Impact of Dental Caries on the Quality of Life of Preschool Children in Salvador, Bahia

Anyele Jesus Matos, Maria Cristina Teixeira Cangussu, Maria Beatriz Barreto de Sousa Cabral, Maria Isabel Pereira Vianna, and Tatiana Frederico de Almeida

ABSTRACT

Dental caries affects most of preschoolers and has important consequences for the development and quality of life of affected children.

Aim: To describe the epidemiological status of dental caries in preschoolers in Salvador-BA- Brazil and evaluate the impact of this oral disease on the oral health-related quality of life (OHRQoL), considering sociodemographic characteristics.

Methodology: This is a cross-sectional study in a representative sample of preschool children in Salvador-BA- Brazil. Caries was assessed using dmft and the impact on quality of life used the B-ECOHIS (Brazilian version of the Early Childhood Oral Health Impact Scale). Data collection took place in 2018 through, thorough clinical examination and questionnaire application. Descriptive, univariate, and multivariate analyzes were performed using robust Poisson regression, with a significance level of 5%.

Results: 1591 children were examined, and the prevalence of caries was 36.46%. The presence of early caries (adjusted PR = 2.07; 1.82-2.34 95% CI), severe caries (PR = 2.07; 1.84-2.33 95% CI) and child oldest age (adjusted PR = 1.55; 1.36-1.77 95% CI) were associated with children's OHRQoL.; child oldest age (adjusted PR = 1.42; 1.19-1.69 95% CI), the presence of early caries (adjusted PR = 2.65; 2.22-3.16 95% CI), severe caries (PR = 3.07; 2.63-3.60 CI 95%) and the number of people in the household (PR = 1.46; 1.22-1.73 CI 95%) were associated with Family OHRQoL.

Conclusion: The children evaluated had a high prevalence and severity of early caries. Worst oral health and sociodemographic conditions had a negative impact on the OHRQoL of children and their families.

Keywords: dental caries, epidemiology, preschoolers, quality of life.

I. INTRODUCTION

The American Academy of Pediatrics defines child health as “the social, physical and emotional functioning of the child”, with the capacity and quality of family care being of fundamental importance. Therefore, the measurement of quality of life related to child health must be done from the perspective of the child and the family [1]. It is clear that oral health is interconnected with general health, and, therefore, studies that assess oral health and its impact on quality of life are essential and also identifying the consequences and importance of oral health. Thus, oral health-related quality of life (OHRQoL) is a multidisciplinary concept with a subjective character and has been widely studied in different countries, involving different characteristics, such as physical, family, leisure, among others [2].

In Brazil, there are two validated instruments to assess OHRQoL in children. The Oral Health-Related Quality of Life Questionnaire for Children in Preschool Age (B-ECOHIS) and the Oral Health-Related Quality of Life Instrument for Children aged 05 Years (SOHO-5) [3]. With regard to oral problems in childhood, early caries, which affects primary dentition, is an important health problem in many countries and also in Brazil. Despite recent methods of prevention and diagnosis, this remains a prevalent childhood disease worldwide, being the most common chronic disease in children in the world population [1].

Although a decline in the prevalence of dental caries has been observed in recent decades, which can be explained mainly by public policies for the promotion and prevention of oral health, in addition to the population's greater access to fluoridated products [4], this is still considered a problem of public health and deserves attention, especially in relation to the preschool age group, in which oral health conditions are little known and little prioritized by health care strategies in the Brazilian public sector.

In young children, the disease can acquire specific destructive characteristics, resulting in pain and infection. It can cause difficulty in chewing and reduced appetite, leading to an inadequate eating pattern and thus compromising the child's physical development. The aesthetic issue is also highlighted, which can affect social life, causing isolation and shyness [5]. Other negative consequences are sleep problems, behavioral changes, poor academic performance,
need of hospitalization, in addition to contributing to the increase in health care costs [6].

The dmft is an epidemiological index that expresses the sum of decayed primary teeth (with cavitation), lost, and filled due to the presence of caries. In the last national oral health epidemiological survey, at 05 years of age, a Brazilian child had, on average, an index of 2.43 teeth with caries experience, with a predominance of the decay component, which was responsible for more than 80% of the index [7].

The proportion of caries-free individuals decreases with age, an expected phenomenon, considering the cumulative nature of the indexes used. At 05 years of age, only 46.6% of Brazilian children were caries-free in primary dentition, according to the results of national survey 2010 [7].

Thus, the aim of this study was to describe the epidemiological profile of early caries in children aged 03 to 05 years in Salvador-BA, in order to contribute to the monitoring and surveillance of oral problems in children in the city, where the rates of dental caries are high in this group [5], [8], [9]. Furthermore, the impact of early caries on the OHRQoL of preschoolers was investigated, considering aspects of the socioeconomic context.

II. METHODOLOGY

A cross-sectional epidemiological study was carried out with children between 36 and 71 months of age who attended basic health units and municipal public daycare centers. Data collection took place between August and November 2018 and involved children and their guardians, primarily mothers (primary caregivers, in most cases).

The municipality of Salvador-BA- Brazil is territorially divided, for administrative purposes, into 12 health districts, according to epidemiological, political, and socioeconomic criteria, with a total population of approximately 2.9 million inhabitants [10].

The sample, obtained in multiple stages, was calculated considering 10% of the event's prevalence, standard error of 2.9%. A 95% confidence interval was used and the prevalence of the impact of oral conditions on the OHRQoL of children and their families determined in a pilot study (30%) was used to calculate the sample size-941 children. A correction factor of 1.5 was used to increase accuracy. The minimum sample size to satisfy the necessary criteria was 1412 individuals. However, the sample was increased by 15% to compensate for possible losses, totaling 1623 children. Daycare centers and health facilities were randomly selected in each of the districts. At the time of oral examinations, all children present in daycare centers or health units were evaluated.

The inclusion criteria for the participants in this study were: children aged between 36 and 71 months, who regularly attended public municipal daycare centers or a health unit in each health district. In addition, these children should not have systemic diseases and should have the consent form signed by their mothers or guardians in advance. Children with special needs were excluded from the study due to the difficulty in performing the clinical oral examination, especially in a school environment.

OHRQoL was assessed using the Early Childhood Oral Health Impact Scale (ECOHIS) questionnaire, an instrument developed in the United States to assess the impact of oral health problems and dental treatments on the quality of life of preschool children (2 to 5 years old) and their families [11]. Thirteen items are part of ECOHIS, which relate to two sections: Child Impact section and Family Impact section. The first section has four subscales: symptoms, functions, psychological and social interaction. The family impact section has two: stress and family function. This is a simple instrument, with few items, low cost, and easy to apply, considering the child's years of life and the experience of his/her family. The answer options correspond to the frequency indicated by the respondent with which each item affects the quality of child and family life.

The Brazilian version of the Early Childhood Oral Health Impact Scale (B-ECOHIS) is already culturally adapted and validated [12], [13]. The B-ECOHIS is intended for children aged 2 to 5 years and is the most used instrument in the literature to assess OHRQoL in preschool children and their families [14].

Three teachers of Public Health from the Dentistry College at Federal University of Bahia and 08 students from the same course, trained and calibrated, were responsible for data collection. There was theoretical-practical training, with discussion of the criteria of the epidemiological indexes and instruments used. The inter-examiner calibration took place in a public day care center, when 30 children aged between 3 and 5 years were examined. The intra-examiner calibration was measured during data collection, when 10% of the exams were repeated 07 days after the first assessment. The Kappa coefficient and the agreement index were used (agreement index between them and within examiners equal to or greater than 90% and Kappa equal to or greater than 0.85 for dental caries).

The open area of public day care center and the waiting room of health units were the places for the application of the questionnaire with the mothers or main guardians and for the children's oral exams. They were seated, in an environment with natural light, and oral examinations were supported by a mirror, periodontal probe from the World Health Organization (WHO) and personal protective equipment. Dental caries was evaluated according to the criteria proposed by the dmft [7], [15].

The instrument aimed at the children's mothers or guardians- a structured questionnaire, was applied directly. This had identification data and sociodemographic data of the child- gender (male/female), age (36-55 months/ over 55 months), ethnicity (white/other), maternal and paternal education (up to 8 years of schooling/ ≥ 8 years of schooling) and number of people in the household (≤ 4/5 or more), in addition to the B-ECOHIS. The impact of children on OHRQoL was considered present during data analysis when there was at least one positive response (frequency equal to or greater than 'sometimes') for any of the items in this instrument. Likewise for the Family Impact on OHRQoL when there was at least one positive response to the items in this section of the B-ECOHIS. The Child and Family Impact on OHRQoL were the two dependent variables considered. The independent variables were sociodemographic conditions and early caries (dmft=0 or dmft>=1) and caries severity, as proposed by Chaffee [16] (dmft<=4 or dmft>=5).

Data were entered into EXCEL [17] and analyzed in
STATA 14 [18]. Descriptive analyzes of sociodemographic conditions and investigated oral health problems were performed. Pearson's Chi-Square test was used in exploratory analyzes of potential factors associated with the impact on OHRQoL, observing a significance level of 5%. Robust Poisson regression was used to estimate prevalence ratios and their respective 95% Confidence Intervals, considering the two main dependent variables (Child and Family Impact on OHRQoL) and the independent variables. In the multivariate analysis, the stepwise forward method was adopted to include the latter in the final adjusted models. Independent variables with a p-value <0.20 for each of the outcomes in the univariate analysis were incorporated, and those with a p-value <0.05 were kept in the final models.

The present study was approved by the Research Ethics Committee of the Faculty of Dentistry, Federal University of Bahia (Brazil) (CAAE 78351317.0.0000.5024). The confidentiality of the information and the anonymity of the participants was maintained, the children's mothers or guardians signed the Free and Informed Consent Term (FICF).

III. RESULTS

The study included 1591 children aged 36 to 71 months, most of them male. Regarding skin color, most of them were black (93.34%). In this study, 81.02% of the preschoolers' mothers had 8 years of schooling or more; and 76.68% of the parents also had the same condition. Regarding the number of people in the household, 76.05% of the participating children lived with up to 4 people in their homes (Table I).

TABLE I: DISTRIBUTION OF SOCIO-DEMOGRAPHIC CONDITIONS OF CHILDREN AGED 3 TO 5 YEARS IN SALVADOR-BA, 2018. (N=1591)

| Variables                        | n   | %    |
|----------------------------------|-----|------|
| **Age**                          |     |      |
| 36-54 months                     | 785 | 49.34|
| 55 months or more                | 806 | 50.66|
| **Gender**                       |     |      |
| Male                             | 802 | 50.41|
| Female                           | 789 | 49.59|
| **Skin Colour**                  |     |      |
| White                            | 106 | 6.66 |
| Black and others                 | 1485| 93.34|
| **Maternal education**           |     |      |
| 8 years or more                  | 1289| 81.02|
| Less than 8 years                | 302 | 18.98|
| **Paternal education**           |     |      |
| 8 years or more                  | 1220| 76.68|
| Less than 8 years                | 371 | 23.32|
| **Number of persons in the household** |     |      |
| Until 4 persons                  | 1210| 76.05|
| 5 persons or more                | 381 | 23.95|

Regarding the presence of dental caries and dental biofilm in preschool children in Salvador-BA, there was a prevalence of 36.46% and 55.63%, respectively. Among these children, 24.83% had between 1 and 4 lesions, while 11.63% of them had 5 or more caries lesions (severe caries). The mean dmft found was 1.46, and of this, decayed teeth corresponded to 89.04% and extracted and filled, 5.48% each.

With regard to the responses of mothers or guardians to the questionnaire that evaluated the OHRQoL (B-ECOHIS), it was found that in relation to pain in the teeth, mouth or jaw, 70.46% of children never felt pain, 18.60 % of them felt it sometimes and 1.95% of them felt this pain frequently. Regarding the child having difficulty drinking hot or cold drinks, it was found that 86.05% of the children never had this difficulty, 6.98% of the children had difficulty sometimes (Table II).

Regarding the difficulty in eating certain foods, 83.72% of the children never felt this difficulty and 10.12% did sometimes. About the difficulty of pronouncing a word, 2.58% of them felt sometimes. Regarding the child missing daycare or school due to oral problems, it was seen that 92.96% of the children never missed and 94.22% of the children never failed to perform some daily activity. Regarding the child having difficulty sleeping, it was found that 91.26% of them never had this difficulty and 4.46% of them sometimes. Other aspects that stand out about the presence of oral problems were that 5.66% sometimes got irritated and 2.33% sometimes stopped smiling or talking because of them (Table II).

Some questions in the B-ECOHIS assessed the impact of the child’s oral condition on the quality of family life. Almost 4% of children who had dental problems or had dental treatment had a financial impact on the family. It was also observed that 9.74% of the mothers or guardians of the children had already been upset due to some oral problem of the child. Some mothers or guardians sometimes felt guilty about their children’s oral problems (9.11%). It was found that 91.01% of the mothers or guardians never needed to miss work because of their children’s oral problems, but sometimes this happened to some (4.15%) (Table II).

It was also verified in this study that the prevalence of the impact of oral health problems of children on the quality of life of family members (family impact) was 25% and the impact of oral health problems on the quality of life of children themselves (child impact) was 37, 52%.

Some independent variables showed statistically significant differences (p<0.05) when analyzing their association with the impact on child and family quality of life. Thus, age, maternal education, number of people in the household, presence of caries and severe caries were associated with quality of life in all two dimensions analyzed. It is noteworthy that maternal education was the only independent variable that had no statistically significant difference for the impact on quality of family life (Table III).

In the multivariate analysis, all the independent variables that were associated with the impact on child and family quality of life, with a significance level of less than 0.20 in the univariate analyzes (Table III), were part of the final models. It is noteworthy that adjusted final models were generated considering the presence of early caries with any level of severity and final models taking into account only the presence of severe caries (5 caries lesions or more).

In the multivariate analysis, the presence of early caries (adjusted PR=2.07; 1.82-2.34 95% CI), severe caries (PR=2.07; 1.84-2.33 95% CI), and older age of the child (adjusted PR= 1.55; 1.36-1.77 CI 95%) was associated with child OHRQoL; older age (adjusted PR= 1.42; 1.19-1.69 CI 95%), the presence of early caries (adjusted PR=2.65; 2.22-3.16 CI 95%), severe caries (PR=3.07; 2.63-3.60 CI 95%) and the number of people in the household (PR=1.46; 1.22-1.73 CI 95%) were associated with family OHRQoL (Tables IV and V).
TABLE II: DISTRIBUTION ACCORDING TO THE RESPONSES TO THE QUESTIONNAIRE ON THE IMPACT OF ORAL HEALTH ON THE QUALITY OF CHILD AND FAMILY LIFE (B-ECOHIS), SALVADOR – BA, 2018. (n=1591)

| Child impacts section | n    | %   | n    | %   | n    | %   | n    | %   | n    | %   |
|-----------------------|------|-----|------|-----|------|-----|------|-----|------|-----|
| Had pain in the teeth, mouth or jaws? | 1121 | 70.46 | 119 | 7.48 | 296 | 18.60 | 31 | 1.95 | 9 | 0.57 |
| Had difficulty drinking hot or cold beverages? | 1369 | 86.05 | 71 | 4.46 | 111 | 6.98 | 15 | 0.94 | 9 | 0.57 |
| Had difficulty eating some foods? | 1332 | 83.72 | 63 | 3.96 | 161 | 10.12 | 18 | 1.13 | 10 | 0.63 |
| Had difficulty pronouncing any words? | 1480 | 93.02 | 35 | 2.20 | 41 | 2.58 | 7 | 0.44 | 5 | 0.31 |
| Missed preschool, daycare or school? | 1479 | 92.96 | 42 | 2.64 | 56 | 3.52 | 5 | 0.31 | 2 | 0.13 |
| Had trouble sleeping? | 1452 | 91.26 | 46 | 2.89 | 71 | 4.66 | 11 | 0.68 | 4 | 0.25 |
| Been irritable? | 1412 | 88.75 | 54 | 3.39 | 90 | 5.66 | 16 | 1.01 | 6 | 0.38 |
| Avoided smiling or laughing? | 1503 | 94.47 | 30 | 1.89 | 37 | 2.33 | 7 | 0.44 | 6 | 0.38 |
| Avoided talking? | 1529 | 96.10 | 22 | 1.38 | 28 | 1.76 | 1 | 0.06 | 3 | 0.19 |
| Had a financial impact on your family? | 1460 | 91.77 | 39 | 2.45 | 59 | 3.71 | 11 | 0.69 | 12 | 0.75 |

Family impacts section

| Been upset? | 1322 | 83.09 | 46 | 2.89 | 155 | 9.74 | 35 | 2.20 | 24 | 1.51 |
| Felt guilty? | 1317 | 82.78 | 57 | 3.58 | 145 | 9.11 | 28 | 1.76 | 36 | 2.26 |
| Taken time off from work? | 1448 | 91.01 | 49 | 3.08 | 66 | 4.15 | 9 | 0.57 | 12 | 0.75 |

TABLE III: PREVALENCE OF THE IMPACT OF SOCIO-DEMOGRAPHIC ASPECTS AND DENTAL CARES ON THE QUALITY OF CHILD AND FAMILY LIFE OF CHILDREN AGED 3 TO 5 YEARS, EVALUATED BY B-ECOHIS, SALVADOR – BA, 2018. (n=1591)

**CHILD IMPACT**

| Gender | n | % | n | % | n | % | n | % | n | % |
|--------|---|---|---|---|---|---|---|---|---|---|
| Male   | 516 | 64.34 | 286 | 35.66 | 0.122 | 610 | 76.25 | 190 | 23.75 | 0.246 |
| Female | 478 | 60.58 | 311 | 39.42 | 0.581 | 73.73 | 207 | 26.27 | 0.000 |
| Age    | n | % | n | % | n | % | n | % | n | % |
| 36-54 months | 568 | 72.36 | 217 | 27.64 | 0.000 | 635 | 80.89 | 150 | 19.11 | 0.000 |
| 55 months or more | 426 | 52.85 | 380 | 47.15 | 0.556 | 69.24 | 247 | 30.76 | 0.000 |
| Skin Colour | n | % | n | % | n | % | n | % | n | % |
| White   | 68 | 64.15 | 38 | 35.85 | 0.712 | 84 | 79.25 | 22 | 20.75 | 0.296 |
| Black and others | 926 | 62.36 | 559 | 37.64 | 1107 | 74.70 | 375 | 25.30 | 0.000 |
| Maternal education | n | % | n | % | n | % | n | % | n | % |
| 8 years or more | 823 | 63.85 | 466 | 36.15 | 0.020 | 974 | 75.74 | 312 | 24.26 | 0.161 |
| Less than 8 years | 171 | 56.62 | 131 | 43.38 | 0.217 | 71.85 | 85 | 28.15 | 0.000 |
| Paternal education | n | % | n | % | n | % | n | % | n | % |
| 8 years or more | 766 | 62.79 | 454 | 37.21 | 0.643 | 922 | 75.76 | 295 | 24.24 | 0.205 |
| Less than 8 years | 228 | 61.46 | 143 | 38.54 | 0.269 | 72.51 | 102 | 27.49 | 0.000 |
| Number of persons in the household | n | % | n | % | n | % | n | % | n | % |
| Until 4 persons | 773 | 63.88 | 437 | 36.12 | 0.039 | 939 | 77.67 | 270 | 22.33 | 0.000 |
| 5 persons or more | 221 | 58.01 | 160 | 41.99 | 0.000 | 252 | 66.49 | 127 | 33.51 | 0.000 |
| Dental cares | n | % | n | % | n | % | n | % | n | % |
| No      | 748 | 73.99 | 263 | 26.01 | 0.000 | 858 | 84.95 | 152 | 15.05 | 0.000 |
| Yes     | 246 | 42.41 | 334 | 57.59 | 0.333 | 57.61 | 245 | 42.39 | 0.000 |
| Severe dental cares | n | % | n | % | n | % | n | % | n | % |
| No      | 748 | 73.99 | 263 | 26.01 | 0.000 | 858 | 84.95 | 152 | 15.05 | 0.000 |
| 1 - 4   | 197 | 49.87 | 198 | 50.13 | 0.000 | 269 | 68.27 | 125 | 31.73 | 0.000 |
| 5 or more | 49 | 26.49 | 136 | 73.51 | 0.64 | 34.78 | 120 | 65.22 | 0.000 |

TABLE IV: ADJUSTED PREVALENCE RATIOS, THEIR RESPECTIVE 95% CONFIDENCE INTERVALS AND P-VALUES FOR THE ASSOCIATION BETWEEN IMPACT ON CHILD AND FAMILY QUALITY OF LIFE AND THE PRESENCE OF EARLY CARES IN CHILDREN AGED 3 TO 5 YEARS, OBTAINED BY ROBUST POISSON REGRESSION, SALVADOR – BA, 2018. (n=1591)

**CHILD IMPACT**

| Gender | PR (CI=95%) | p-value | PR (CI=95%) | p-value |
|--------|-------------|---------|-------------|---------|
| Male   | 1           | 0.11 (0.99-1.26) | 0.064 | 1.13 (1.01-1.26) | 0.000 |
| Age    | 36-54 months | 1.55 (1.36-1.77) | 0.000 | 1.42 (1.19-1.69) | 0.000 |
| Maternal education | 8 years or more | 1.08 (0.93-1.24) | 0.281 | 0.99 (0.81-1.20) | 0.930 |
| Number of persons in the household | n | % | n | % | n | % | n | % | n | % |
| Until 4 persons | 1.13 (0.99-1.26) | 0.068 | 1.46 (1.22-1.73) | 0.000 |
| Early dental cares | n | % | n | % | n | % | n | % | n | % |
| No      | 1.09 (0.99-1.26) | 0.207 (1.82-2.34) | 0.000 | 2.65 (2.23-3.16) | 0.000 |

PR: Prevalence Ratio. CI 95%: Confidence Interval 95%.
TABLE V: ADJUSTED PREVALENCE RATIOS THEIR RESPECTIVE 95% CONFIDENCE INTERVALS AND P-VALUES FOR THE ASSOCIATION BETWEEN IMPACT ON INDIVIDUAL AND FAMILY QUALITY OF LIFE AND THE PRESENCE OF SEVERE DENTAL CARRIES (MORE THAN 5 TEETH) IN CHILDREN AGED 3 TO 5 YEARS. OBTAINED BY ROBUST POISSON REGRESSION, SALVADOR - BA, 2018. (n=1591)

| Gender | CHILD IMPACT | FAMILY IMPACT |
|--------|--------------|---------------|
|        | PR (CI=95%) p-value | PR (CI=95%) p-value |
| Male   | 1            | 1             |
| Female | 1.11 (0.98-1.25) 0.075 | 1.48 (1.25-1.75) 0.000 |
| Age    |              |               |
| 36 a 54 months | 1            | 1             |
| 55 months or more | 1.62 (1.42-1.85) 0.000 | 0.98 (0.81-1.19) 0.880 |
| Maternal education |              |               |
| 8 years or more | 1            | 1             |
| Less than 8 years | 1.08 (0.94-1.25) 0.255 | 1.19 (1.05-1.34) 0.000 |
| Number of persons in the household |              |               |
| Until 4 persons | 1            | 1             |
| 5 persons or more | 1.13 (0.98-1.29) 0.073 | 1.43 (1.21-1.70) 0.000 |
| Severe dental caries |              |               |
| No | 1            | 1             |
| Yes | 2.07 (1.84-2.33) 0.000 | 3.07 (2.63-3.60) 0.000 |

PR: Prevalence Ratio.
CI 95%: Confidence Interval 95%.

IV. DISCUSSION

Early caries proved to be a disease that is still quite prevalent and has consequences for the quality of life of children, as well as the socioeconomic conditions of the family context.

In this study, the prevalence of caries was 36.46%, lower than the national prevalence observed in the last survey in 2010, which was 53.40% [7]. In a study by Almeida et al. [8] with 1374 children aged 05 years in Salvador-BA, the prevalence of caries was 49.60%. In the study by Nóbrega et al. [4] with 5-year-old children enrolled in municipal public and private institutions in the city of Teresina-PI, the prevalence of caries was 50.2%. However, the prevalence reported in this investigation was higher than that found in cities in other regions of the country. Ortiz et al. [19], found a prevalence of 16.42% of caries in children aged 0-5 years in Santa Maria-RS. In a cross-sectional study carried out by Antunes et al. [20] with children aged 02 to 06 years old who attended public day care centers in Nova Friburgo-RJ, the prevalence of dental caries was 33.70%.

The dmft found was equal to 1.46, with a high proportion of decayed teeth, lower than the dmft at 05 years of age in Brazil, which was equal to 2.67. In the Salvador-BA survey, carried out in 2005, the dmft in this age group was equal to 1,978. In all these surveys [7], [8], the percentage of decayed teeth in need of surgical-restorative treatment corresponded to more than 80% of the index, revealing the need for public policies more committed to changing the epidemiological picture of oral health in children at such a young age.

It is recognized that oral conditions influence the individual's quality of life. However, only oral clinical characteristics would not represent the impact of quality of life on the physical, social and mental well-being of individuals. For this reason, researchers developed the concept of OHRQoL, which covers physical, psychological, family aspects, among others, and has been studied in different countries [2]. The use of instruments such as ECOHIS contributes to this theme being better investigated among children aged 2 to 5 years from different parts of the world [20].

Corroborating other investigations [1], [4], [6], [19]-[25], this study found that early caries has a negative impact on children and their families. In addition to caries, other authors have already investigated the consequences of other oral problems for OHRQoL [26]-[28], but previous studies that evaluated the impact of early caries on OHRQoL showed more consistent results. Usually, caries in childhood causes pain, difficulties in speech, in the act of eating and drinking in the child. In the family dimension, this pathology is related to the feeling of guilt in those responsible for the care [20].

Positive responses from mothers or guardians to these B-ECOHIS items were frequent in this investigation, as well as in others already carried out [3], [16], [19], [21], [23], [25], [29], [30].

Families of children in early childhood act as mediators between children and society, providing care and stimulation necessary for physical growth and adequate development. This care depends on family resources such as the level of education of parents, physical and mental health of guardians, social support, autonomy, time and financial resources. The mother usually represents the main caregiver in the family context [31], [32]. Early caries, in turn, is a disease determined by biological and non-biological factors, in which social determinants play a fundamental role [5], [16], [33]-[35]. Thus, it is possible to understand the association observed in this study between sociodemographic aspects of the family context, especially age, parental education, and number of people in the household, and OHRQoL in the child and family dimension.

Regarding the child's age, among older children, the occurrence and severity of oral problems may be more frequent, such as caries, which explains the association of this variable with the outcomes investigated here and in other studies [3], [19], [36], [37]. The relationship between parental education and impact on OHRQoL has also been verified in other epidemiological investigations [16], [19], [38]. The number of people in the household represents a proxy variable of family care capacity, as the greater the density of people in the child's home, the conditions that provide more qualified care are reduced, promoting the development of oral diseases, and also impacting the OHRQoL.

Recent literature indicates that the severity of early caries tends to increase the impact of this disease on OHRQoL, which is consistent with the findings presented here, where
the occurrence of more teeth affected by caries was associated with a negative impact in the children's section and family of the B-ECOHIS. In the study by Antunes et al. [20], children with high caries severity were five times more likely to suffer an impact on OHRQoL, something similar was also found in the investigations conducted by Firmino et al. [39], Chaffee et al. [16], Duangthip [24]. In fact, the greater the severity of the decay, the greater the chances that the lesions will lead to pain, which can make parents and caregivers more sensitive to oral problems. Guedes et al. [40], for example, in a longitudinal study that followed 352 children for 02 years in Santa Maria-RS, they found that the presence of only early caries lesions was not a significant predictor of OHRQoL impairment. The cross-sectional study by Munayco-Pantoja [41] carried out with 200 children aged 3 to 5 years in Lima, Peru, found that the total ECOHIS score is higher in children with severe caries in early childhood than in children without caries.

The analysis of the OHRQoL of preschoolers through a representative and random sample of the city of Salvador-BA represents an advantage of this research in relation to most of the investigations already carried out. Early caries was investigated based on well-defined criteria in the literature, and multivariate analyses were performed that considered sociodemographic characteristics. The limits of this study are related to the use of a cross-sectional design, which limits the establishment of causal relationships between the investigated variables. Studies with longitudinal approaches should be carried out in search of greater detail on the relationships observed here.

V. CONCLUSION

The prevalence of early caries among preschoolers aged 3 to 5 years in the city of Salvador-BA was 36.46%. The dmft observed was equal to 1.46, with a predominance of decayed teeth. Regarding health-related quality of life, the presence of early caries (adjusted PR=2.07; 1.82-2.34 95% CI), severe caries (PR=2.07; 1.84-2.33 95% CI) and child age (adjusted PR= 1.55; 1.36-1.77 95% CI) were associated with child OHRQoL: age (adjusted PR=1.42; 1.19-1.69 95% CI), the presence of early caries (adjusted PR=2.65; 2.22-3.16 95% CI), severe caries (PR=3.07; 2.63-3.60 95% CI) and the number of people in the household (PR=1.46; 1.22-1.73 CI 95%) were associated with family OHRQoL.

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