



Factors influencing pre-school children's attendance to public health services in Acapulco, Guerrero, Mexico

Factores que influyen en la asistencia de los preescolares al servicio dental público en Acapulco, Guerrero, México

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ABSTRACT

Aim: The present articles purports the aim of identifying factors influencing pre-school children's attendance to the services of two public dental modules in the city of Acapulco, Guerrero, as well as identifying opportunity areas in order to improve dental care. **Materials and methods:** The present study was of a cross-section and exploratory nature. It was conducted on four pre-grade schools. A self-administered questionnaire was applied. Informers for the aforementioned questionnaire were the children's parents or tutors. Result variable was attendance of pre-school children to public dental services. **Results:** Data from 336 pre-school children were collected. One out of four pre-school children had attended dental services of the health center in the last 12 months. Lack of funds was the main reason mentioned for not bringing uninsured children to dental services. The facts of attending the same school during the former school year as well as parents having received treatment at the dental module, were influencing factors in the attendance of these pre-school children to the dental services. **Conclusions:** Users' previous contact with dental services in the school or in a dental office were factors which increased the likelihood of dental services use of preschool children at the health centers.

Key words: Dental health, pre-school children, risk factors.

Palabras clave: Salud dental, preescolares, factores de riesgo.

RESUMEN

Objetivo: Identificar los factores que influyen en la asistencia de los preescolares al servicio de dos módulos dentales públicos en Acapulco, Guerrero, e identificar las áreas de oportunidades para mejorar la atención dental. **Material y métodos:** Estudio transversal exploratorio en los alumnos de cuatro escuelas de nivel preescolar. Se aplicó un cuestionario autoadministrado, los informantes fueron los padres o tutores de los preescolares. La variable resultado fue la asistencia de los preescolares a los servicios dentales públicos. **Resultados:** Se obtuvieron datos de 336 alumnos de nivel preescolar. Uno de cada cuatro preescolares asistió a los servicios dentales del centro de salud en los últimos 12 meses. La falta de dinero fue la principal razón reportada para no llevar a los escolares sin seguridad social al servicio dental. La asistencia a la misma escuela el ciclo escolar anterior y que los padres se hayan atendido en el módulo dental estuvieron asociados al hecho de llevar a los preescolares al servicio dental. **Conclusiones:** El contacto previo de los usuarios con los servicios dentales, en la escuela o en la atención curativa, son factores que incrementan la probabilidad de uso de los servicios dentales de los escolares en los centros de salud.

INTRODUCTION

The Mexican Ministry of Health (SSA: Secretaría de Salubridad y Asistencia) has outlined three intervention components for the treatment and prevention of dental diseases: oral health of pre-school and school-age children, fluoridation of common-use salt, and an assistive healing program. Two out of the three components take place at the Ministry of Health's operative units. The first component is eminently preventive and related to health education. It is estimated that 95% of children aged 3 to 14 years are afflicted by caries, and when reaching 6 or 7 years of age these children suffer from caries in permanent teeth.¹ In spite of these high numbers of oral diseases, preventive use of dental services was

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found to be below expectations. Severe dental caries has been found to be associated to the perception of the importance of oral health, the age of the child, oral hygiene as well as the family's socio-economic level.²

The Ministry of Health of the State of Guerrero offers oral health preventive and healing services, through its dental care modules, to all uninsured population. Recent assessment of the state's dental services shows a performance index of 80%, with a 62% productivity indicator.³ Low usage of dental services contributes to the inadequacy of productivity indicators.

In 2006 a 31% dental service usage rate in Mexican pre-school state institutions was reported.⁴ Multiple factors influence the use of dental services. Some of them are related to characteristics, attitudes and values, preventive behaviors and users' perception of oral health requirements. Other factors are the sphere (scope) of the dental services, such as access and structure of dental care programs. A third group of factors depend on the experience and previous contact with services as well as satisfaction with dental care.⁵ Medina-Solis found that variables associated to the use of dental services used by pre-school age children were: higher scholastic achievements of the mother, higher socio-economic level of the patients, being the eldest child, dental brushing and higher risk of caries in children.^{4,6} Another study reported factors associated to the low use of dental services by pre-school children, the importance parents must give to oral health, and how parents should avoid giving preferential treatment to girls and first-born.⁷ Research on assessment of a public dental service using caries risk measurement in children aged 3-14 years, conducted in Venezuela in 2006, found that when using health services, there was predominance of healing care over preventive care, and also that patient motivation was important to the decreasing high risk of dental caries, to moderate risk. This study equally underlined the lack of public strategies to keep patients highly motivated.⁸

Oral health knowledge is an important aspect in order to undertake preventive actions. A study conducted in 2006 in the State of Mexico found that 58% of children in pre-school and school age exhibited fair knowledge of oral health.⁹ Nevertheless, 74% of school age children presented caries problems in both primary and permanent dentitions. This would indicate the fact that oral health knowledge is insufficient.

When dealing with pre-school children, additional factors must be taken into account, since these children are dependent on the decisions, time and needs of their parents or legal guardians. If parents do

not carefully examine their children's mouths, or when they do not consider oral health as a priority, they will have lesser opportunity to demand dental services. There are studies showing that parents who received persuasive information on dental care for their children did not modify their attitude.¹⁰ The fact that some dental services might entail payment might represent a hindrance for the use of dental services by children with low financial resources.⁶

The staff of the Ministry of Health Dental Modules in Acapulco conducts routine visits to the pre-school education schools so as to detect cases which might require dental care. Few of the children identified in these visits attended dental institutions; the motives for this low usage of these services are still unknown. The present research targeted the identification of factors associated to pre-school children attendance to dental care, as well as areas where there would be room for improvement in the dental care services of the basic centers of Santa Cruz and La Garita, which belong to the Ministry of Health in Guerrero, Mexico.

MATERIALS AND METHODS

An analytical, cross-sectional study was conducted. Study sphere was composed of pre-school children of the influence area of the Santa Cruz (three schools), La Garita (one school) dental modules. A convenience sample was used. Information was obtained from the children's parents or legal guardians who completed a self-administered questionnaire provided at a school reunion convened for this purpose. Users' participation in the study was voluntary, unremunerated and informed. The survey was of an individual nature, participants had previously agreed via an informed consent text delivered before the survey.

The questionnaire was composed of six sections with questions:

Section 1: General information concerning the child, questions on age, gender, numerical place in the family, firstborn or only child, as well as attendance the previous year to the present school.

Section 2: Pre-school child's social security. Research was conducted on coverage and type of social security, person responsible for the child's health and care, as well as the institution which might provide health care services.

Section 3: Pre-school child's dental hygiene. Questions were asked concerning the dental care institution, use of toothbrush and dental floss, attendance to dental services of the health center in the last 12 months, and reasons for non-attendance.

Section 4: Oral hygiene habits of parents and guardians: Research was conducted on the importance given to oral health, oral hygiene information, participation in oral hygiene conferences, institution responsible for the conference, use of toothbrush, dental floss and oral rinse.

Section 5: Use of dental services by parents or guardians: information was collected on knowledge of dental care schedules at the health center, most convenient time for the user, knowledge of dental services costs, attendance to the dental services of the health center during the last year, reasons for non-attendance, perception of waiting time, length of trip and cost to arrive to the health center, perception of received care as well as suggestions to improve dental services at the Health Center.

Section 6: Family information: the following were collected: data of participant, level of education of parents and guardians, number of family members, self owned home and approximate monthly income of the family. Variable under study was attendance to dental services in the last twelve months. Operative definition of dental service attendance were the cases where the parent or guardian informed of having taken his child to dental service care in the last twelve months.

Answers provided with respect to perception of the importance of oral health were recorded in a 0 to 10 scale, the lowest numerical value corresponded to the lesser importance. Scale of response to care given at the health center included five categories: very good, good, average, bad and very bad.

Reported monthly income was used to ascertain the families' socio-economic level. Families who reported monthly income which was below the 25 percentile of the sample's income distribution were considered as having the lower financial income. Data were captured with the *Epi-Data* statistical package. Data analysis was conducted with CIET map statistical package.¹¹ Simple frequencies of studied variables were performed, variable associations of variables which influence the non-assistance to dental health services were identified. Association estimate, 95% confidence interval and confounders evaluation as well as effect modifiers were performed according to Mantel-Haenszel¹² procedure. Assessment of variables' independent effect was estimated through adjusted odds ratios (AOR) according to conventional logistic regression models. The beginning of the model was saturated with significant association variables, which were eliminated one by one using the criterion of statistical significance. Only factors which exhibited

a 95% confidence level were considered. Participants were aware of and in agreement with the use given to the information they provided. The study was approved by the Research Local Committee of the 07 Sanitary Jurisdiction, Acapulco's Health Ministry, State of Guerrero.

RESULTS

Socio-demographic data

Information was obtained from 336 pre-school children. 53% (n = 179) belonged to the Santa Cruz neighborhood, and 47% (n = 157) belonged to La Garita. 9% (n = 29) belonged to the first year of pre-school, 41% (n = 140) to the second year, and 50% (n = 167) to the third year. Gender distribution was 47% (n = 156) female and the rest male (n = 176). Gender information or age of the pre-school child was not reported in four cases. 29% (n = 96) of pre-school children were under five years of age, 41% (n = 135) were five years old, and 30% (n = 101) were six years old. 25% (n = 85) of the children were only children, and 38% (n = 129) were first-born. 49% (n = 167) of all children had attended the same school during the previous school year.

In 63% of all cases, both parents were responsible for their child, (n = 211), in 31% of all cases, the mother was responsible (n = 103), in 4% (n = 14) the father was responsible, in 2% of cases the legal guardian or other person was responsible (n = 8) of the children. Mostly, the mother was the person charge of the child (47%, n = 158), followed by both parents (30%, n = 101), the grandmother assumed the third place (17%, n = 57), and finally 6% (n = 20) was taken by other relatives caring for the child.

General family data

The mother answered the survey in 78% of cases (n = 261), the father in 12% (n = 40), another person in 6% (n = 19) and the legal guardian in 5% of cases (n = 16). The mother had never attended school in two cases, had primary education in 13% of all cases (n = 44), secondary education in 27% of cases (n = 92), and high school or over in 59% (n = 197). One interviewee did not provide answers. Fathers' schooling was nil in six cases, primary education in 11% of cases (n = 36), secondary education in 23% of cases (n = 78) and high school or over in 56% of cases (n = 189). In 27 surveys no answer was provided for this question. Average members per family was 4.5 (rank 3 to 13 individuals). Almost half of the interviewees, 49%

(n = 163) reported owning their home. 94% (n = 315) answered the question about family's monthly income. Average monthly income was 3,741 pesos (\$ 300 US approximately). Percentile 25 of income distribution was 2,000 pesos and percentile 75 was 4,500 pesos.

School children's social security coverage

44% (n = 146) of pre-school children informed being covered by the Instituto Mexicano del Seguro Social IMSS (Mexican Institute for Social Security). 36% (n = 120) of the children were not covered by any insurance. 8% (n = 27) of children was covered by the Instituto de Seguridad y Servicios Sociales (ISSSTE) (Institute for Social Services and Security), 6% (n = 20) was covered by the Seguro Popular (People's Insurance) and 1% (n = 4) was covered by the Programa Oportunidades (Opportunities Program). Two cases were covered by the National Defense Ministry (SEDENA) and 17% (5%) informed being covered by other types of social security.

In cases when the child required medical attention, 38% (n = 128) was taken to the IMSS, 32% (n = 107) attended private practice, 17% (n = 58) attended the National Health Ministry, 6% (n = 21) attended ISSSTE, 5.8% (n = 18) went to other places, and four cases (1%) provided no answer.

With respect to dental care provided to the pre-school children, one third of the interviewees (33%, n = 112) reported they did not take the children to the dentist. 16% (n = 53) took their children to the dental module of the Health Ministry (SSA). *Figure 1* shows location of dental care for the rest of the children.

With respect to pre-school children lacking social security (n = 144), 43% (n = 61) of interviewees informed they did not take their child to the dentist, 26% (n = 37) attended dental services of the SSA,

22% (n = 32) attended private practice, and 9% (n = 13) informed about taking their children to other places. One case did not answer this question.

Pre-school children's dental hygiene

Almost all the children possessed a dental brush (99%, n = 333). Only three cases reported not having one. Two children did not brush their teeth in spite of having a toothbrush. 30% (n = 100) brushed their teeth once a day, 50% (n = 168) brushed twice a day, and 18% (n = 59) brushed their teeth three times a day or more. Only 10% (n = 35) informed they used dental floss.

Pre-school children's use of dental services

In general, 25% (n = 84) of interviewees brought their children to the SSA Health center. When considering only school children lacking social security (including those who reported having people's insurance or being in the program «Oportunidades»), 28% (n = 41) had attended a dental practice office in the last 12 months. The reason why the rest of the children (n = 103) had not attended are presented in *figure 2*. The main reason why non-insured children did not attend a dental office was lack of financial resources (25%, n = 26), and because they went elsewhere (16%, n = 16). The first reason mentioned might be a reflection of the fact that population receiving care from the Health Ministry (SSA) is the population with lesser financial means.

Factors associated to pre-school children's use of dental services

Several factors were determined as associated to pre-school children's use of dental services in the last

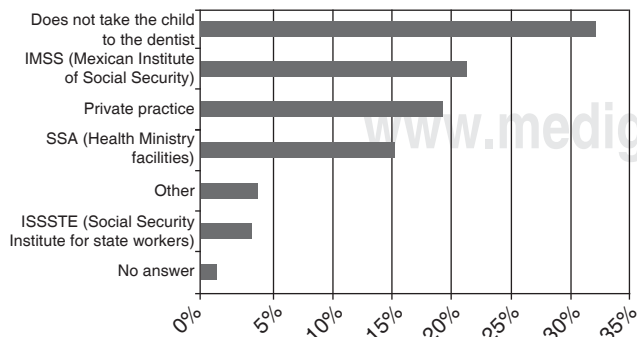


Figure 1. Place of treatment for dental services of pre-school children of the influence areas of the two public dental modules.

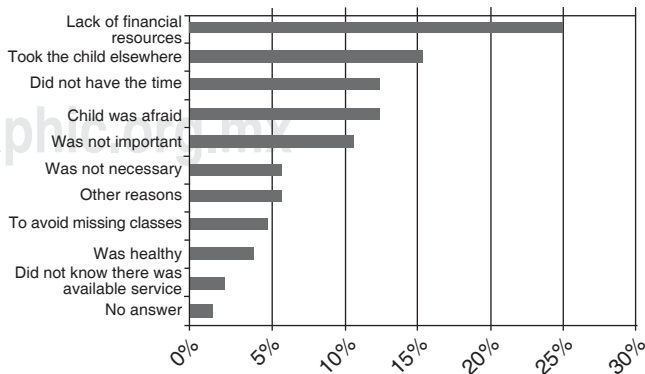


Figure 2. Reasons for not taking uninsured, pre-school children in the last 12 months to public dental services (n = 103).

12 months. List of factors, unadjusted odds ratios, and confidence limits are shown in *table I*.

Out of all factors included in the saturated logistic regression model, only two showed independent association to use of dental services by the children in the last 12 months. The greater association (adjusted odds ratio 10.48) was found in pre-school children whose parents had attended dental care services at the health center. The other factor was to have attended the same school during the previous school year (adjusted odd ratio 2.40). *Table II* shows the final model of associated factors, according to logistic regression analysis.

Improvement area for dental services

34% (n = 113) of all parents were aware of the Health Center Dental Service business hours. 39% (n = 132) informed that the dental services' morning schedule was the most convenient. The same percentage (39%) informed that for them the afternoon schedule was the most suitable, 20% (n = 68) reported no special predilection. 16% (n = 54) was familiarized with how much the dental services

at the health center should cost. 19% (n = 28) were parents of pre-school children lacking social security coverage. Out of the total 336 parents, 164 reported not using the dental service of the health center, and five parents did not provide an answer. The remaining 167 parents provided some sort of suggestion in order to improve care provided at the health center. Main recommendations were to improve service (n = 23), more services (n = 18) and better personal attention (n = 14). The remainder suggestions are presented in *table III*.

DISCUSSION

The present study revealed the fact that one third (33%) of pre-school children did not attend a dental office (*Figure 1*). Percentages are higher (42%) in those cases when the children lack social security coverage. This might indicate the fact that oral health might not be considered a priority, or that patients only attend the dental office in cases of oral symptoms.

Dr. Medina-Solís found that 31% of pre-school children enrolled in state schools had attended dental services in the last twelve months.⁶ The present study

Table I. Saturated model for the logistic regression of factors associated to attendance to dental services at the health center.

Factors	Non adjustable odds ratio	CI 95%
Age of pre-school child (5 years or over)	2.50	1.33-4.5
Attendance to same school on previous year	2.26	1.36-3.76
Enrolled in «people's insurance»	4.24	1.74-10.32
Taking the child to SSA physician	2.76	1.54-4.93
Knowledge of business hours of dental services at health center	3.66	2.21-6.05
Knowledge of costs of dental services at health center	2.73	1.51-4.96
Attendance of parents to dental services of health center	9.45	5.45-16.40
Maternal schooling level (primary or over)	1.94	1.01-3.72

Table II. Final model of logistic regression of factors associated to attendance to dental services at the health center.

Factors	Non adjustable odds ratio	Adjusted odds ratio	CI 95% adjusted odds ratio	Interaction test	Value of p
Attendance of parents to dental service at the health center	10.07	10.48	5.91-18.58	0.0077	0.93
Attendance to same school during previous school year	2.24	2.40	1.36-4.26	0.0077	0.93

Table III. Suggestions to improve dental services at the health center.

Suggestion	n =	Percentage
None	84	50.3
Better equipment	23	13.8
Better services/care	18	10.8
More respect/better treatment	14	8.4
More information	8	4.8
Evening hours	7	4.2
More material	6	3.6
Faster attention	4	2.4
Free/cheaper services	2	1.2
Better organization	1	0.6
Total	167	100.0

revealed this figure to be 25%, when taking all children as a whole, and 28% when considering uninsured children, including those who were enrolled in the «Seguro popular» (people's insurance) or coverage of the Oportunidades (opportunities) program.

25% (n = 84) of all pre-school children had attended the dental services offered at the health center in the previous 12 months. When only considering uninsured children, the percentile was 28% (n = 41). These results indicated that only 41 out of the 84 pre-school children who attended Social Security facilities in the last twelve months did not have social security coverage, and the remaining 43 children, although having social security coverage, attended dental consultation in the Ministry of Health (SSA) dental modules. The reasons for this conduct were not established, to find this out would have elicited why children who were covered by other social security preferred to be treated at the Ministry of Health (SSA).

Other studies have informed that older children⁴ with mothers with higher scholastic levels⁶ presented more probabilities of attending a dental practice. Our study found the same effect in the bivariate analysis. Nevertheless, in the logistic regression analysis, these factors did not exhibit statistical significance and were left out of the final model. Only two factors identified in the bivariate analysis (having attended the same school the previous year and attendance of parents to the dental module of the health center) exhibited statistical significance in the logistic regression model (Table II).

Dr. Lara-Flores indicated that previous contact and satisfaction with dental services increased their use.⁵ In our study, only two interviewees rated as «bad» the dental attention received in the health center

module. This fact limited the analysis of this variable to assess its association with the attendance of pre-school children to dental services. Nevertheless, the association found in our research between the attendance of parents to the dental service at the health center and the attendance of pre-school children to dental services in the last twelve months was compatible with facts exposed by Dr. Lara-Flores.

Our study also revealed the fact that pre-school children who attended the same school during the previous school year had more probabilities to attend dental service in the last twelve months. Other authors have not included this variable in their studies, this fact limited the opportunity to compare this finding with other research.^{5,7} Since no questions were asked with respect to why the children did attend the dental services, we cannot assert the reason why these students exhibited greater possibility of using health services. We propose two possible explanations: First: attendance to dental services takes place when there are circumstances which lead to it, and it takes place within several months, when there are financial resources in the family as well as sufficient time for parents or guardians to take the child, seeing that the child does not miss out on classes. The second possible explanation is the fact that previous contact with dental services, through the dental team which operated in prevention activities within the school might be a factor which increases the opportunity to take them to the health center to receive dental treatment. Our survey did not include questions on previous appointments; these questions would have provided a greater perspective on this possibility.

We consider that the three main recommendations to improve dental services in the SSA's health centers – better equipment, more services and better treatment – are realities which require a solution. Improvement of equipment and services is linked to the financial resources the institution might have, and will hardly be resolved through the modules. Nevertheless, service given to patients is easy to improve locally. Few participants suggested improvement in office hours, waiting time and cost of the services.

CONCLUSIONS

Almost all (99%) pre-school children possessed a dental brush, nevertheless, only a fifth of them (18%) brushed their teeth three times a day. Prevalence of dental floss use among pre-school children was 10%.

In general, assistance rate of pre-school children to dental services, in the influence areas of basic nuclei and children lacking social security coverage were

distributed almost equally, lack of financial resources was the main reason reported for non-attendance to the dental services of the health center.

Previous contact with the health team either at school or in an office increases the possibility of pre-school children's attendance to dental services. Two factors were associated to use of dental services at the health center: having attended the same school the previous year and the fact that the child's parents might have received treatment at the dental services of the health center.

The main suggestion to improve dental services was to improve equipment in the dental modules.

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