

Dental and Periodontal Health and Treatment Needs in a Mother/Child Rural Puerto Rican Population

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Background: Oral research directed toward the maternal and child dyads is important because mothers are a source of dental caries pathogens and are the health behavior managers and trainers of children. The objectives of this study were: 1) to evaluate the oral health status of the mothers in a sample of 100 children aged 12 to 60 months from a rural community in Puerto Rico, and 2) to compare the children with their mothers' oral health status.

Methods: A sample of 71 women and 100 of their children, (Mean Age= 28.8 years \pm 9.0, and 36.41 mos \pm 18.2, respectively) were evaluated for DMFT/S and periodontal health or deft/s. A NIDCR calibrated dentist performed all dental evaluations of children and mothers utilizing NIDCR criteria. Descriptive statistics were produced.

Results: Mothers' bleeding point prevalence in at least one site was 63%; prevalence of at least one site with pocket depth of 4 to 6 mm was 37 %. Calculus prevalence was, no calculus 25%, supragingival calculus 56.7%, subgingival calculus 2.2%, supra and sub gingival calculus 16.3%. Mean Dental Indices for mothers were DMFS (16.51 \pm 0.02), DMFT (12.20 \pm 6.76), Caries (2.93 \pm 2.86), Filling (7.07 \pm 8.76), Missing (2.93 \pm 4.53). Children's Mean Dental Indices were defs (4.32 \pm 9.7), deft (2.30 \pm 4.0), decalcifications lesions (1.36 \pm 1.9), caries (1.96 \pm 3.2) and surfaces caries (3.81 \pm 8.68), fillings (0.22 \pm 0.83) and extracted teeth (0.043 \pm 0.45).

Conclusions: Significant levels of treated and untreated caries and gingival disease were observed in this sample. The importance for primary and secondary prevention, as well as treatment for periodontal and dental disease, in rural Puerto Rican communities is evident from this investigation. Supported by NIDCR Grant No. RO1 DE 12628. [*PR Health Sci J* 2010;1:36-39]

Key words: Mother child oral health, Women periodontal health

This is the first study in PR regarding women's oral health and their children's oral health status. Several studies have provided evidence of the association between mothers' oral and their children's oral health (1-14). This association between a mothers' oral health and that of their children has been previously studied and has provided evidence of the vertical transmission of streptococcus mutans (sm) between mother and child thus increasing the risk of caries in young children (15-30). Since the presence of active carious processes in mothers provides the reservoir for the transmission of sm to their children thereby increasing children's caries risk, the importance of good maintenance of the oral health of the mothers is a priority in prevention of dental disease in children. The mothers' oral health profoundly impacts the health and dental health of their children. Caries as a dental condition is an infectious and transmissible disease that also has general health implications. Statistics report that 18% of premature births are attributable to poor oral health in mothers (31- 35). Although still controversial, some studies provide evidence that pregnant women with poor oral health

are more likely to have a premature and / or low birth weight baby. 35- 42 Children of mothers with poor oral health are five times more likely to have oral health problems. National policymakers are working to educate families about the crucial oral health needs of pregnant women, new mothers and young children. Advocacy efforts have targeted increasing oral health care access for at risk populations and promotion of dentists and pediatricians as part of the oral health service team for pregnant women, women of childbearing age and young children.

Recent research and programs for the prevention of oral diseases, such as Early Childhood Caries (ECC), have focused on maternal/infant relationships. ECC condition is epidemic in Hispanic pre school children and is influential in determining the risk of caries in permanent teeth (35-42). As previously stated Early Childhood Caries is a severe condition with a high

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prevalence among Hispanic children especially Puerto Rican children and other ethnic minorities. The high prevalence of ECC in low income Puerto Rican children has been analyzed in several studies performed by the author of this paper (43-50).

Also programs dealing with the accessibility to dental care have recently focused on the dyad of mother and child in order to maintain dental health in both (8).

The purpose of this study was to evaluate the oral health status of the mothers of a convenience sample of 100 children aged 12 to 60 months from a rural community in Gurabo, Puerto Rico and to compare the children's oral health with their mothers' oral health status.

Methods

A convenience sample of 100 children aged 12 to 60 months of age and 71 of their mothers were recruited in the Local Medical Center of Gurabo, a semi rural community in Puerto Rico. Mothers were recruited to participate with their children by the nurses and the health educator at the Center. The study was explained to the participant mothers and an IRB and HIPAA consent form was signed if the subject agreed to participate. Then both mother and child were evaluated for caries and periodontal disease following NIDCR criteria by a calibrated dentist (PI). The caries exam consisted of evaluation of all present teeth for caries status and decalcification lesions, previous restorations and missing teeth due to carious involvement. The periodontal evaluation consisted of examination for the presence of calculus, periodontal pockets and cej (cemento enamel junction) for calculation of loss of attachment in 2 quadrants of the mouth (one upper and one lower). A total of 3 questionnaires were administered by 3 trained interviewers. The 3 questionnaires consisted of the RAPPID Scale from the University of Washington in Seattle, sociodemographic and a diet questionnaires and closed contact interview. Data was analyzed using the EPI-INFO Program (EPI 6) and descriptive statistics were calculated. Also chi square test was used to measure significant associations mothers' oral health and children's oral health.

Results

Mothers' mean age was 28.88 years \pm 9.06 (Age range 17-31). Children's mean age was 36 months \pm 18.15 (age range 6 -69 months). Results of descriptive analysis of dental indices for children are presented in Table 1. Results of descriptive analysis for mothers' dental indices are presented in Table 2.

The mean prevalence of pocket depth of at least 1 site with depth of 4 to 6 mm on mothers' sample was mesial pockets, 15.53% \pm 19.46 and buccal pockets, 8.74% \pm 15.56.

The total mean percentage of sites with pocket depth from 2 mm to 7 mm in mothers' sample was 2mm, 43.59%; 3mm, 30.71%; 4mm, 9.2%; 5mm, 6.7%; 6-7 mm, 21.40%.

Table 1. Oral indices for children

Oral indices	Means
dmfs*	4.32 \pm 9.75
dmft**	2.30 \pm 1.94
decalcifications	1.36 \pm 1.94
fillings	0.22 \pm 0.83
missing	0.04 \pm 0.41
decay	1.96 \pm 3.30

*dmfs: decay, missing for caries and filled surfaces of primary teeth

**dmft: decay, missing for caries and filled teeth of primary teeth

Table 2. Oral indices for Mothers

Oral Indices	Means
DMFS*	16.51 \pm 9.02
DMFT**	12.20 \pm 6.76
DECAY TEETH	2.73 \pm 2.86
FILLED TEETH	7.07 \pm 8.76
MISSING TEETH	2.9 \pm 4.53

*DMFS: decay, missing for caries and filled surfaces of permanent teeth

**DMFT: decay, missing for caries and filled teeth of permanent dentition

The mean total buccal pocket depth was 2.29 mm \pm 0.45, the mean total mesial pocket depth was 2.63 mm \pm 0.60.

The percent prevalence of women with at least 1 site with 1 bleeding point was 63%. The calculus prevalence in women sample was 25% no calculus, 56.7% supra gingival calculus, 2.2% sub gingival calculus and 16% supra and sub gingival calculus.

Also the children's sample presented a history of prevalence of LBW of 14.3% and pre term babies accounted for the 8.2% of the sample.

A significant association was found between the oral health status of the mother and having a child with LBW ($p = 0.03$). Significant association between DMFS/T and dmfs/t of children was found ($p < 0.001$). A significant association between signs of periodontal disease, such as bleeding gums and buccal pockets, and reports of having birthed a LBW ($p = 0.007$) were also found. In addition, we found a significant association between DMFS/T and bleeding, a sign of periodontal disease ($p = 0.02$). Finally, we found a significant association between bleeding gums and pocket depth ($p < 0.001$).

Discussion

Children in this study showed a high rate of caries with a mean of 1.96 teeth with carious lesions and a mean dmfs of 4.32. Prevalence of caries in this group of children was 36%. Also studies of the oral health of Hispanic children report (51-57) high indices of dental disease, with a prevalence of ECC ranging from 30% to 50%. This Puerto Rican group of children was not an exception to the high rate of dental caries in minority ethnic pre school children.

Mothers were, on average, of young age and also presented high rates of dental disease. This group of mothers showed a mean of at least 3 missing and decayed teeth representing a high need for dental services. Presence of signs of periodontal disease was high for this group of mothers showing a 63% prevalence of bleeding points, which implies the presence of an active inflammation process at the time of dental examination. The total mean percent of sites with pocket depth in the group of mothers studied showed that almost 22% of the group studied presented pocket depth greater than 6 mm which represents a severe sign of periodontal disease.

Most interestingly, was the high prevalence of children with history of LBW (14.3%) and pre term babies (8.2%) and its possible association to the poor oral health of their mothers. Previous studies 15-30 have also shown that the oral health status of mothers is related to their children's oral health. This study shows evidence of a significant association between the oral health of mothers and oral health of their children ($p < 0.001$).

Conclusions

Significant levels of treated and untreated caries and gingival disease were observed in this sample. The importance for primary and secondary prevention, as well as treatment of periodontal and other dental disease in rural Puerto Rican communities, is evident from this investigation.

Resumen

El estudio y la investigación en salud oral materno infantil es de suma importancia ya que en el binomio madre / niño, la madre suele ser la fuente de los patógenos dentales que causan las caries y son además las responsables de las prácticas en salud de sus hijos. Objetivos: Los objetivos de este estudio fueron: 1) evaluar el estado de salud oral de las madres de un grupo de 100 niños entre las edades de 6 a 60 meses de edad de una comunidad semi rural de Puerto Rico y 2) comparar la salud oral de los niños con la salud oral de sus madres. Métodos: La muestra de conveniencia de 71 mujeres y 100 de sus niños, (Edad promedio= 28.8 años \pm 9.0, y 36.41 meses \pm 18.2, respectivamente) fueron evaluados para los índices COPD/S y enfermedad periodontal y copd/s. Un dentista calibrado en los criterios de NIDCR (Instituto Nacional de Investigación Dental y Craneofacial) realizó todas las evaluaciones dentales tanto de las madres como de los niños. El análisis estadístico consistió de estadísticas descriptivas y la prueba de chi cuadrado usando el programa EPI-INFO. Resultados: La prevalencia para las madres de al menos un punto de sangrado fue de 63%, la prevalencia de al menos una bolsa periodontal de 4 a 6 mm fue de 37%. Prevalencia de cálculo fue de 25% no presencia de cálculo, 56.7% cálculo supragingival, 2.2% cálculo subgingival calculus, 16.3% presencia de cálculo supra y sub gingival. Los índices de caries dentales para las madres fueron los siguientes: COPS (16.51 \pm 0.02), COPD (12.20 \pm 6.76), Caries (2.93 \pm

2.86), Restauraciones (7.07 \pm 8.76), Dientes Ausentes (2.93 \pm 4.53). Para los niños los índices de caries fueron cops (4.32 \pm 9.7), copd (2.30 \pm 4.0), lesiones de decalcificación (1.36 \pm 1.9), caries (1.96 \pm 3.2), caries por superficie (3.81 \pm 8.68), restauraciones (0.22 \pm 0.83) y dientes ausentes (0.043 \pm 0.45). Conclusiones: El grupo estudiado presenta altos niveles de enfermedad dental con caries no tratadas y presencia de enfermedad periodontal en las madres. La importancia de la prevención primaria y secundaria tanto como la promoción en salud oral en el área materno infantil se evidencian en esta investigación.

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