



Early Childhood, Major Suffering: Effects of Early Childhood Caries on Oral Health and Children's Quality of Life

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How to cite this paper: Ennich, M., Badre, B., Bouih Ouchama, Y. and El Arabi, S. (2026) Early Childhood, Major Suffering: Effects of Early Childhood Caries on Oral Health and Children's Quality of Life. *Open Access Library Journal*, 13: e15613. <https://doi.org/10.4236/oalib.1115613>

Received: June 12, 2026

Accepted: July 14, 2026

Published: July 17, 2026

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Abstract

Early Childhood Caries (ECC) is an aggressive form of dental caries affecting the primary dentition of preschool children. The consequences of ECC extend far beyond the oral cavity and impact the child's general health and well-being. Parents' quality of life is also affected, particularly because of daily stress, feelings of guilt regarding their child's health status, and the professional and financial constraints related to dental care. The aim of this study was to describe the effects of Early Childhood Caries (ECC) on the oral health and overall well-being of children and their parents. This descriptive study was conducted in the Pediatric Dentistry Department of the University Hospital Center of Casablanca. It included a sample of 79 parent-child pairs. Inclusion criteria included children aged 6 years or younger, affected by ECC, and managed in the Pediatric Dentistry Department. Data were collected using two questionnaires. The first included 18 closed-ended questions and 8 open-ended questions, while the second, the Arabic version of the Early Childhood Oral Health Impact Scale (ECOHS), assessed the impact of oral health on the quality of life of the child and parents through 13 questions. The results revealed that 46.8% of children were underweight. Among school-attending children, 90.2% had already missed school because of pain. In addition, 62% of children had difficulty sleeping, 36.7% avoided smiling or laughing in the presence of other children, and 41.8% had difficulty pronouncing certain words. In conclusion, this study highlights the significant impact of ECC on the quality of life of young children. It underlines the need to strengthen preventive actions from pregnancy onward. Simple and adapted advice should be communicated to parents at every dental visit or by any healthcare professional involved in early childhood care.

Subject Areas

Dentistry, Pediatric Dentistry, Public Health

Keywords

Early Childhood Caries, ECC, Preschool Children, Quality of Life, ECOHIS, Morocco

1. Introduction

Early Childhood Caries (ECC) is a chronic, multifactorial infectious disease that affects the primary teeth of children under six years of age and remains one of the main oral public health concerns worldwide. It is defined as the presence of at least one decayed tooth surface, a tooth missing because of caries, or a filled surface in a primary tooth in a child younger than 72 months. Severe ECC is characterized by smooth-surface lesions before the age of three years or by a high number of decayed, missing, or filled surfaces according to age, ranging from 4 to 6 surfaces between 3 and 5 years of age [1].

The literature emphasizes that ECC remains highly prevalent, particularly in vulnerable populations, with global estimates varying according to regions and socioeconomic factors. A recent systematic review focusing on Africa reported an average prevalence of approximately 38% among preschool children, with substantial inter-country variations ($\geq 31\%$ - 45%) [2]. National and regional data also show a significant prevalence of ECC in various contexts, including Asia and the Middle East.

The clinical consequences of ECC are numerous and go beyond simple tooth destruction. Affected children often present with oral pain, feeding difficulties, an inability to chew properly, and sleep disturbances, which may contribute to growth delay, impaired nutritional status, and increased susceptibility to infections. Systematic reviews confirm an association between ECC and unfavorable nutritional status, such as compromised weight and height growth in affected children [3]-[5]. Moreover, recent studies show that ECC also has a significant impact on oral health-related quality of life, including functional, emotional, and social aspects for both the child and the family [4] [6].

In Morocco, although specific epidemiological data on ECC are limited, some studies report a high prevalence of caries among young children, reflecting a substantial burden of oral disease in the pediatric population [7]. Despite this, there is a shortage of rigorous national studies investigating the impact of ECC on the oral and general health of children in clinical settings.

Given the importance of this disease and its wide-ranging impact on the child's overall health, the present study aimed to evaluate the impact of Early Childhood Caries on oral health, well-being, and development in children aged 2 to 6 years, while highlighting the need for early prevention strategies, parental awareness, and

integrated public health interventions.

2. Materials and Methods

2.1. Study Design and Participants

This descriptive cross-sectional study was conducted in the Pediatric Dentistry Department of the Casablanca Dental Consultation and Treatment Center (CCTD) between April and June 2022. Participants were recruited consecutively among children attending the department during the study period.

Children aged 2.5 to 6 years diagnosed with Early Childhood Caries (ECC) or Severe Early Childhood Caries (S-ECC) and already followed in the department were eligible for inclusion. ECC was defined as the presence of at least one decayed (cavitated or non-cavitated), missing due to caries, or filled tooth surface in any primary tooth in a child younger than 72 months. S-ECC was defined according to the American Academy of Pediatric Dentistry criteria. Children older than 6 years and children attending the department for the first time were excluded.

2.2. Data Collection

Data were collected using two questionnaires. The first was a structured questionnaire developed by the research team and administered to parents. It included sociodemographic characteristics, oral health status, reasons for consultation, and perceived effects of ECC on the child and family. Open-ended responses were reviewed and grouped into thematic categories before analysis.

The second questionnaire was the Arabic version of the Early Childhood Oral Health Impact Scale (ECOHIS), a validated instrument used to assess the impact of oral health on the quality of life of children and their families.

2.3. Variables Studied

Socioeconomic status was classified according to the World Health Organization occupational classification based on the father's profession and categorized as low, medium, or high socioeconomic level.

Nutritional status was assessed using Body Mass Index (BMI), calculated from each child's weight and height and interpreted using pediatric BMI reference curves. Children were classified as underweight, normal weight, or overweight.

School attendance was recorded as a dichotomous variable (attending school/not attending school). Incisor caries referred to the presence of carious lesions affecting primary incisors. Preventive care included professional fluoride application and preventive oral health measures provided during treatment.

2.4. Ethical Considerations

Authorization to conduct the study was obtained from the Head of the Pediatric Dentistry Department. Parents were informed about the objectives and procedures of the study, and oral informed consent was obtained before participation. Participant anonymity and confidentiality were ensured throughout the study.

2.5. Statistical Analysis

Data were entered into Microsoft Excel 2016 and analyzed using SPSS version 20.0. Descriptive statistics were calculated for all variables. Open-ended responses were analyzed through thematic categorization. Comparisons of proportions were performed using the chi-square test or Fisher's exact test, and comparisons of means were performed using Student's t-test. Statistical significance was set at $p < 0.05$.

3. Results

The study included 79 children, with a mean age of 4.9 years, of whom 55.4% were male. The majority lived in Casablanca (91.1%) and were enrolled in school (79.7%). The socioeconomic level of the families was low in 39.2% of cases, medium in 58.3%, and high in 2.5%. Most mothers were homemakers (92.4%) and had a primary or secondary level of education (72.2%). The mother's last dental consultation dated back more than five years in 45.6% of cases. Children were mainly accompanied to the consultation by their mother (74.7%). Pain was the main reason for consultation, representing 70.9% of cases, far ahead of consultations for oral rehabilitation (21.5%), while requests for esthetic or preventive reasons remained marginal (3.8% each) (**Figure 1**).

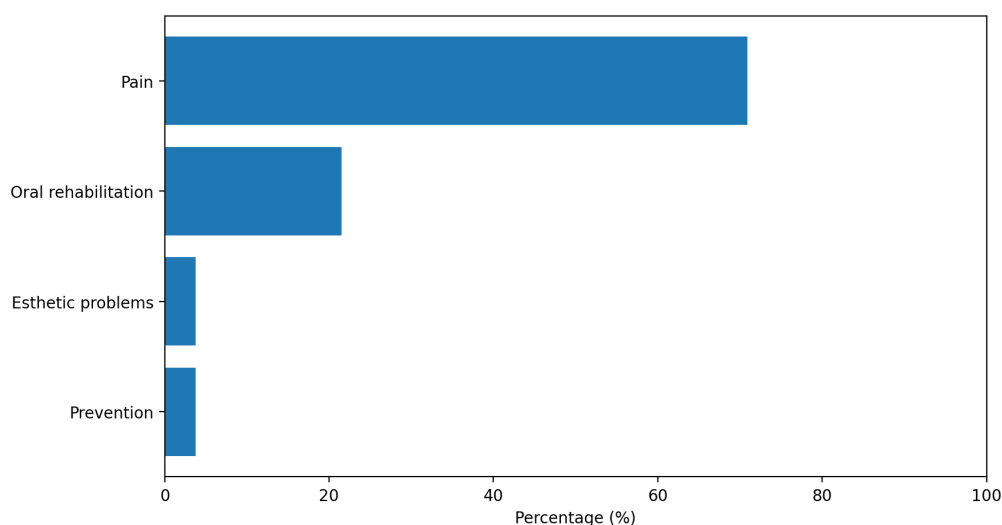


Figure 1. Main reason for consultation.

Regarding oral health status, 68% of children had dental plaque. The first permanent molar was absent in 62% of children, erupting in 10%, and present in the arch in 28%; among these, 59% were decayed, 14% were filled, and 27% were sound. Regarding management, 64.6% underwent extractions, 68.4% received pulp treatments, and 33% received preventive care. Prosthetic procedures included space maintainers (13.9%) and removable prostheses or crowns (15%).

The impact of ECC on the child's quality of life was significant: 92.3% had experienced dental pain, 90.2% had missed school, and 36.7% had avoided speaking

with their peers. Difficulties eating or drinking were reported by 79.6% of children, sleep disorders by 62%, pronunciation difficulties by 41.8%, irritability or frustration by 38%, and avoidance of smiling or laughing by 36.7% (**Figure 2**).

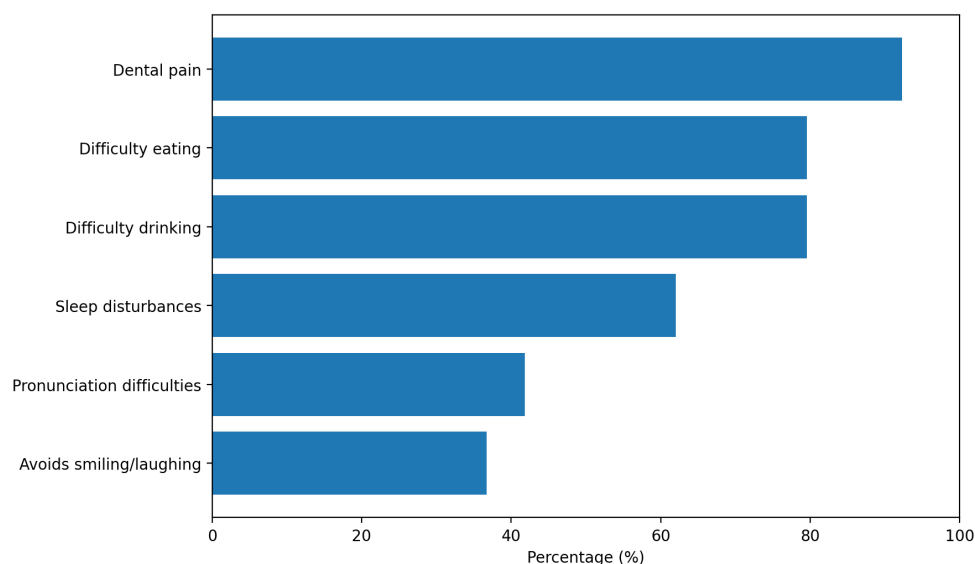


Figure 2. Impact of ECC on the child's quality of life.

The impact on parents included financial difficulties (86.1%), feelings of guilt (89.8%), emotional distress (87.3%), and work absenteeism (46.1%) (**Figure 3**).

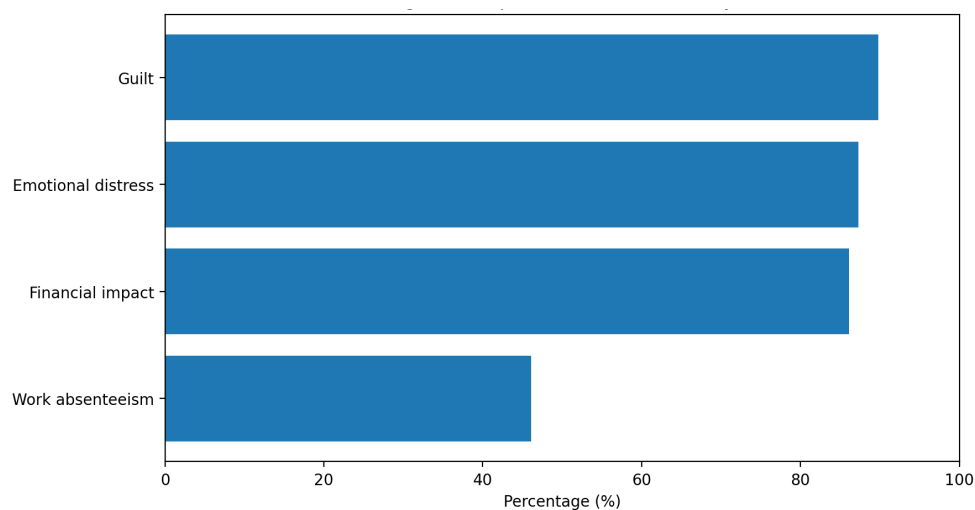


Figure 3. Impact of ECC on the family.

Descriptive comparisons suggested that children with incisor caries more frequently reported pronunciation difficulties and avoidance of speaking than children without incisor involvement. Similarly, eating difficulties appeared more common among children who underwent extractions. Preventive care was often initiated after the occurrence of painful episodes, suggesting delayed utilization of preventive services. Because complete statistical parameters were not available for all

comparisons, these findings should be interpreted as descriptive trends rather than statistically confirmed associations.

4. Discussion

Early Childhood Caries (ECC) remains a concerning oral condition because of both its high prevalence and its multidimensional impact on the health and well-being of the child and family. In our study, the high frequency of dental plaque (68%) as well as the involvement of incisors and first permanent molars reflect insufficient prevention and oral hygiene, in agreement with national and international literature. In Morocco, several studies have reported an ECC prevalence ranging from 45% to 74%, confirming the importance of the burden of this disease in our context [7].

The repercussions of ECC on children's quality of life appear particularly marked. In our series, most children presented dental pain, difficulties eating or drinking, sleep disorders, and disturbances in communication and social interaction. These results are consistent with those of Naidu *et al.*, who showed that pain, eating disorders, and sleep disturbances are the most frequent manifestations of the impact of ECC on the quality of life of young children [8]. Similarly, Zaror *et al.*, in their systematic review, confirmed that ECC significantly alters the functional, emotional, and social dimensions of oral health-related quality of life [9]. Avoidance of speaking and pronunciation difficulties observed in children with incisor caries highlights the direct effect of anterior dental involvement on oral functions, esthetics, and self-esteem, as also reported by Tschammler *et al.* [10].

The treatments performed, particularly extractions and pulp treatments, helped relieve pain and improve oral health status, but they remain physically and emotionally burdensome for children and their families. Our results show that children who underwent extractions had more eating difficulties, which is consistent with the observations of Corrêa-Faria *et al.*, who demonstrated that the severity of carious lesions and invasive treatments is associated with a greater impairment of quality of life [11]. The fact that children who received preventive care had often already experienced painful episodes highlights delayed use of preventive strategies, emphasizing the need for earlier interventions.

The family impact of ECC is also major. In our study, most parents expressed feelings of guilt, financial difficulties, and disruptions in their professional life. These results corroborate those of Pahal *et al.*, the authors of the ECOHIS questionnaire, who showed that ECC affects not only the child but also the emotional, social, and economic balance of the entire family [12]. Naidu *et al.* also reported high levels of parental stress and financial burden related to dental care in children with ECC [8].

Socioeconomic and educational factors appear to be major determinants in the occurrence of ECC. Most of our patients came from families with low or medium socioeconomic status, and their mothers mainly had a primary or secondary level of education. These observations are consistent with the work of Lai *et al.*, who

demonstrated a significant association between low socioeconomic status, low maternal education level, and increased severity of ECC [13].

Nevertheless, our study has certain limitations. Its cross-sectional design does not allow a causal relationship to be established between the variables studied, and the relatively modest sample size may limit the extrapolation of the results to the entire Moroccan population. Despite this, it provides valuable clinical and social data on the multidimensional impact of ECC in a Moroccan hospital setting.

5. Conclusions

Early Childhood Caries significantly compromises oral health, growth, daily functioning, and psychosocial well-being in preschool children while generating substantial emotional and financial burdens for their families. The high prevalence of pain, eating difficulties, sleep disturbances, school absenteeism, and parental distress observed in this study highlights the broad consequences of ECC beyond the oral cavity.

These findings support the implementation of early preventive strategies targeting parents and caregivers from pregnancy onward and reinforce the need to integrate oral health promotion into primary child healthcare programs. Strengthening parental education and facilitating access to preventive dental services may contribute to reducing the burden of ECC and improving the quality of life of children and their families.

Conflicts of Interest

The authors declare no conflicts of interest.

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