Caries prevalence of preschool age children in community homes of the Cauca Valle and related social factors

Prevalencia de caries en preescolares de hogares comunitarios en el Valle del Cauca y factores sociales relacionados

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ABSTRACT

Dental caries represents a public health problem due to its high frequency in population and the cost it represents for society. Studies conducted in recent decades in children under the age of six have found prevalence in a 20 to 70% range. **Objective:** The aim of the present study was to describe caries indicators such as DMF index and degree, caries history and caries prevalence found in children living in some community homes of six municipalities of Valle del Cauca in Colombia. **Material and methods:** A cross-sectioned study was conducted in 982 children lodged in community homes of six municipalities. Classic index of DMF and modified DMF were recorded according to a clinical instrument provided by the Social Protection Ministry of Colombia. Estimators were calculated bearing in mind the design and using statistical program SPSS, Version 19. **Results:** A 45.6% caries prevalence was found (caries with or without cavitation). Classic DMF was 1.7 (95% CI: 1.5-1.9) in the two to five year old population and increased to 2.3 when including the modification of caries without cavitation. In the simple regression analysis, type of social security, ethnicity and age were correlated to DMF teeth. **Conclusion:** The present study found lesser prevalence and history of caries in pre-school age children than that reported in the third national oral health study in five year old population, as well as results reported in the fourth study for population aged 3-5 years.

RESUMEN

La caries dental es un problema de salud pública debido a su alta frecuencia en la población y los costos que implican para la sociedad. Los estudios realizados en las últimas décadas en la población menor de seis años de edad han encontrado una prevalencia en un rango entre 20 y 70%. **Objetivo:** El objetivo del estudio fue describir los indicadores de caries como índice y nivel de COP, antecedentes de caries y prevalencia de caries dental en niños en algunos hogares comunitarios de seis municipios del Valle del Cauca, Colombia. **Material y métodos:** Se realizó un estudio transversal en 982 niños de hogares comunitarios de seis municipios. El índice clásico de la COP y la COP modificada se registraron de acuerdo con un instrumento clínico proporcionado por el Ministerio de Protección Social de Colombia. Los estimadores se calcularon teniendo en cuenta el diseño, utilizando el programa estadístico SPSS versión 19. **Resultados:** Se encontró una prevalencia de caries del 45.6% (caries con o sin cavitación). El COP clásico fue de 1.7 (IC del 95%: 1.5-1.9) en la población de dos a cinco años y aumentó a 2.3 incluyendo la modificación de la caries sin cavitación. En el análisis de regresión simple, el tipo de seguridad social, la condición étnica y la edad se correlacionaron con el nivel de COP. **Conclusión:** Este estudio encontró una prevalencia y antecedentes de caries en la población preescolar menor que la reportada en el Tercer Estudio Nacional de Salud Oral en la población de cinco años y los resultados reportados en el estudio IV a los tres y cinco años.

INTRODUCTION

Studies conducted during the last decade show presence of caries at early ages. Caries is found in a range of 20 to 70% in population under six years of age.[1-6] Dental caries is a public health issue due to its high prevalence in the population, conditions and sequels it elicits and the possible association with certain systemic diseases, cost their represent for society[7] and impact on population's quality of life.[8] Recently, the panorama has been extended incorporating study of health social determinants in problems related to dental public health.[9,10] A

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study applying multivariate analysis of logistic regression found that only oral hygiene techniques and socioeconomic level would be significantly associated in caries risk prediction.[11] Recent studies in a preschool population of a Mexican region found that caries experience was high, and associated to poor oral hygiene.[12] Other studies, such as that effected in the city of Chongqing, corroborate the proposition that dental caries prevalence and DMF mean gradually increased as the children grew.[13]

In view of the oral morbidity exhibited by their populations and new findings which systemically compromise people's health, different governments of the world have promoted policies to guarantee that pregnant females receive counseling in oral and dental health that include information related to prevention of early caries, as well as some recommendations on oral and dental health, including the purpose of bringing their child to the dental office before he is one year old.

In the case of Colombia, the Social Protection Ministry (*Ministerio de Protección Social*) presented in 2009 a report on how to determine a baseline for the follow-up of oral health goals in the National Plan of Public Health (*Plan Nacional de Salud Pública*)[14] and requested that territorial divisions harvest information on DMF teeth; this enabled acquiring information on the 2010-2011 period.[15] Constant results keep showing that caries are still a public health issue.

Children under six years of age represent a vulnerable, highly affected group.[16]

The dental caries situation of children living in community homes in the Valle del Cauca is unknown; knowledge of which factors might be related to their prevalence is equally not documented.

The aim of the present study was to describe caries indicators such as DMF levels and index, caries history and dental caries prevalence in the child population of some community homes of six municipalities of the Valle de Cauca department in Colombia.

METHODS

The database of the study «Oral Health Baseline for Cauca Valley 2009-2012» was analyzed. This study comprised data on pre-school population in 11 community homes located in six municipalities of the Valle del Cauca, counting with 982 entries. Studied homes had been selected by means of simple random sampling, by raffling through a list of 31 homes. To execute contract number 0526 (2010) between Cartago Hospital and Department Health Ministry, the project's operator counted with approval of the Cartago Hospital's ethics committee. Community mothers of these homes were briefed on the study's objectives, and they were requested to provide informed consent forms, in which parents authorized their children's participation in the acquisition of an oral health baseline in community homes. Parents were informed that data and results harvested during research would be kept strictly confidential. Children not included were those who exhibited general health systemic compromise (leukemia, cancer, respiratory infection and others) as well as those presenting acute lesions in the mouth (abscesses, toothache, herpes etc.).

Classic DMF index was recorded (index encompassing teeth with caries and cavitation, teeth filled due to caries and teeth missing due to caries) and modified DMF modified according the clinical instrument supplied by the Colombia Social Protection Ministry.[14]

A 9% inter-examiner discrepancy was obtained for standardization of this index. An 80% concordance with kappa values was observed in community plaque index (CPI) community bacterial plaque standard.[17] Dental plaque recording was the last activity of the clinical examination, the patient was requested to rinse for 30 seconds with a disclosing substance preparation; after this, surfaces of present teeth were examined according to index established for community plaque.

Sociodemographic variables included in the format provided by the examining dentist were the following: age, population group, type of social security, gender, geographical area, number of teeth to be examined, teeth with caries and cavitation, teeth with caries lacking cavitation, filled teeth, teeth lost due to caries, teeth lost due to other causes, and healthy teeth.

Statistical analysis

Acceptable community plaque index was considered when dental plaque indexes were 25% or less. A DMF lesser than 2.3 was taken as reference for adequate DMF, this was the measurement provided by ENSAB III[18] for five year old population. Factors related to caries history, caries prevalence and DMF level were determined by means of a bivariate analysis through an odds ratio (OR) with 95% CI estimation. Multivariate analysis was conducted with logistic regression, only including significant associations with $p \leq 0.05$. No significant interactions were identified during the exploration of hypothesis-generating associations, regression crude and adjusted estimators were taken into account.[19] Estimators were calculated taking into account design, using SPSS® version 17 and Epi Info 3.5.1 statistical programs.