4. Impact of Traditional Cultural Practices**

Traditional cultural practices have significant impacts on children's oral health. It was shown that the practice of canine bud extraction in children of Ethiopian immigrants leads to negative dental consequences, such as infections and dental malformations. Similarly, studies by Musinguzi *et al.* and Atim *et al.* revealed that childhood oral mutilation, practiced in some communities in Uganda and Sudan, causes severe pain and dental complications (8,6,4).

These practices are deeply rooted in cultural beliefs and can be difficult to change. However, educational interventions and cultural awareness campaigns can help reduce their prevalence. that traditional and cultural approaches to child rearing play a key role in preventing early caries among children in the Norway House Cree Nation in Manitoba, suggesting that integrating cultural knowledge into health interventions can be beneficial (20).

### **4.5. Implications for Health Practice and Policy**

The results of this systematic review have important implications for clinical practice and public health policy. Oral health interventions must be designed taking into account specific

cultural contexts to be most effective. Educational programs and cultural awareness campaigns can help overcome barriers to accessing care and promote positive oral health practices.

Health professionals must be trained to understand and respect cultural differences in oral health perceptions and practices. Patient-centered and culturally sensitive approaches to care can improve the acceptance and effectiveness of oral health interventions.







## 5. LIMITATIONS

Several limitations must be considered when interpreting the results of this systematic review. The variability in definitions and methodologies across studies can create challenges in comparing and synthesizing findings. Publication bias may skew the representativeness of the results, and the small sample sizes in many studies limit the statistical power to detect significant differences. The diverse cultural and geographical contexts of the studies may affect the applicability of the findings to other settings. Additionally, the quality of the included studies varies, potentially introducing biases. Confounding factors, the rapid evolution of cultural practices, reliance on self-reported data, variability in intervention availability, and language and access limitations further restrict the generalizability of the conclusions. To accurately interpret the results, we must take into account certain limitations of this systematic review, such as:

- **Randomization and risk of bias:** the lack of randomization and inadequate control groups in many of the included studies may introduce a risk of bias.
- **Data quality:** the variable quality of the included studies may affect the robustness of the conclusions. Studies of low methodological quality can introduce bias and errors in the synthesis of results.
- **Sample size:** many studies included in this review have small sample sizes, which may limit their ability to detect significant differences. This limitation may also restrict the generalizability of the findings to a broader population.
- **Duration of follow-up:** the limited duration of follow-up in many of the included studies makes it difficult to assess the long-term effects of orthodontic treatment. Variations in the length of follow-ups between studies could also introduce heterogeneity in the results analyzed, thus affecting the comparability of the data.
- **Confounding Factors:** several confounding factors, such as socioeconomic status, dietary habits, and access to health care, may influence results, and all studies may not adequately control for them.
- **Evolution of Cultural Practices:** cultural practices and modern influences on oral health are changing rapidly, which may make some findings outdated or less relevant to current contexts.
- **Self-reported data:** many studies rely on self-reported data from parents or children, which can introduce recall or social desirability bias.

- Insufficient articles: there is a gap in the literature regarding the aborded theme.





## 6. CONCLUSION

The findings from this review underscore the complex interplay between culture, socioeconomic status, and child oral health outcomes. Culturally sensitive interventions that account for diverse cultural beliefs and practices are essential for promoting oral health equity and improving outcomes for children across cultural contexts. This systematic review aimed to explore the influence of modern culture on children's oral health by examining a variety of studies conducted in different cultural and geographic contexts. The results of this review reveal several key themes and important limitations that merit discussion.

The studies reviewed demonstrate that oral health perceptions and practices are strongly influenced by cultural and linguistic factors. For example, mothers from culturally and linguistically diverse backgrounds in Australia experience significant challenges in accessing oral health services, thereby affecting the oral health of their children. Additionally, showed that acculturation plays a crucial role in the effectiveness of pediatric oral health interventions among minorities.

Variations in traditional practices highlight the profound impact of cultural beliefs on oral health. These practices, although cultural, often result in negative dental consequences, highlighting the need for culturally sensitive interventions.

Disparities in the use of oral health services were also observed, suggesting that cultural integration may play a protective role. However, this systematic review also identified several important limitations.

Future interventions should be designed taking into account specific cultural contexts to be more effective. By recognizing and addressing cultural, socio-economic, and linguistic factors, it is possible to significantly improve the oral health of children globally.





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## 8. APPENDICES

**Appendix A1** - Assessment of the risk of bias in randomized studies using the EPHP tool, presented by the name of the first author, year of publication, and degree of risk of bias for each topic (11).

Study	Selection bias	Study design	Confounders	Blinding	Data collection methods	Withdrawals and drop-outs	Final decision
Gao <i>et al.</i> (2012) (9)	Moderate	Moderate	Moderate	Weak	Moderate	Weak	<b>Weak</b>
Fukai <i>et al.</i> (2012) (1)	Moderate	Moderate	Moderate	Moderate	Strong	Moderate	<b>Moderate</b>
Chi (2013) (2)	Strong	Strong	Moderate	Weak	Strong	Weak	<b>Weak</b>
Broughton <i>et al.</i> (2013) (21)	Moderate	Strong	Moderate	Moderate	Strong	Moderate	<b>Moderate</b>
Davidovich <i>et al.</i> (2013) (8)	Moderate	Moderate	Moderate	Weak	Moderate	Weak	<b>Weak</b>
Okunseri <i>et al.</i> (2013) (14)	Strong	Strong	Moderate	Moderate	Strong	Strong	<b>Strong</b>
Cidro <i>et al.</i> (2014) (20)	Moderate	Moderate	Moderate	Weak	Moderate	Weak	<b>Weak</b>
Jaiswal <i>et al.</i> (2015) (23)	Moderate	Moderate	Moderate	Moderate	Strong	Moderate	<b>Moderate</b>
Christian <i>et al.</i> (2015) (3)	Moderate	Moderate	Moderate	Moderate	Strong	Moderate	<b>Moderate</b>
Costa <i>et al.</i> (2016) (12)	Moderate	Strong	Moderate	Weak	Strong	Moderate	<b>Moderate</b>
Tiwari MPH <i>et al.</i> (2017) (15)	Moderate	Strong	Moderate	Weak	Moderate	Weak	<b>Weak</b>
Tiwari <i>et al.</i> (2018) (16)	Moderate	Strong	Moderate	Moderate	Strong	Moderate	<b>Moderate</b>
Nes <i>et al.</i> (2018) (19)	Moderate	Moderate	Moderate	Weak	Moderate	Weak	<b>Weak</b>
Atim <i>et al.</i> (2018) (4)	Moderate	Moderate	Moderate	Weak	Strong	Moderate	<b>Moderate</b>
Elgamri <i>et al.</i> (2018) (5)	Moderate	Moderate	Moderate	Weak	Moderate	Moderate	<b>Moderate</b>
Musinguzi <i>et al.</i> (2019) (6)	Moderate	Strong	Moderate	Moderate	Strong	Moderate	<b>Moderate</b>
Teshome <i>et al.</i> (2019) (7)	Moderate	Moderate	Moderate	Weak	Moderate	Moderate	<b>Moderate</b>
Kabani <i>et al.</i> (2020) (17)	Strong	Strong	Moderate	Moderate	Strong	Strong	<b>Strong</b>
Kyoon-Achan <i>et al.</i> (2021) (18)	Moderate	Moderate	Moderate	Weak	Moderate	Weak	<b>Weak</b>
Marcus <i>et al.</i> (2022) (13)	Moderate	Moderate	Moderate	Moderate	Strong	Moderate	<b>Moderate</b>
Granlund <i>et al.</i> (2022) (22)	Strong	Strong	Moderate	Strong	Strong	Strong	<b>Strong</b>