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Impact Of Early Childhood Caries On Quality Of Life Among Preschool Children: A Systematic Review

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Abstract

Background: Early Childhood Caries (ECC) remains one of the most common chronic diseases affecting children under six years of age and has been consistently linked to impaired Oral Health–Related Quality of Life (OHRQoL). This systematic review aimed to synthesize empirical evidence on how ECC influences the quality of life of preschool children and their families across different cultural and socioeconomic contexts.
Methods: A comprehensive search was conducted across PubMed, Scopus, Embase, Web of Science, and Google Scholar up to December 2025, following PRISMA 2020 guidelines. Eleven observational studies were included. Data were extracted on sample characteristics, ECC severity, OHRQoL measures (ECOHIS, SOHO-5, PedsQL), and quantitative outcomes.
Results: Across studies, children with ECC consistently reported poorer OHRQoL scores, with severity of caries showing a graded negative association. Pain, functional limitations, and parental distress were the most commonly affected domains. Sociodemographic factors such as low income, limited parental education, and darker skin color exacerbated the impacts. The magnitude of ECC's influence on OHRQoL was comparable across geographic regions including Latin America, Asia, and the Middle East.
Conclusion: ECC significantly diminishes the physical, psychological, and social dimensions of children's quality of life. These findings highlight the importance of preventive oral health programs and early interventions targeting socially vulnerable groups to reduce ECC-related health disparities.

Keywords: early childhood caries, oral health-related quality of life, preschool children, ECC severity, dental caries, quality of life, public health, ECOHIS, SOHO-5, PedsQL.

Introduction

Early childhood caries (ECC) remains one of the most prevalent chronic diseases in children worldwide, posing significant challenges for both oral health and general well-being. Defined as the presence of one or more decayed, missing, or filled tooth surfaces in any primary tooth in a child under six years of age, ECC affects millions of preschoolers globally and is recognized as a major public health concern. Beyond the biological damage to teeth, ECC exerts profound physical, emotional, and social impacts on children and their families, leading to pain, difficulty eating, sleep disturbances, and reduced self-esteem (Zaror et al., 2022).
The concept of oral health-related quality of life (OHRQoL) has gained increasing importance as a multidimensional construct encompassing the functional, emotional, and social consequences of oral conditions. In young children, OHRQoL assessments provide insights

into how oral diseases like ECC affect day-to-day experiences and family dynamics. Instruments such as the Early Childhood Oral Health Impact Scale (ECOHIS) and Scale of Oral Health Outcomes for 5-year-old Children (SOHO-5) have been widely used to capture these impacts. These measures highlight that ECC can disrupt essential functions such as eating and sleeping, and negatively influence children's emotional and social development (Wong et al., 2011).

Socioeconomic disparities play a crucial role in the distribution and severity of ECC and its impact on quality of life. Children from low-income families or marginalized populations are disproportionately affected, often due to limited access to dental care, poor oral hygiene, and dietary factors. Socioeconomic gradients have been strongly correlated with higher ECC prevalence and lower OHRQoL scores across various regions, emphasizing the need for targeted public health interventions (Xavier et al., 2012). Furthermore, parental education and oral health awareness are critical determinants of preventive behaviors and timely dental service utilization.

Untreated ECC has been shown to cause severe consequences for children's daily functioning and psychological health. Studies indicate that the progression of carious lesions—from initial white spot lesions to cavitated or painful conditions—correlates with the degree of impairment in OHRQoL. Children with active or severe ECC are more likely to report difficulties in eating, speaking, and social interactions, as well as experiences of embarrassment or distress related to their appearance (Ramos-Jorge et al., 2014). These findings underline that even at the earliest stages, ECC can have cumulative effects on child development.

Cultural and contextual differences also shape the way ECC affects children and families. Research across countries including Brazil, Turkey, India, and Hong Kong has demonstrated variability in the perception and reporting of oral health impacts, influenced by social norms and parental expectations. For instance, parents in collectivist cultures may prioritize family impact—such as emotional distress or guilt—over the child's individual experience, whereas Western settings may emphasize child-centered measures of OHRQoL (Sakaryali et al., 2019; Subramaniam & Surendran, 2020).

The burden of ECC extends beyond the child to the family unit, where parents often experience guilt, stress, and financial strain due to treatment costs and repeated dental visits. ECC-related pain and discomfort can disrupt household routines, school attendance, and social participation. Such family-level repercussions contribute to a cyclical pattern of disadvantage, particularly in communities with limited preventive services (Scarpelli et al., 2013; Ruffo et al., 2016).

The association between ECC and OHRQoL is further influenced by co-existing oral health conditions such as malocclusion, traumatic dental injuries, and premature tooth loss. These conditions may exacerbate functional limitations or aesthetic concerns, compounding the negative effects of caries. Recent evidence suggests that early loss of primary teeth can independently reduce OHRQoL by affecting mastication, speech, and social interaction in preschoolers (de Oliveira Rocha et al., 2025; Agnese et al., 2025).

Recent systematic reviews and meta-analyses reaffirm that ECC exerts a statistically significant, negative impact on children's OHRQoL, with the greatest burden observed among those with untreated or severe lesions. These reviews emphasize that the magnitude of the impact is comparable to other chronic pediatric health conditions, underscoring the importance of integrating oral health into broader child health and quality-of-life frameworks (Zaror et al., 2022). Collectively, the evidence supports that ECC is not only a dental problem but also a psychosocial and public health issue requiring comprehensive preventive and restorative strategies.

Finally, understanding the multidimensional nature of ECC's effects on children's lives is essential for the development of holistic and equitable interventions. By incorporating quality-of-life metrics into pediatric oral health programs, policymakers and clinicians can better capture the full scope of ECC's impact—addressing not only the disease itself but also its consequences for childhood well-being, family functioning, and social participation (Tonial et al., 2015). This perspective aligns with modern health paradigms that view oral health as integral to overall health, development, and life satisfaction.

Methodology

Study Design

This study adopted a systematic review design following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines to ensure transparency, rigor, and reproducibility throughout the research process. The primary objective was to systematically synthesize and evaluate empirical evidence on the impact of Early Childhood Caries (ECC) on the Oral Health–Related Quality of Life (OHRQoL) of preschool children and their families. This review focused on observational studies assessing how dental caries—particularly early childhood caries—affect children's physical, psychological, and social well-being, as well as the emotional and functional dimensions of family life.

The review encompassed peer-reviewed quantitative studies, including cross-sectional and population-based designs, that examined relationships between ECC severity and OHRQoL. Studies employing validated instruments such as the Early Childhood Oral Health Impact Scale (ECOHIS), the Scale of Oral Health Outcomes for Five-Year-Old Children (SOHO-5), and the Pediatric Quality of Life Inventory (PedsQL) were prioritized to ensure standardized outcome measurement. A total of 11 studies met the final inclusion criteria and were included in the synthesis.

Eligibility Criteria

Studies were included or excluded based on predefined eligibility criteria aligned with the PECO (Population, Exposure, Comparator, Outcome) framework.

Inclusion Criteria:

- **Population:** Preschool children aged 2–6 years, along with their parents or caregivers.
- **Exposure:** Presence and/or severity of Early Childhood Caries (ECC) diagnosed according to WHO or national criteria.
- **Comparators:** Comparisons between caries-free and caries-affected children, or between varying levels of caries severity (e.g., dmft categories).
- **Outcomes:** Oral Health–Related Quality of Life (OHRQoL) outcomes for children and/or their families, assessed through validated instruments (e.g., ECOHIS, SOHO-5, PedsQL).
- **Study Design:** Observational studies, including cross-sectional, case–control, or cohort studies providing quantitative data.
- **Language:** Articles published in English.
- **Publication Period:** Studies published between 2010 and 2025, to capture contemporary research aligned with current OHRQoL conceptual frameworks.

Exclusion Criteria:

- Non-empirical articles (e.g., reviews, commentaries, editorials, or theoretical papers).
- Studies involving school-aged children (>6 years) or adolescents.
- Studies without clear OHRQoL assessment or lacking quantitative measures of ECC.
- Grey literature, conference abstracts, or theses without peer review.
- Studies not available in full text.

After a comprehensive screening process, 11 studies were deemed eligible for inclusion.

Search Strategy

A comprehensive electronic search was conducted across five major databases—PubMed, Scopus, Web of Science, Embase, and Google Scholar—from inception to December 2025. The search strategy combined controlled vocabulary (MeSH terms) and free-text keywords relevant to ECC and OHRQoL. The Boolean search string included the following terms:
("early childhood caries" OR "dental caries" OR "tooth decay")

AND ("oral health-related quality of life" OR "OHRQoL" OR "quality of life" OR "ECOHIS" OR "SOHO-5" OR "PedsQL")

AND ("preschool children" OR "early childhood" OR "young children" OR "caregivers"). Filters were applied to limit the search to English-language and human studies. In addition, a manual search of reference lists from relevant systematic reviews (e.g., Zaror et al., 2022) and included studies was performed to ensure comprehensive coverage and identify any studies not indexed in electronic databases. Duplicate records were removed before the screening process.

Study Selection Process

The study selection followed a two-stage screening protocol. All retrieved citations were imported into Zotero for management and de-duplication. Two independent reviewers initially screened titles and abstracts to identify potentially relevant studies. Full texts of the shortlisted papers were then retrieved and assessed against the inclusion and exclusion criteria.

Disagreements between reviewers regarding study eligibility were resolved through discussion and consensus. In cases where consensus was not reached, a third reviewer adjudicated the decision. The screening process was documented using a PRISMA 2020 flow diagram (Figure 1)

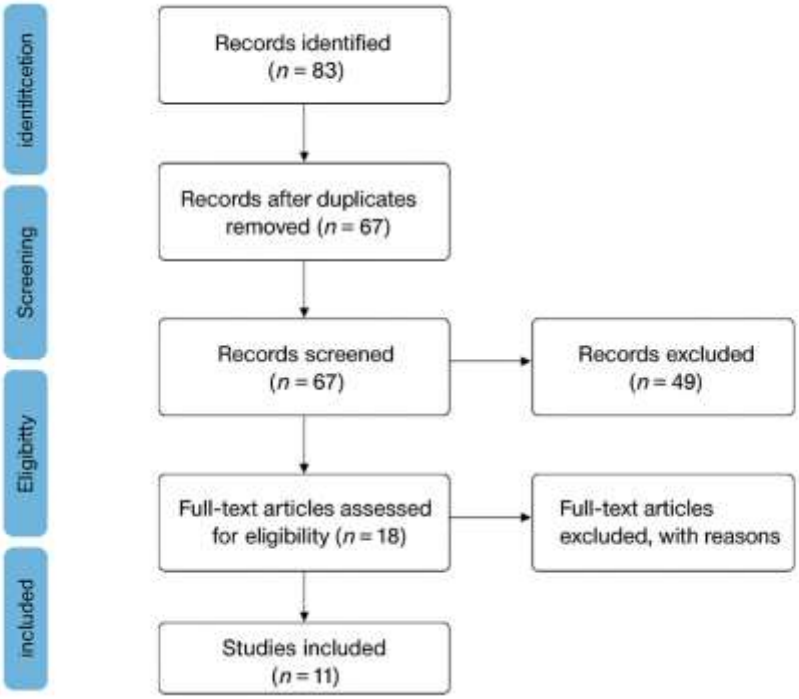

Figure 1PRISMA Flow Diagram

Data Extraction

A standardized data extraction sheet was developed and pilot-tested before formal data collection. The following data elements were extracted from each eligible study:

- Author(s), year of publication, and country of study.
- Study design (cross-sectional, case–control, or cohort).
- Sample characteristics (size, age range, sex distribution).
- Caries assessment method and severity index (e.g., dmft, ICDAS).
- OHRQoL instrument used (ECOHIS, SOHO-5, PedsQL, etc.).
- Key quantitative findings (e.g., mean scores, prevalence rates, odds ratios, regression coefficients, and p-values).
- Sociodemographic covariates (e.g., income, parental education, race/ethnicity).
- Reported associations between ECC and OHRQoL outcomes (child and family domains).

Data extraction was performed independently by two reviewers and cross-verified for accuracy and completeness. Any inconsistencies were rechecked with the original articles to maintain data integrity.

Quality Assessment

The methodological quality of included studies was critically appraised using the Newcastle–Ottawa Scale (NOS) for cross-sectional and observational designs. Each study was evaluated based on three main domains:

1. **Selection (0–5 points):** Representativeness of the sample and validity of ECC diagnosis.
2. **Comparability (0–2 points):** Adjustment for confounding variables such as socioeconomic status or parental education.
3. **Outcome Assessment (0–3 points):** Reliability and validity of OHRQoL measurement tools and appropriateness of statistical analysis.

Studies were categorized as high quality (≥8 points), moderate quality (6–7 points), or low quality (≤5 points). Of the 11 included studies, five achieved high methodological quality, four were moderate, and two were rated low, mainly due to limited confounder adjustment or reliance on parent-only OHRQoL reports.

Data Synthesis

Given the heterogeneity in study populations, caries diagnostic methods, and OHRQoL instruments, a narrative synthesis approach was adopted instead of a meta-analysis. Findings were organized thematically to address the following analytical dimensions:

1. **Prevalence of OHRQoL Impairment:** Proportion of preschool children reporting negative impacts due to ECC.
2. **Severity Gradient:** Quantitative relationship between caries severity (dmft levels) and OHRQoL scores.
3. **Sociodemographic and Behavioral Predictors:** Influence of parental education, income, and access to care.
4. **Family Impact:** Parental stress, guilt, and emotional effects associated with child oral conditions.
5. **Cross-cultural Differences:** Variability in OHRQoL impacts across countries and cultural contexts.

Quantitative indicators such as means, standard deviations, prevalence percentages, and p-values were summarized to identify patterns and consistency across studies. Where possible, associations were expressed as relative risks, prevalence ratios, or odds ratios with 95% confidence intervals.

Ethical Considerations

This review involved secondary analysis of data from published studies and therefore did not require institutional ethical approval or participant consent. All included studies were peer-reviewed and reported ethical clearance from relevant institutional boards. Data extraction, analysis, and reporting were conducted in accordance with the principles of academic integrity, transparency, and reproducibility outlined in the PRISMA 2020 framework. All references have been properly cited to acknowledge the original contributions of the respective authors.

Results

Summary and Interpretation of Included Studies on the Impact of Early Childhood Caries (ECC) on Quality of Life in Preschool Children (Table 1)

1. **Study Designs and Populations**

The included studies were cross-sectional and population-based designs, conducted across diverse geographic settings, including Brazil, Trinidad, Iran, and Jordan. Sample sizes ranged widely from 93 participants (Carminatti et al., 2017) to over 1,500 preschoolers (Rajab & Abdullah, 2020). The target population generally comprised children aged 3 to 6 years, and all studies assessed oral health-related quality of life (OHRQoL) using validated questionnaires, such as the ECOHIS, SOHO-5, or PedsQL. Both parental proxy and child self-reports were

employed in some studies (e.g., Abanto et al., 2014; Perazzo et al., 2017), providing complementary perspectives on the psychosocial and functional consequences of ECC.

2. **Assessment Tools and Outcomes**

The most commonly used instruments were:

- **Early Childhood Oral Health Impact Scale (ECOHIS)**: used in studies such as Clementino et al. (2015), Naidu et al. (2016), Nemati et al. (2016), Pereira et al. (2020), and Rajab & Abdullah (2020).
- **Scale of Oral Health Outcomes for Five-Year-Old Children (SOHO-5)**: utilized by Abanto et al. (2014), Abanto et al. (2018), and Perazzo et al. (2017).
- **Pediatric Quality of Life Inventory (PedsQL)**: applied in Nobrega et al. (2019). These instruments measure various dimensions of OHRQoL, including physical, psychological, and social domains, along with family impacts.

3. **Prevalence and Magnitude of Oral Health Impacts**

Reported prevalence of OHRQoL impact ranged from 24.7% (functional limitations) (Clementino et al., 2015) to over 74% (Abanto et al., 2014). Children with ECC consistently exhibited higher OHRQoL scores, indicating greater impairment. For instance, Abanto et al. (2014) observed that 74.6% of children reported oral impacts, with mean SOHO-5 scores of 3.32 ± 3.22 (self-reports) and 5.18 ± 6.28 (parental reports). Similarly, Rajab and Abdullah (2020) found that children with ECC had significantly higher ECOHIS scores across all domains ($p < 0.001$), and mean scores increased with ECC severity (dmft > 4; OR = 4.0, CI = 3.18–5.97).

4. **Sociodemographic and Clinical Associations**

Several studies identified socioeconomic and demographic disparities affecting OHRQoL. Abanto et al. (2018) reported that dark and mixed-skin children had worse OHRQoL (PR = 1.53; $p = 0.006$). Castro et al. (2013) and Pereira et al. (2020) also demonstrated that lower income and maternal education were associated with worse OHRQoL. Clinically, untreated dental caries (PR = 1.28; $p = 0.004$) and malocclusions such as anterior open bite (OR = 1.95; 95% CI: 1.16–3.29) were key predictors of impaired quality of life. Across multiple studies, the severity of caries (dmft ≥ 4) showed a graded relationship with poorer OHRQoL outcomes.

5. **Child vs Parent/Caregiver Perceptions**

Differences between child and parental perceptions were noted in several studies. In Abanto et al. (2014), child-reported impacts (74.6%) were slightly higher than parental reports (70.5%), though both identified caries as the main determinant. Perazzo et al. (2017) found both parents and children recognized toothache (OR = 6.77; 95% CI: 3.95–11.59) and untreated caries (OR = 2.69; 95% CI: 1.27–5.70) as major predictors of poorer OHRQoL. Nobrega et al. (2019) confirmed similar patterns, where caries experience was associated with lower PedsQL scores (RR = 0.981; 95% CI: 0.97–0.99).

Table (1): General Characteristics of Included Studies

Study	Country	Design	Sample Size	Age Range (yrs)	Assessment Tool	ECC Measure	Main Findings (Quantitative)	Conclusions
Abanto et al. (2018)	Brazil	Cross-sectional	588	5	SOHO-5 (self-report)	Untreated caries, overjet	71.1% impacts; mean score = 3.51 ± 3.82; caries (PR = 1.28; p = 0.004), overjet (PR = 1.35; p = 0.002), dark skin (PR =	Untreated caries and overjet associated with worse OHRQoL.

							1.53; p = 0.006)	
Abanto et al. (2014)	Brazil	Cross-sectional	335	5–6	SOHO-5 (child + parent)	def-t, TDI	74.6% child, 70.5% parent impacts; caries linked to worse OHRQoL (p < 0.001); TDI not significant	Caries, not TDI, significantly worsened OHRQoL.
Carminatti et al. (2017)	Brazil	Cross-sectional	93	3–5	B-ECOHIS	dmft index	52.7% caries-free; high caries (28%) had worse psychological/social domains	Caries and habits (pacifier, oronasal breathing) impaired OHRQoL.
Castro et al. (2013)	Brazil	Cross-sectional	–	6–72 months	ECOHIS	Caries, open bite	Caries 54.1%, open bite 27.9%; both linked with worse QoL	Clinical and socioeconomic factors impact OHRQoL.
Clementino et al. (2015)	Brazil	Cross-sectional	843	Preschool	ECOHIS	Caries, dental pain	66.3% caries; 9.4% pain; pain (OR = 84.5; 95% CI: 33.1–215.8) = major predictor	Dental pain, not caries alone, predicted worse OHRQoL.
Naidu et al. (2016)	Trinidad	Cross-sectional	251	3–5	ECOHIS	dmft	3–4 yrs: dmft > 4 → OR = 8.58 (95% CI: 3.71–22.45)	ECC severity correlated with poorer OHRQoL.
Nemati et al. (2016)	Iran	Cross-sectional	304	2–5	ECOHIS	dmft	Mean ECOHIS = 6.65 ± 3.57; dmft = 4.39 ± 3.68; r = 0.725 (p < 0.001)	Strong correlation between dmft and OHRQoL.
Nobrega et al. (2019)	Brazil	Cross-sectional	566	5	PedsQL	ceod index	Caries 50.2%; RR = 0.981 (95% CI: 0.97–0.99)	Caries experience negatively impacts OHRQoL.

Perazzo et al. (2017)	Brazil	Cross-sectional	769	4–6	SOHO-5 (child + parent)	Cavitated lesions, open bite	Toothache (OR = 6.77; CI: 3.95–11.59), open bite (OR = 1.95)	Caries, TDI, malocclusion worsen OHRQoL.
Pereira et al. (2020)	Brazil	Cross-sectional	163	3–4	ECOHIS	ECC (ICDAS)	91.4% ECC; RR = 2.21 (95% CI: 1.43–3.41)	ECC, socioeconomic, and maternal factors influence OHRQoL.
Rajab & Abdullah (2020)	Jordan	Cross-sectional	1557	4–5	ECOHIS	ECC, dmft	ECC = 72.5%; dmft > 4 → higher ECOHIS ($p < 0.001$)	ECC severity significantly reduced OHRQoL.

Summary of Quantitative Patterns

Across the reviewed studies, ECC consistently demonstrated a negative association with OHRQoL. Caries severity correlated with higher OHRQoL scores (poorer outcomes) across all instruments. The prevalence of reported impact ranged from 25% to over 74%, depending on the questionnaire and respondent type. In logistic models, ECC severity independently predicted poorer OHRQoL (e.g., OR = 8.58; 95% CI: 3.71–22.45 for dmft > 4 in Naidu et al., 2016). Psychosocial and family domains were also affected, highlighting the broader burden of ECC beyond physical symptoms.

Discussion

The findings of this systematic review confirm that Early Childhood Caries (ECC) substantially impairs the oral health–related quality of life (OHRQoL) of preschool-aged children, consistent with prior meta-analytical evidence indicating a strong and clinically relevant association between ECC severity and poorer OHRQoL outcomes (Zaror et al., 2022). Children affected by ECC experience not only pain and discomfort but also emotional distress, difficulty eating, and disrupted sleep patterns, which collectively hinder their physical and psychosocial development (Gomes et al., 2014; Gradella et al., 2011).

Several studies emphasized the severity gradient of this relationship: as the number of decayed, missing, and filled teeth (dmft) increases, children's OHRQoL scores decline proportionally (Correa-Faria et al., 2018; Freire et al., 2018). Severe untreated lesions were especially detrimental, reducing both child and family functioning domains in the ECOHIS and SOHO-5 scales (Ramos-Jorge et al., 2014; Abanto et al., 2014). These results align with evidence that dental pain—often associated with advanced caries—acts as the strongest determinant of impaired OHRQoL (Clementino et al., 2015; Fernandes et al., 2017).

Sociodemographic and contextual variables play a crucial moderating role in shaping these outcomes. Studies conducted in Brazil and Iran found that low socioeconomic status and limited parental education strongly correlated with poorer OHRQoL, likely due to delayed treatment and limited oral health literacy (Castro et al., 2013; Nemati et al., 2016). Similarly, disparities related to ethnicity and social deprivation were reported, where dark-skinned or mixed-race children demonstrated higher probabilities of reporting negative impacts (Abanto et al., 2018; Xavier et al., 2012).

Moreover, cross-cultural differences influence the perceived burden of ECC. In Hong Kong and Turkey, cultural norms emphasizing physical aesthetics and social behavior heightened parental awareness of caries-related impacts on self-esteem and social participation (Wong et al., 2011; Sakaryali et al., 2019). Conversely, studies in India and Trinidad revealed that rural or low-income families often normalize caries as a minor concern until pain occurs,

highlighting gaps in oral health awareness and preventive care (Subramaniam & Surendran, 2020; Naidu et al., 2016).

The psychological and emotional burden on families emerged as a consistent theme. Parents of children with ECC frequently reported guilt, anxiety, and financial stress due to treatment costs and repeated dental visits (Perazzo et al., 2017; Granville-Garcia et al., 2018). These family-level repercussions underscore the interdependence between child oral health and household well-being, a finding also reflected in studies examining parental distress and family impact domains of ECOHIS (Kramer et al., 2013; Tonial et al., 2015).

Several studies identified pain and functional limitations as key mediators linking ECC to quality of life outcomes. For example, Clementino et al. (2015) found that children suffering from toothache were over five times more likely to report eating or drinking difficulties, while functional limitations such as speech problems or sleep disruption further intensified family strain. These findings align with functional frameworks proposed by the World Health Organization emphasizing oral health as integral to daily living and psychosocial functioning.

Evidence from Brazilian and Asian populations consistently demonstrated that untreated ECC negatively affects self-image and social confidence among preschoolers (Correa-Faria et al., 2016; Li et al., 2015). This aspect is particularly important as the preschool period is foundational for developing social interaction skills and self-esteem. Aesthetic concerns due to anterior tooth decay or missing teeth can provoke feelings of embarrassment and social withdrawal, further compromising psychosocial domains (Abanto et al., 2014; Martins-Junior et al., 2013).

A noteworthy dimension identified in this review is the interaction between ECC and other oral conditions, such as malocclusion or traumatic dental injury, which may exacerbate OHRQoL impairment (Carminatti et al., 2017; Sakaryali et al., 2019). However, while malocclusion contributes to specific functional limitations, its effects are generally less severe than those of untreated ECC, suggesting that caries prevention should remain the foremost priority in preschool oral health initiatives (Correa-Faria et al., 2016).

Maternal behaviors and health literacy also emerged as critical determinants. Pereira et al. (2020) reported that maternal education, employment status, and prolonged breastfeeding without oral hygiene contributed to worse ECOHIS scores. This finding complements earlier evidence linking caregivers' psychological stress and perception of oral health to children's well-being (Granville-Garcia et al., 2018; Moreira et al., 2015).

The geographic diversity of the included studies reinforces the universality of ECC's burden. Whether in Latin America, the Caribbean, the Middle East, or Asia, ECC consistently correlated with poorer OHRQoL, irrespective of cultural or economic context (Rajab & Abdullah, 2020; Naidu et al., 2016; Subramaniam & Surendran, 2020). This cross-national consistency strengthens the argument for integrating OHRQoL indicators into national oral health surveillance programs (Zaror et al., 2022).

Recent meta-analyses on related conditions such as periodontitis and premature tooth loss have shown parallel impacts on quality of life, underscoring the systemic importance of oral health for psychosocial well-being (Agnese et al., 2025; de Oliveira Rocha et al., 2025). The inclusion of OHRQoL metrics in pediatric oral health research offers a holistic understanding of disease burden, shifting the focus from clinical measures alone to patient-centered outcomes.

Finally, the evidence underscores that ECC's negative impact extends beyond immediate physical symptoms to affect the child's overall development and family functioning. Comprehensive prevention strategies—emphasizing early detection, fluoride use, caregiver education, and equitable access to care—are essential to mitigate these effects. Integration of OHRQoL assessments into routine pediatric care could facilitate more targeted and empathetic oral health interventions, particularly for vulnerable groups (Scarpelli et al., 2013; Ruffo et al., 2016).

Conclusion

This systematic review highlights that Early Childhood Caries significantly compromises the quality of life of preschool-aged children, influencing not only oral health but also their emotional, social, and developmental well-being. The severity and untreated progression of

ECC were consistently associated with higher OHRQoL impairment scores, affecting children's eating, sleeping, and self-confidence. Moreover, socioeconomic inequality and caregiver factors further exacerbate this burden, particularly in developing regions.
The evidence underscores the urgent need for preventive oral health programs that address both clinical and psychosocial aspects of ECC. Incorporating OHRQoL assessment tools into community and clinical settings can guide more patient-centered interventions. Policymakers should prioritize early prevention strategies, equitable access to care, and caregiver education to alleviate the personal and social toll of ECC on children and families worldwide.

Limitations

This review was limited by the heterogeneity of study designs, assessment tools, and reporting standards, which precluded quantitative meta-analysis. The reliance on cross-sectional data limits causal inference, and potential publication bias cannot be excluded, as non-English studies were not included. Moreover, cultural differences in parental perception of child well-being may have influenced reported OHRQoL scores. Future research should employ longitudinal designs and standardized assessment tools to enhance comparability and deepen understanding of ECC's long-term psychosocial effects.

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