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Assessment of children oral health quality in institutional care situation

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ABSTRACT

Background: The hypothesis was that institutionalized children who live in shelters/ orphanages, without parental care, unstable family situation, psychological disorders, low socioeconomic status and with limited access to oral health care can improve the risk of oral diseases. Objectives: The aim of study evaluated the quality of oral health of children in a situation of institutional care (shelter), compared with the oral health condition of children who live with their family under parental care in a stable family situation.
Methods: This study was descriptive, observational, cross-sectional and case-control study. Thirty- eight 38 patients of aged 0 to 12 years were analyzed. They were divided into two groups: 19 institutionalized children (Study Group - SG) and 19 children in parental care (Control Group - CG). Data were collected about the systemic and drug conditions and aspects of oral health. The index used to assess the oral health of the patients were: Visible Plaque Index (VPI), Gingival Health Condition Index (GHCI), ICDAS Index, Invasive Dental Treatment Need Index (ITNI). The data obtained were tabulated and the descriptive statistics analysis was calculated, including as summary measures in absolute number and percentage. The results obtained were submitted to statistical analysis using the chi-square test with a significance level of 5%.
Results: The systemic diseases in the EG were reported in 37% and 11% in the CG. The use of medications was reported in 32% of participantes of the EG. The EG group presents harmful habits in a higher percentage (53%) compared to the CG. The results of VPI, GHCI, ICDAS, ITNI, GE had the highest percentage in GE.
Conclusion: Children in a situation of institutional care regardless of the oral health condition with worse results in the index surveyed in relation to children with parental care in a stable family situation. These results emphasizing the needs for implementation of preventive health programs in shelters, in order to minimally reduce the impact of absence from the family. Additionally, the use of controlled medications and medical monitoring were higher in the group of institutionalized children.

Keywords: Institutionalized Child, Oral Health, Social Inequity, Oral Hygiene, Orphanage

INTRODUCTION

Omission, abuse, hypotheses of serious negligence, abandonment, or violence are the main reasons children live in institutional shelters that have parental care due to their parents dying or unable to raise their children (Shanthi et al., 2017). Those children and adolescents were removed from family life, and their rights were threatened or violated. It is known that the family is the most sustainable source of social contact for children (Pavithran et al., 2017).

The children oral health aspects are related to factors such as socio-economic level, family income, education and family structure, influencing psychosocial and psychological attributes and general behavior, being causal factors for the development of behavioral and neurological diseases (Shah et al., 2016; Chaffee et al., 2017).

In the past, the institutions that received orphaned or abandoned children were called “orphanages”. Currently, the name "orphanages" was replaced by centers or shelters for institutional care and received this population (Gubert et al., 2015).

The most documented concern in the literature was inappropriate personal hygiene behaviors, followed by inadequate water and sanitation infrastructure and overcrowding. In addition, insufficient finances and caregiver experience or involvement are reported barriers to implement improvements in children's institutions (Moffa et al., 2019). The access to and use of dental care services is also related to socio-economic inequalities, although there is an increase in dental services in all social strata in Brazil (Khare et al., 2012; Calvasina et al., 2018). Oral health care is a common health need, but this care is not satisfactory in this population. However, there is a higher risk of developing oral diseases and negative consequences for health and social life (Ojahanon et al., 2013).

Institutionalized children do not receive information from their parents about oral and general health care, and caregivers of institutional shelters are responsible for monitoring and collaborating with the children's oral hygiene (Markeviciute and Narbutaite, 2015).

The oral cavity can develop evolution diseases rapidly, for example, caries and gingivitis. Those oral diseases present a high percentage of children and young. Therefore, it is essential to quickly diagnose and treat the most prevalent oral diseases, especially in children neglected in general oral care (Souza et al., 2016; Rodan et al., 2015).

His study hypothesized that institutionalized children who live in shelters without parental care, unstable family situation, psychological disorders, low socio-economic status, and limited access to oral health care could influence the higher risk of oral diseases. Therefore, this research evaluated the quality of children's oral health in a situation of institutional care (shelter) compared to children who live in a family nucleus with parental care in a stable family situation.

MATERIAL AND METHODS

Design of Study

A descriptive, observational, cross-sectional and case-control study was carried out in a convenience sample of children in a situation of institutional care compared to a control group of children living with their families. The volunteers were submitted for evaluation by applying a structured interview with the responsible caregivers. The Research Ethics Committee approved this University of the Western of Sao Paulo (Protocol: 3.712.068).

Study universe and reference population

Two groups of patients participated: Study Group - 19 children in institutional care, aged 0 to 12 years and Control Group - 19 children that lives with their family under parental supervision, aged 0 to 12 years. They were selected by pairing age, gender, systemic aspects, behavioral and physical condition, school level, and socio-economic status. Data collection for the study was carried out at the Pediatric Dentistry Clinic of the University of the Western of Sao Paulo - UNOESTE and two childcare institutions in Presidente Prudente, SP.

Inclusion criteria were age between 0 and 12 years, children in institutional care and their peers for the control group, children in institutional care for more than 6 months. The written adherence of guardians to the consent form is free and informed of participation in the study. The children agreed to sign the consent form and volunteer with behaviors to evaluate them.

Procedures for data collection

The guardians of the patients who participated in this research were informed of the research aim and the methods used, and the children were only evaluated after the guardians signed the Informed Consent Form and the children signed the Assent Term. Legal guardians were interviewed to assess eating and oral hygiene habits, systemic condition, the behavior of volunteers and access to dental care services. The answers were recorded in an individual form.

Analysis of the Visible Plaque Index (VPI), Gingival Health Condition Index (GHCI), Caries Experience Index through the International Caries Detection and Assessment System (ICDAS) and the Need for Invasive Dental Treatment Index (ITNI) were perfomed by one researcher. Those indexes were performed analyzing the presence of biofilm on the surfaces of teeth was based on the Visible Plaque Index (VPI) proposed by Ribeiro (Ribeiro et al., 2002), being represented by the following Scores: (0): absence of visible biofilm; (1): thin biofilm on posterior or/and anterior teeth; (2): thick biofilm without great adhesion on posterior or/and anterior teeth; (3): thick biofilm firmly adhered to posterior and anterior teeth.

Volunteers who received the score: (0) had excellent biofilm control. The type of biofilm was classified from 1 to 3: (1): thin biofilm, when it can only be identified after drying the tooth surface; (2): thick biofilm, easily identified, but not firmly adhered and easily removed from the surface; (3): biofilm firmly adhered to the tooth surface and difficult to remove from the tooth surface. Scores 2 and 3 were considered as mechanical control of deficient biofilm (Ribeiro et al., 2002).

The gingival health condition was evaluated using the Gingival Health Condition Index (GHCI), (Ribeiro et al., 2002), using a sterile periodontal probe. The scores were assigned considering the aspects of the presence of gingival inflammation and control efficiency biofilm according to Ribeiro (Ribeiro et al., 2002): (0) clinically healthy gingiva, without spontaneous or induced bleeding, after being probed; (1) bleeding gums after the probe was performed (induced bleeding) without gingival hyperplasia; (2) gingiva with spontaneous bleeding without gingival hyperplasia; (3) gingiva with gingival hyperplasia with or without gingival bleeding.

The caries experience as assessed by the ICDAS analysis (International Caries Detection and Assessment System) (Cabral et al., 2014), that use the scores: (0) healthy tooth surface; (1) opacity or discoloration (white or brown) visible in cracks after drying; (2) visible opacity even in the presence of moisture; (3) cavity in opaque or pigmented enamel, with no sign of dentin involvement; (4) shading of the underlying dentin; (5) enamel cavity with exposure of the underlying dentin; (6) cavitation in enamel with exposure of the underlying dentin, involving more than half of the surface. Prophylaxis and relative isolation were performed under artificial lighting, and all tooth surfaces were assessed (mesial, distal, buccal, lingual and occlusal), one quadrant at a time.
The degree of involvement of teeth with active carious lesions that required an invasive approach was measured using the Invasive Needs Index (ITNI), (Lobão et al., 2008), expressed as a percentage. The scores used were: (1) Restorative treatment, (2) Conservative Pulp Therapy, (3) Radical endodontic treatment, (4) Extraction due to extensive carious lesion.

Statistical analysis of results
The data obtained were tabulated and the descriptive statistics analysis was calculated for all data, including as summary measures in absolute number and percentage. The results obtained were submitted to statistical analysis using the chi-square test with a significance level of 5% (Bioestat - Belém, Pará, Brazil).

RESULTS

The mean age of the groups was divided: Study Group - 1 to 5 years (3.4 ± 1.4), group 6 to 12 years (9.6 ± 1.6) and Control Group - 1 to 5 years (3.7 ± 1.4), group 6 to 12 years (9.4 ± 1.6). Table 1 shows the results regarding the quantitative variables analyzed in the study. The presence of illnesses in the study group was 37% and in the control group 11% ($p<0.05$). The use of medication in the study group was 32% ($p<0.05$), while in the control group, it was 11% ($p<0.05$).

Table 1: Frequency distribution of the qualitative variables analyzed according to the group

		Study group n=19	**Group control n=19**	**p-value**
Sex	Feminine	53 % (10) [a]	32 % (6) [a]	0.18
	Male	47 % (9) [a]	68 % (13) [a]	
Presence of illnesses	No	63 % (12) [a]	89 % (17) [a]	0.05
	Yes	37 % (7) [a]	11 % (2) [a]	
Medication Use	No	68 % (13) [a]	89 % (17) [a]	0.11
	Yes	32 % (6) [a]	11 % (2) [a]	
Deleterious habits	No	47 %(9) [a]	63 % (12) [a]	0.32
	Yes	53 % (10) [a]	37 % (7) [a]	
Cariogenic Diet	No	0 [a]	21 % (4) [a]	0.03
	Yes	100% (19) [a]	79 % (15) [a]	

Lowercase letters compared in line: represent a statistically significant difference between study groups (Chi-Square; $p<0.05$)

Table 2 presents the results referring to the analysis of systemic aspects such as medications, medical specialties and deleterious habits. In the study group, the need to use controlled medications ($p<0.05$) and the need for medical follow-up predominate.

Table 2: Results referring to the analysis of systemic aspects: medications, medical specialty and deleterius habits

		Study group n =19	Group control n =19
Medicines	Risperidone	26% (5)	5% (1)
	Imipramine	21% (4)	5% (1)
	Ritalin	10% (2)	5% (1)
	Fluoxetine	10% (2)	0
Medical Specialty	Speech Therapist	15% (3)	5% (1)
	Psychiatrist	26% (5)	0
	Neurologist	26% (5)	5% (1)
	Cardiologist	0	5% (1)
Deleterious Habits	Feeding bottle	15% (3)	21%(4)
	Pacifier	15% (3)	5% (1)
	Nail Biting	36% (7)	26% (5)
	Digital Suction	21% (4)	0
	Bruxism/Squeeze	15% (3)	15% (3)

The data presented in Table 3 are to analyze the presence of biofilm (score 0 to 3) and bleeding (score 0 to 2) to evaluate the presence of gingivitis. The study group showed less number of patients in the zero score than the absence of biofilm and gingivitis, demonstrating the inefficient quality of oral hygiene, regardless of the mean age of the groups evaluated.

Table 3: Scores obtained from clinical evaluation regarding biofilm and gingivitis:

		Study group		Group control	
		1 to 5 years n=11	6 to 12 years n= 8	1 to 5 years n=9	6 to 12 years n=10
Biofilm	Scores 0	36% (4)	37% (3)	55% (4)	50% (5)
	Scores 1	18% (3)	25%(2)	12% (1)	10% (1)
	Scores 2	27% (3)	25% (2)	22% (2)	30% (3)
	Scores 3	9%(1)	12% (1)	12% (1)	10% (1)
Gum Bleeding	Scores 0	36% (4)	37% (3)	88% (8)	90% (9)
	Scores 1	55% (6)	50% (4)	12% (1)	10% (1)
	Scores 2	9% (1)	12 % (2)	0	0

The results of Table 4 referring to the ICDAS and the Index of Need for Treatment (ITNI) of the study group, presented a higher percentage than the control group at all mean ages evaluated.

Table 4: Scores obtained from the clinical evaluation regarding the presence of the Invasive Treatment Need Index (ITNI)

		Study group		Group control	
		1 to 5 years n =11	6 to 12 years n = 8	1 to 5 years n = 9	6 to 12 years n =10
ICDAS	Scores 0	45% (5)	50 % (4)	66 % (6)	70 % (7)
	Scores 1	9% (1)	13 % (1)	0	10%(1)
	Scores 2	18% (2)	0	12 % (1)	10%(1)
	Scores 3	9% (1)	13 % (1)	0	0
	Scores 4	9% (1)	13 % (1)	22 % (2)	10%(1)
	Scores 5	0	13 % (1)	0	0
	Scores 6	9% (1)	0	0	0
INI	No need	45% (5)	50 % (4)	66 % (6)	70% (7)
	Scores 1	45% (5)	37% (3)	44 % (4)	30%(3)
	Scores 2	0	13 % (1)	0	0
	Scores 3	9%(1)	0	0	0
	Scores 4	0	0	0	0

DISCUSSION

A stable family is the most sustainable source of social contact for children. Parents are often the main decision-makers about those children's health. Their perceptions can have a huge influence on the choices and decisions regarding children's general approach and treatment. (Pavithran et al., 2020)

The systemic variables assessed in this study were diseases, use of controlled medications, deleterious habits, and cariogenic diet. The result of variables comparing the study and control groups showed that the study group presented high-frequency negative aspects (Table 1). Those differences could be justified by the institutionalization of children, the replacement of parental care by institutional care could generate behavioral and psychological problems, such as depression, anxiety, attention deficit and hyperactivity (Turney and Wildeman, 2016). Institutionalized children are considered a population at risk of abnormal psychosocial development that can influence children's health behavior leading to physical, behavioral and psychological health problems (Shanbhog et al., 2014).

The study group's results about the use of controlled medications are monitored by professionals such as neurorogists, psychiatrists, and therapy. In addition, the study group presented more deleterious habits that denote some no-supplied emotional need (Table 2). UNICEF, UNAIDS and USAID reported that orphanages could be detrimental to a child's growth and development because children can survive and thrive. They need to grow up in a community and family environment that supply their psychological and emotional needs (Christian et al., 2019).

Several children's oral diseases are related to socio-economic status, family structure, oral hygiene and diet. In Table 3, it can be observed that the study group presented high potential for oral disease. A high percentage of patients with biofilm and gingival bleeding, following the higher number of patients than any control group. in the results of Table 3. Institutionalized children comprise a group that are found to have a high prevalence of dental caries and gingivitis. This was attributed to inappropriate oral health practices, psychological stress and inappropriate eating habits. Furthermore, these children are underprivileged and do not receive as much care as children living in homes with stable families (Kumar et al., 2011). However, the Statute of Children and Adolescents in Brazil, states that it is the duty of the family, community, society, and public authorities to ensure the realization of health-related rights, including dental care from prenatal care to a need for dental care during infancy.

The results regarding the presence or absence of caries in the two groups obtained (Table 4) were characterized by an experience of caries being higher in the study group. This finding could be explained by the increased use of controlled medications, biofilm, and gingivitis. The children of the study group have health care provided by the institution's caregivers. However, there are many children per caregiver, making oral health care unsatisfactory. However, despite being under parental care, children in the control group have their oral health influenced by risk factors, including positive or positive parental behavior, such as indulgence or lack of effective dedication to the children (Conzatti and Mosmann, 2015).

The study of Shah et al. (2016), the overall prevalence of caries in permanent dentition was 67.65% in children aged 7 to 11 years, a result similar to the present study, that 50% of caries was found in the group of aged patients between 6 and 12 years. Children in institutional care situations may have a higher caries incidence due to social and affective vulnerability (Shah et al., 2016). Caries rates between children in orphanages were more increased than children in the general population. So, it is urgent to establish a prevention strategy to reduce caries' burden in this highly vulnerable population (Christian et al., 2019). The orphaned children have lower use of preventive and therapeutic oral health services, and the need for urgent attention to planning a comprehensive oral health program to improve the oral health status of this specific part of the children population (Shanthi et al., 2017).

Table 4 shows that most patients in the control group need some dental treatment due to dental caries or gum disease. A study conducted by Khare et al., 2012 obtained similar results to the present study, in that they found the prevalence of dental caries in deciduous teeth of 49.6% and permanent teeth of 41%. Thus children need restorative treatments and pulp therapies. Epidemiological studies show that dental care for children in institutions is inadequate, observing a large experience of caries disease and not treated. They are considering that dental treatment is difficult to implement within institutions, reinforcing that it is necessary to develop special programs to prevent dental caries (Dmitrov et al., 2011).

Children diagnosed with dental caries, presence of biofilm and gingival bleeding required treatment (Table 4) and were referred for curative treatment with a preventive approach at the Pediatric Dentistry Clinic of the Faculty of Dentistry, University of Western São Paulo - Unoeste. As oral health is an integral part of general health, it is essential that health policymakers meet this underprivileged group of society (Shanthi et al., 2017).

This article highlights the risk factors and treatment needs of institutionalized children. The limitation of this study was the number of participants in institutional care, which is an unstable population with great fluctuating potential. Thus, it was challenging to increase the sample of the study population with the characteristics required in the inclusion criteria, especially in including children who had been in the institution for more than 6 months, as they would only have some oral hygiene sequelae

after this period. Furthermore, the scarcity of studies on patients' oral condition in institutional care situations limited the results' comparison.

The contributions of this subject for the literature are the knowledge of the population and dentists. It is recommended that health education programs should be conducted focus at caregivers and support staff of the host institutions to create awareness about the importance of oral health. In addition, children should be encouraged to take up good oral health practices at an early age, which helps to improve preventive dental behavior.

CONCLUSION

It can be concluded that the children in an institutional care situation, regardless of oral health, with poorer results in the index based on their family under parental supervision. Thus, emphasizing the need to implement preventive health programs in shelters to minimally alleviate the shortage resulting from the formal absence from the family. Additionally, it was found that controlled medications and monitoring with medical teams were higher in the group of institutionalized children.

CONFLICT OF INTEREST

The authors declare no conflict of interest

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