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A Case-Control Research Examined the Effect of Traumatic Oral Damage on Early Toddler's

Garcia Paiva*

Department of Dentistry, State University of Paraiba, Brazil

Abstract

There are no long-term research that examine how traumatic dental injury (TDI) affects preschoolers' oral health-related quality of life. A population-based case-control study was conducted with a representative sample of 335 children, ages 3-5, enrolled in public and private preschools in the city of Campina Grande, Brazil, to examine the effect of TDI on in preschoolers. Age, gender, type of preschool and monthly household income of the case group and the control group were matched at a ratio of one to four (67 cases and 286 controls). Application of the Early Childhood Oral Health Impact Scale allowed for evaluation of the impact on children's. (ECOHIS). Through the use of clinical investigations, the incidence of TDI was identified. By three trained dentists. Data analysis techniques included conditional logistic regression analysis [P 0.05; 95% confidence interval], descriptive statistics, McNemar's test, the chi-square test with linear trend, and McNemar's test. "Felt pain" (19.4%) and "difficulty eating" (16.4%) were the most often mentioned comments. In the case group, the prevalence of TDI was 37.3%, compared to 33.9% in the control group. There were no statistically significant variations in the presence of TDI between the case and control groups (odds ratio = 1.16; 95% CI: 0.66-2.02). Preschoolers' quality of life was unaffected by TDI.

Keywords: Tooth Injuries; Quality of life; Primary Teeth; Epidemiology

Introduction

Any harm of a physical, chemical, or thermal type that affects one or more teeth and the oral cavity is referred to as a traumatic dental injury (TDI). Young children frequently experience TDI due to their underdeveloped motor and cognitive systems [1]. Preschoolers are more prone to falls and subsequent oral cavity damage during the learning phase, which involves the movements of standing, walking, and running2. Because of its high occurrence rate among this group of people, TDI is in fact regarded as a public health issue3-5. The consequences of TDI on dental-facial aesthetics, social interactions, and pain and difficulties chewing can all have a detrimental influence on one's quality of life. 6–9. The way someone feels about their quality of life determines The World Health Organization10 states that one's position in life in respect to their objectives, expectations, standards, and worries depends on the cultural context and value system in which they live [2]. Oral health-related quality of life (OHRQoL) is a multifaceted concept that considers the effects of oral problems, as TDI, on functional, social, and psychological well-being because oral health is a crucial component of overall health1. There are many evaluation techniques available to quantify self-reported OHRQoL. For different age groups of kids, specific assessment instruments have been created, taking into account various phases of cognitive, social, and emotional development. These metrics have been utilised in epidemiological research to support clinical indicators and give a clearer picture of health status13 [3]. The Early Childhood Oral Health Impact Scale (ECOHIS) is frequently used in dentistry to evaluate how oral health issues and associated treatment experiences affect preschool children's and their families' quality of life11. For use with Brazilian children, this questionnaire has been translated14, examined, and validated. All research studies that evaluate the effects of TDI.

Method

Ethical Issues

Under protocol number 0046.0.133.000-11, the State University of Paraiba's Human Research Ethics Committee approved this study. All participants' rights were upheld and this study was carried out in complete conformity with the World Medical Association's Declaration of Helsinki. Parents and guardians were told of the study's goals and were asked to sign an informed consent form [4].

Study Design and Sample

In the Brazilian city of Campina Grande, 3-5-year-old children enrolled in both public and private preschools were the subjects of a population-based, matched, case-control research. With a population of 385,213 and six health districts, Campina Grande is an industrialised city in northeastern Brazil. It has significant cultural, social, and economic inequalities with a mean per-capita income of US$110 [5].

A cross-sectional survey with 814 preschoolers was conducted in order to choose the kids for the case and control groups. From this preliminary investigation, the sample size was determined. The minimal sample size was established as 67 cases and 268 controls (n = 335) using a ratio of 1:4. The probability of exposure to was used to calculate the sample size. The odds ratio (OR) (of 2) for OHRQoL in exposed patients compared to non-exposed subjects, as determined by a pilot investigation, and an 80% power of proving a significant difference between groups at the 5% level [6]. Four children were chosen for the control group for every kid in the case group, and they were matched for age, gender, preschool setting (private or public), and monthly household income.

***Corresponding author:** Garcia Paiva, Department of Dentistry, State University of Paraiba, Brazil, E-mail: Paiva.garcia39@gmail.com

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Selection of Cases and Controls

The case and control groups' children were chosen by two researchers (R.G.V.-A. and G.B.G.). Nine of the original 814 kids were not included because they provided one or more "do not know" replies on the Child Impact Section of the Brazilian ECOHIS (B-ECOHIS). The remaining 805 children evaluated in the cross-sectional study were divided into two groups: 248 (38.8%) having an influence on OHRQoL was chosen for the case group, and 557 (61.2%) had no impact on OHRQoL. When the minimal sample size of 67 cases and 268 controls (n = 335) was obtained, the groups were matched at a ratio of 1:4 for age, gender, preschool type, and monthly household income [7]. The score on the Child Impact Section was used to determine the impact on OHRQoL. Items on the B-ECOHIS were classified as having a non-negative influence on OHR- QoL if responses were "never" or "hardly ever," while items with responses of "sometimes," "frequently," or "very often" were classified as having a negative impact on OHR- QoL.

Training and Calibration Exercise

The training and calibration exercise consisted of two steps. The theoretical step involved a discussion of the criteria for the diagnosis of TDI and the analysis of photographs. A specialist in paediatric dentistry (the gold standard) coordinated this step. The second step was the clinical step, in which five dentists examined 50 previously selected children between 36 and 71 months of age. The three dentists with the best level of intra-examiner and interexaminer agreement per- formed all clinical examinations during the collection of data for the main study. Cohen's Kappa coefficients ranged from 0.88 to 0.90 for intra-examiner agreement and from 0.85 to 0.90 for interexaminer agreement.

Eligibility Criteria

Ages 36 to 71 months, enrollment in preschool, the absence of orthodontic treatment, and completion of the questionnaires were requirements for inclusion. Four maxillary incisors lost due to caries or physiological exfoliation, which could impair the clinical diagnosis of TDI, were the exclusion criteria.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS for Windows, version 17.0; SPSS Inc, Chicago, IL, USA) was used for data organisation and statistical analysis. To describe the sample and illustrate the distribution of the B-ECOHIS items, the frequency distribution of the data was determined. The independent variables in the case and control groups were compared using McNemar's test and the chi-square test with linear tendency. At 5% (P 0.05), the level of significance was chosen. The conditional logistic regression model included explanatory variables with P 0.20 in the bivariate analysis as well as those having theoretical relevance (independent of the P-value). Using the backward stepwise approach, unadjusted and multiple conditional logistic regressions were run. The final logistic regression with numerous conditions for dental caries and malocclusion, the model was modified [8].

Result

Variables that were used to match the groups. Between the case and control groups, there were no discernible statistical variations in the distribution frequency of these variables. Three hundred thirty-five preschoolers were chosen, with 50.7% (or 170) of them being males and 49.3% (or 165) being girls [9]. No kids were disqualified from the study because they refused to cooperate during the clinical evaluation. The oldest age group for youngsters was 4 years old (40.0%). According to the frequency distribution for household income, 82.1% of the sample had incomes up to three times the minimum monthly salary, while 17.9% had incomes above the minimum monthly pay. Of the sample, 50.7% attended public preschools and 49.3% attended private preschools. Figure 2 displays the frequency distribution [10].

Discussion

According to the independent variables, the preschoolers. The prevalence of TDI was 34.6%, and enamel fracture was the most prevalent kind (14.9%). The findings showed no statistically significant correlation between TDI and the analysed pre-school children's quality of life. Previous research using the ECOHIS to assess the effect of TDI on preschool children's OHRQoL has all used a cross-sectional design6–9,13,17–20. In five of these investigations, TDI had no impact on OHRQoL13,17–20; however, in four of these studies, TDI had a detrimental effect on OHRQoL as measured by the overall ECOHIS score6–9. The variable sampling and age group allocation procedures used in the various studies may be the cause of the inconsistent findings. Although earlier research has included preschoolers, the majority of those investigations used different age groups.

Conclusion

The current study, like 1-4 years6, 2-5 years8, 9, 20, or 5 years7, 17–19. While some studies6-8,13,17 used a representative sample, others9,18,20 used a convenience sample. Additionally, these research were carried out across different parts of Brazil. The individuals were divided into two groups according to the existence or absence of an impact on OHRQoL and were matched for age, gender, type of preschool, and monthly household income prior to the analyses because the current investigation was a case-control study. This sample allocation differs from that of earlier cross-sectional research, which assessed the participants without grouping or matching them beforehand. Because of this methodology, the current study provides more scientific support.

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