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Communication

DENTAL EROSION AND ORAL HEALTH-RELATED QUALITY OF LIFE IN CHILDREN AGED 3 TO 5 YEARS LIVING IN LIMA. PERÚ.

Erosión dental y calidad de vida relacionada con la salud bucal en niños de 3 a 5 años de lima. Perú.

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ABSTRACT:

Objetive: To determine the impact of dental erosion on the oral health related quality of life in preschool children aged 3 to 5 years.

Material and Methods: An observational, cross-sectional study was carried out. The sample consisted of 150 preschoolers from a preschool in the suburban areas of Lima, Peru. The Basic Erosive Wear Examination (BEWE) index was used for the evaluation of dental erosion; and the Early Childhood Oral Health Impact Scale (ECOHIS) was used to measure quality of life. The data were analyzed in the statistical program SPSS v.25.

Results: A prevalence of erosion of 40.7% was observed; with an initial loss of tooth surface in 28% and a loss of hard tissue of <50% of the surface area in 12% of the examined children. No statistically significant association was found between the impact of erosion and the oral health related quality of life ($p>0.05$). However, the dimension with the highest score was *functional limitations*.

Conclusion: The prevalence of dental erosion in preschool children was high, and dental erosion did not show an impact on the oral health related quality of life.

KEYWORDS:

Tooth erosion; Quality of life; Tooth wear; Oral Health; Health-related quality of life; Child.

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RESUMEN:

Objetivo: Determinar el impacto de la erosión dental en la calidad de vida relacionada con la salud bucal en preescolares de 3 a 5 años.

Material y Métodos: Se realizó un estudio observacional de corte transversal. La muestra estuvo conformada por 150 preescolares de un jardín infantil de la zona suburbana de Lima, Perú. Se utilizó el índice Basic Erosive Wear Examination (BEWE) para la evaluación de la erosión dental; y se utilizó la Escala de Impacto en la Salud Bucal de la Primera Infancia (ECOHIS) para medir la calidad de vida. Los datos fueron analizados en el programa estadístico SPSS v.25.

Resultado: Se observó una prevalencia de erosión del 40,7%; con una pérdida inicial de superficie dental en el 28% y una pérdida de tejido duro <50% del área superficial en el 12% de los niños examinados. No se encontró asociación estadísticamente significativa entre el impacto de la erosión y la calidad de vida relacionada con la salud bucal (p> 0,05). Sin embargo, la dimensión con mayor puntaje fue limitaciones funcionales.

Conclusión: La prevalencia de erosión dental en preescolares fue alta, y la erosión dental no mostró impacto en la calidad de vida relacionada con la salud bucal.

PALABRAS CLAVE:

Erosión de los dientes ; Calidad de vida; Desgaste de los dientes; Salud bucal; Calidad de vida; Niño.

INTRODUCTION.

Oral health is a vital part of general health and is a valuable asset to each individual; and its care favors the quality of life. For this reason, the Peruvian Ministry of Health and the American Academy of Pediatric Dentistry recommend starting dental care at an early age.[1] Among oral diseases, erosive tooth wear (ETW), have been increasing in prevalence in recent years, which is a multifactorial condition characterized by the superficial dissolution of enamel.[1-3] According to worldwide reports, dental erosion lesions have a high prevalence in children, ranging from 15.1% to 59.7%.[4,5] The condition is associated with frequent consumption of juices, sodas, carbonated drinks, and gastroesophageal reflux.[6]

However, this condition is hardly perceptible to dentists, leading to a late approach to the subject.[2] In Peru, dental erosion has been unexplored in the literature, especially in children,[7] the progression goes unnoticed by the dental professional, especially in the initial stage, because it is confused with other types of wear with similar characteristics such as abrasion, attrition and abfraction.[3]

Although epidemiological studies have reported a high prevalence of ETW, there are no studies reporting its impact on oral health-related quality of life (OHRQoL) in preschool children. Only one Brazilian study has evaluated the impact of dental erosion on OHRQoL in preschool children.[6]

Therefore, the purpose of this study is to identify the impact of dental erosion on quality of life related to oral health in a group of preschoolers from Lima, Peru.

MATERIALS AND METHODS.

Design and sample

An observational, cross-sectional study was carried out, approved by the Scientific Committee of the Nobert Wienner Private University.

The sample consisted of 150 preschoolers from the educational institution "Niño Jesús Mariscal Chaperito" in the district of San Juan de Lurigancho. To calculate the sample size, a formula was used to estimate a mean: a significance level of 5% was established, with a variance of 0.58 taken from the base article and a population of 300. A non-probabilistic type of sampling was carried out.

Data collection

The parents were previously informed, providing their acceptance through the signing of the informed consent and informed assent was obtained. Data collection was carried out in two stages. First, quality of life was assessed using the ECOHIS (Early Childhood Oral Health Impact Scale) validated in Spanish by Tipán *et al.*[8] The ECOHIS consists of 13 questions. All questions were answered by the parents. Each question had six response options:

0=Never;

1=Almost never;

2=Sometimes;

3=Frequently;

4=Very often;

5=Does not know/does not answer.

Answers "don't know/don't answer" were counted as zero. Second, dental erosion was evaluated using the Basic Erosive Wear Examination index (BEWE), performed during a clinical examination of the buccal/palatal/lingual tooth surfaces in the maxilla and mandible.

The score was from 0 to 3 where:

0 is that there is no erosion wear;

1 is initial loss of surface texture;

2 is a distinct defect, loss of hard tissue less than 50% of the surface area;

and 3 is the loss of hard tissue greater than or equal to the surface area.

The clinical examination was performed by a single examiner, who was previously calibrated by the specialist teacher. An environment was installed in the school with the respective biosafety and adequate lighting, where sterilized instruments were used, mouth mirrors, gloves and gauze for the respective review of each child.

Statistical analysis

A descriptive and inferential statistical analysis was performed, evaluating the relationship using the Student t-test for independent samples.

Table 1. Caregivers' perception of the oral health related quality of life using the ECOHIS scale in preschool children.

Early childhood oral health impact scale–ECOHIS	Never n (%)	Hardly ever n (%)	Occa-sionally n (%)	Frequently n (%)	Very frequently n (%)	Don't know n (%)
CHILD IMPACT DOMAIN						
Pain in teeth, mouth or jaw	53(35.3)	42(28.0)	47(31.3)	7(4.7)	0(0.0)	1(0.7)
Difficulty drinking hot or cold beverages	72(48.0)	50(33.3)	27(18.0)	1(0.7)	0(0.0)	0(0.0)
Difficulty to chew food	76(50.7)	44(29.3)	27(18.0)	3(2.0)	0(0.0)	0(0.0)
Difficulty pronouncing any words	78(52.0)	35(23.3)	33(22.0)	2(1.3)	1(0.7)	1(0.7)
Missed pre-school or day-care	92(61.3)	28(18.7)	25(16.7)	4(2.7)	1(0.7)	0(0.0)
Difficulty sleeping	80(53.3)	22(14.7)	44(29.3)	3(2.0)	1(0.7)	0(0.0)
Being annoyed or bad-tempered	83(55.3)	29(19.3)	35(23.3)	3(2.0)	0(0.0)	0(0.0)
Avoiding laughing or smiling around other children	85(56.7)	20(13.3)	39(26.0)	5(3.3)	1(0.7)	0(0.0)
Avoiding talking	95(63.3)	31(20.7)	19(12.7)	3(2.0)	1(0.7)	1(0.7)
FAMILY IMPACT DOMAIN						
Feel upset	72(48.0)	30(20.0)	42(28.0)	5(3.3)	1(0.7)	0(0.0)
Felt guilty	70(46.7)	32(21.3)	45(30.0)	2(1.3)	1(0.7)	0(0.0)
Had to take hours or days off work	55(36.7)	36(24.0)	47(31.3)	8(5.3)	3(2.0)	1(0.7)
Had the family's economic situation affected	74(49.3)	28(18.7)	40(26.7)	6(4.0)	2(1.3)	0(0.0)

ECOHIS: Early Childhood Oral Health Impact Scale.

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Table 2. Impact of dental erosion on the oral health related quality of life in preschool children from the district of San Juan de Lurigancho, 2019.

	N (%)	Oral symptoms x ± SD	Functional limitations x ± SD	Psychological aspects x ± SD	Self-image/ interaction x ± SD	Parents distress x ± SD	Family function x ± SD	Quality of life x ± SD
Without dental erosion	89(59.3)	1.04 ± 1.01	2.79 ± 2.40	1.54 ± 1.50	1.43 ± 1.65	1.90 ± 1.67	1.89 ± 1.75	10.58 ± 7.66
With dental erosion	61(40.7)	1.13 ± 0.94	2.89 ± 2.61	1.64 ± 1.64	1.26 ± 1.67	1.57 ± 1.58	2.25 ± 2.05	10.64 ± 8.80
p-value		>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05

* Student t-test for independent samples. SD:Standard deviation

This statistical test was chosen as the Shapiro-Wilk test was carried out, obtaining a normal distribution of the data. The statistical package SPSS v. 25.0 (IBM, USA) was used and a significance level was set at 5%.

RESULTS.

The sample consisted of 150 preschoolers, of which 50.7% (n=76) were male and 49.3% (n=74) female. The average age of the sample was 3.9±0.8 years. The prevalence of dental erosive lesions was high, at 40.7% (n=89); in the group with dental erosion 28% (n=42) initial loss of tooth surface was found.

The oral health related quality of life was negative for the impact domains on the child and on the family. A total of 4.7% responded *"often"* to the question of pain in the teeth, mouth, or jaw; followed by 3.3% of *"often"* for the question *"have you avoided smiling"*; followed by 2.7% of "often" for the question *"missed pre-school or day-care"* and 2% of *"often" for the question "difficulty eating some foods"*, *"trouble sleeping"*, *"being annoyed or bad-tempered"* and *"has avoided talking"*. A total of 5.3%; 4.0% and 3.3% responded *"often"* to the questions *"had to take time off work"*, *"had the family's economic situation affected"*, and *"have you or another family member been worried"*; respectively. (Table 1).

It was determined that there is no statistically significant difference between the impact of erosion and the oral health related quality of life (p>0.05). (Table 2).

The teeth with the most dental erosion were located in the anterior area (21.3%).

DISCUSSION.

In recent years, different studies have been carried out on the prevalence of dental erosion and the predisposing factors that generate or aggravate the condition. Previous research[2,6] found a prevalence of 52.4% and 58.8%, in a sample of children from the United Arab Emirates and Brazil, respectively.

In the present study, dental erosive lesions were diagnosed in 40.7% of the children evaluated. It was also shown that one of the most relevant factors was the diet.[4-7] Within it, the high consumption of soft drinks. Many studies have shown the association between dental erosion, dietary factors, and a high intake of acidic beverages.[6,7]

Comparisons between the analyzed studies should be interpreted with caution due to the lack of uniformity in the recorded methods.

Erosive tooth wear is increasingly seen in primary dentition; however, it is not perceived by parents as an oral health problem. Therefore, its diagnosis and treatment are the responsibility of the dentist.[1-3] Diagnosing tooth erosion can be difficult.

However, in our study it was possible to achieve

good intra-and inter- examiners' Cohen's Kappa agreement values when the Basic Erosive Wear Examination (BEWE) index was used during training and calibration.

When evaluating the quality of life and oral health of preschoolers, there was no statistically significant association between the impact of dental erosion and quality of life; as described by Tello *et al.*,[6] and Caraguay *et al.*,[7] Similarly, other investigations find that if there is a significant correlation between dental erosion and its effect on the quality of life of individuals, but those findings were reported in adult populations.[10]

Being a cross-sectional study, it is not possible to deduce the cause-effect relationship since the prevalence of dental erosion is also associated with sociodemographic and economic characteristics.[6,9]

Within the limitations of the study, it could be considered that a randomized type of study was not carried out, which could generate bias.

However, adequate training and calibration were carried out to guarantee the reliability of the measurements of the variables.

CONCLUSION.

The prevalence of dental erosion in preschool children was high, and dental erosion did not show an impact on the oral health related quality of life. It is recommended to take what was obtained in this research as a starting line to evaluate this problem and guide the patient in the prevention of this disease; as well as improve and redirect public health policies related to food consumption and its effect on dental health.

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Conflict of interests:

None declared.

Ethics approval:

The study was approved by the Committee of the Norbert Wiener Private University, Lima, Peru.

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All authors participated in the study design, implementation and writing of the manuscript.

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