

NON-UTILIZATION OF ORAL HEALTH SERVICES IN ECUADORIAN CHILDREN AND ITS ASSOCIATED FACTORS: A CROSS-SECTIONAL STUDY

No utilización de servicios de salud bucal en niños ecuatorianos y sus factores asociados: un estudio transversal

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ABSTRACT

Background: Oral health care plays a critical role in childhood. Factors influencing the non-utilization of oral health services must be identified to improve oral health in children.

Objective: To estimate the frequency of non-utilization of oral health services in Ecuadorian children and identify its associated factors.

Material and Methods: A cross-sectional study was conducted in a probabilistic sample of 8,461 Ecuadorian children aged 5-9. The data were obtained from the 2012 National Survey of Health and Nutrition. The information on oral health care and sociodemographic variables was collected through a questionnaire applied to mothers or caregivers of the children. Bivariate and multivariate analyses, using logistic regression, were employed to identify factors associated with the non-utilization of oral health services.

Results: 30.6% (95% CI:29.6-31.6) did not visit the dentist in the last year before the survey. 47.5% of parents or guardians mentioned that it was unnecessary, 13.8% did not attend due to a lack of time, and 9.8% did not have the necessary funds. Non-utilization of oral health services was associated with living in urban areas (OR: 1.26; 95% CI 1.13-1.41), in the Coast region (OR: 1.55; 95% CI 1.37-1.74), self-identify as indigenous (OR: 1.72; 95% CI 1.48-2.01), that the child lives only with the mother (OR: 1.13; 95% CI 1.01-1.28), only with the father (OR: 1.48; 95% CI 1.01-2.17), or in the absence of both (OR: 1.54; 95% CI 1.22-1.94). For each year of increasing age, the probability of not visiting the dentist decreased by 6% (OR: 0.94; 95% CI 0.90-0.97) and for each increase in the socioeconomic quintile by 11% (OR: 0.89; 95% CI 0.86-0.93).

Conclusions: Demographic and socioeconomic factors associated with the non-utilization of oral health services in Ecuador act as barriers to dental care.

Keywords: *Dental health services; Children; Sociodemographic factors; Ecuador; Oral health; Surveys and questionnaires.*

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RESUMEN

Antecedentes: La atención odontológica desempeña un papel crucial durante la infancia. Para promover una mejor salud bucodental en los niños, es indispensable identificar los factores que determinan la no utilización de los servicios odontológicos. **Objetivo:** Estimar la frecuencia de no utilización de servicios de salud bucodental en niños ecuatorianos e identificar factores asociados.

Material y Metodos: Estudio transversal en una muestra probabilística de 8461 niños ecuatorianos de 5 a 9 años. Los datos se obtuvieron de la Encuesta Nacional de Salud y Nutrición 2012. La información sobre el cuidado de la salud bucal y variables sociodemográficas se recogió mediante un cuestionario aplicado a padres o tutores. Se utilizaron análisis bivariados y multivariados con regresión logística binaria para identificar los factores asociados a la no utilización de los servicios de salud dental.

Resultados: El 30,6% (IC 95% 29,6-31,6) no visitó al dentista en el último año previo a la encuesta. El 47,5% de padres o tutores mencionaron que era innecesario, el 13,8% no acudió por falta de tiempo y el 9,8% no tuvo dinero. La no utilización de servicios de salud bucodental se asoció con residir en el área urbana (OR: 1,26; IC95% 1,13-1,41), en la región Costa (OR: 1,55; IC95% 1,37-1,74), autoidentificarse como indígena (OR: 1,72; IC95% 1,48-2,01), que el niño viva solo con la madre (OR: 1,13; IC95% 1,01-1,28), solo con el padre (OR: 1,48; IC95% 1,01-2,17), o en ausencia de ambos (OR: 1,54; IC95% 1,22-1,94). Por cada año de aumento en la edad, la probabilidad de no visitar al dentista se redujo en un 6% (OR: 0,94; IC95% 0,90-0,97) y por cada incremento en el quintil socioeconómico en un 11% (OR: 0,89; IC95% 0,86-0,93).

Conclusiones: Los factores demográficos y socioeconómicos asociados con la no utilización de los servicios de salud bucal en Ecuador actúan como barreras para la asistencia dental.

Palabras clave: *Servicios de salud dental; Niño; Factores sociodemográficos; Ecuador; Salud bucal; Encuestas y cuestionarios.*

INTRODUCTION

Oral diseases like dental caries, tooth decay, orofacial pain, mouth ulcers, and various mucosal lesions have emerged as a significant public health concern because of their widespread occurrence.¹ Currently, nine out of ten people could develop an oral disease or present sequelae.² Although several of these diseases are preventable, their treatment presents economic and cultural limitations, as well as fears and attitudes of society and health professionals that prevent timely care.³

The presence of oral diseases in children can interfere with the quality and expectations of life, resulting in delays in school learning, either due to the consequences of the disease or urgent visits to the dentist.^{3,4} Good oral

health from childhood contributes positively to physical, mental and social well-being and the enjoyment of life's possibilities, allowing the infant to speak, eat and socialize without obstacles due to limitations due to pain, discomfort or shame.⁵ One of the main factors for poor oral health in childhood is non-attendance at the dentist.⁶

There is evidence of a relationship between oral disease development and fewer visits to dental care centers.^{7,8} Several studies have shown that these visits are determined by the parents' level of education, socioeconomic disadvantages, lack of family support networks and gaps in access to health, among others.⁹⁻¹¹

In general, the utilization of oral health services results in a complex interaction bet-

ween the individual characteristics of users, the availability of services, the organization of the health system, and contextual socio-economic factors. In low- and middle-income countries, dental healthcare services face significant socio-economic, organizational, and infrastructure limitations compared to those in high-income countries.¹²

These limitations directly impact the utilization of dental healthcare services, resulting in a decrease in the number of preventive dental visits and treatment visits.¹³ It is essential for healthcare providers and policymakers in low- and middle-income countries to estimate the prevalence of oral health service utilization and understand the factors associated with this use, to design and implement interventions promoting regular dental attendance.

In the case of Ecuador, a middle-income country, the health system model emphasizes promoting oral health and preventing oral diseases, primarily through recommendations for regular dental visits.¹⁴ However, the prevalence of oral pathologies in the country is high.¹⁵ One of the reasons for this elevated prevalence is the non-attendance to dental services, especially in childhood populations.

Oral health in Ecuador has not been widely studied. This fact is represented by the country's low scientific production in this area compared to other areas of study.¹⁶

To our knowledge, only three studies have addressed issues related to oral diseases or oral health indicators at the national level. The first was carried out in 1996 and assessed the prevalence of several oral diseases using a national sample of 2600 schoolchildren and adolescents from urban and rural areas.¹⁵ The other two studies, conducted in 2012 and 2018, assessed the overall health of the Ecuadorian population, including several indicators of oral health of children and adolescents.^{17,18}

However, several studies based on small samples and conducted in specific locations in the country have addressed various issues related to oral health and diseases. Unfortunately, none of these studies have focused on factors related to the non-utilization of oral health services for children. Assessing the magnitude and factors related to the non-utilization of dental services in the country could help reduce the burden of oral diseases. Therefore, this study aimed to estimate the frequency of non-use of oral health services in Ecuadorian children and to identify its associated factors.

MATERIALS AND METHODS

Study design

We conducted a cross-sectional study based on secondary data from the National Institute of Statistics and Census of Ecuador (INEC). The data came from the National Health and Nutrition Survey ENSANUT 2012. This survey aimed to describe the health situation and access to health services among the Ecuadorian population. Several health topics were evaluated in this survey, such as reproductive health, maternal and child health, chronic non-communicable diseases, nutritional status, food consumption, physical activity and oral health prevention.¹⁷

Population and study area

The study population consisted of Ecuadorian children aged 5 to 9 years old. Ecuador, with an area of 283.560 km² and a population of 16,938.986 in 2022, is divided into four geographically distinct regions and 24 provinces.

The main ethnic groups are mestizos (77.5%), Indigenous (7.7%), Montubio (7.7%)

and Afro Ecuadorian (4.8%). According to the last national census, the population aged between five and nine was 1'412.087 children.¹⁹ Petroleum and agriculture are the principal sources of income, with oil accounting for 40% of the country's exports. The poverty rate in Ecuador in 2019 was 25%.²⁰

Ecuador's health system is fragmented, comprising institutions funded by the government, social security, and the private sector. Public institutions provide healthcare services to the entire population and are categorized into four levels of care. Social security institutions typically offer health services only to affiliated employees and their immediate family members. The private sector comprises for-profit entities (hospitals, clinics, dispensaries, doctors' offices, pharmacies, and prepaid medicine companies) and is generally located in larger cities.²¹

Design of the secondary source sample (ENSANUT National Survey 2012)

The sample design of the ENSANUT 2012 was probabilistic, stratified, and three-stage, using a heterogeneous set of variables related to malnutrition, childhood and adolescent obesity, and chronic diseases to design its sample.

The study domains were national, provincial, urban/rural, fixed age groups and sex. Statistical representativeness was assessed at the national level, as well as by ethnicity, sex, age groups, and geographical area. The total number of participants in the survey was 57,727 people aged 0-59 years, of which 8461 were children aged 5-9 years.¹⁶

Data Collection

Our study used data from the oral health prevention module and the socioeconomic and lifestyle indicators module of the ENSANUT. The data was collected through questionnaires answered by the children's parents or guardians. The response variable was the use of oral health services in the last 12 months, as recorded in the question: "Has your child visited the dentist in the last 12 months?" The answer options to the question were "Yes" and "No."

The covariables included in the study were reasons for non-attendance at the dentist (it was not necessary, the parents did not have money and lack of time from the parents), sex (male/female), age (numeric variable 5-9), area (rural/urban), geographical region (coast, highlands, Amazonia and Galapagos), ethnicity (mestizo, indigenous, afro-Ecuadorian), class attendance (yes/no), family composition (Both parents live with the child, absent father, absent mother, both absent parents) mother schooling (superior, secondary, primary, none) and economic level (numeric variable as quintiles).¹⁷

Statistical analysis

A descriptive analysis was performed to estimate the frequency of non-utilization of oral health services in the last 12 months and to characterize it according to sociodemographic variables. In the identification of the associations between the response variable and the socio-demographic variables, bi-variate analyses were performed for the calculation of the

Prevalence Ratio (PR) and 95% confidence intervals (95% CI) and multivariate analyses using logistic regression expressed with adjusted ORs and 95% CI. Indicators of age and economic level were considered numerical variables in the multivariate model.

Significant associations were those with p -values <0.05 . The analysis was performed with the SPSS version 26 statistical package.

Table 1

Sociodemographic variables

Variable	Category	n (ENSANUT 2012 sample)	%	95% CI
Sex	Man	4318	51.0	50.0-52.1
	Women	4143	49.0	47.9-50.0
Residence area	Urban	4720	55.8	54.7-56.8
	Rural	3741	44.2	43.2-45.3
Region	Sierra	3867	45.7	44.6-46.8
	Coastal	1986	23.5	22.6-24.4
	Amazon	2369	28.0	27.1-29.0
	Galapagos	239	2.8	2.5-3.2
Ethnicity	Mestizo	7005	82.8	82.0-83.6
	Indigenous	1116	13.2	12.5-13.9
	Afro-Ecuadorian	340	4.0	3.6-4.5
School attendance	Yes	8329	98.4	98.2-98.7
	No	132	1.6	1.3-1.8
Family Composition	Lives with mom and dad	6069	71.7	70.8-72.7
	Lives only with mother	1927	22.8	21.9-23.7
	Lives only with father	117	1.4	1.2-1.7
	Parents absent from home	348	4.1	3.7-4.6
Mother's education	Higher	212	2.5	2.2-2.9
	Secondary	1134	13.4	12.7-14.1
	Primary	6797	80.3	79.5-81.2
	None	134	1.6	1.3-1.9
Age (years)	5	1679	19.8	19.0-20.7
	6	1625	19.2	18.4-20.1
	7	1616	19.1	18.8-20.0
	8	1770	20.9	20.1-21.8
	9	1771	20.9	20.1-21.8
Socioeconomic Status (quintiles)	5 (least poor)	945	11.2	10.5-11.9
	4	1325	15.7	14.9-16.5
	3	1621	19.2	18.3-20.0
	2	2045	24.2	23.3-25.1
	1 (poorest)	2525	28.9	28.9-30.8

RESULTS

Table 1 describes the sociodemographic variables of the study population. Of the 8.461 participants, 51% were men, 55.8% lived in urban areas, 45.7% lived in the Sierra region, 82.8% identified as mestizos, 28.9% came from the lowest economic quintile, and 1.6% did not attend classes. Additionally, 71.7% of the participants lived with both parents at home, and 80.3% had mothers with primary education.

Table 2 shows the frequency of non-use of oral health services in the last 12 months and the main reasons. 30.6% (95% CI 29.6-31.6) of the study population did not use oral health services in the last year before the survey. 47.5% of the parents or guardians of the children mentioned that it was unnecessary, 9.8%

did not have money and 13.8% did not attend due to lack of time.

Table 3 presents the bivariate analysis between the non-utilization of oral health services in the last 12 months and sociodemographic factors. In the bivariate analyses, non-utilization of oral services was significantly associated with all study variables except for the sex variable (PR: 1.02; 95% CI 0.95-1.08; *p*: 0.596), the level of primary education (PR: 1.05; 95% CI 0.85-1.31; *p*: 0.602) and secondary of the mother (PR: 1.15; 95% CI 0.92-1.45; *p*: 0.197) compared to a higher education level. Our results showed that children living in urban areas were 9% less likely to use oral health services compared to those living in rural areas (PR: 0.91; 95% CI 0.84-0.99; *p*: 0.009).

Table 2

Oral health form variables

Variable	Category	n (ENSANUT 2012 sample)	%	95% CI
Dental assistance	Yes	5873	69.4	68.4-70.4
	No	2588	30.6	29.6-31.6
Why haven't you gone to the dentist?	Doesn't need it	1229	47.5	45.6-49.4
	Lack of facilities	75	2.9	2.3-3.6
	No dentist on site	100	3.9	3.2-4.7
	High prices	59	2.3	1.8-2.9
	Poor quality of service	46	1.8	1.3-2.4
	No money	254	9.8	8.7-11.0
	Child doesn't have time	134	5.2	4.4-6.1
	Parents don't have time	356	13.8	12.5-15.1
	Another reason	335	12.9	11.7-14.3
Reasons why you went to the dentist last time	Cleaning or checkup	3342	58.8	57.7-60.0
	Fluoride or sealant application	777	13.7	12.8-14.6
	For toothache or pain	767	13.5	12.6-14.4
	For braces or braces checked	38	0.7	0.5-0.9
	For emergency care	21	0.4	0.2-0.6
	For extraction	745	13.1	12.2-14.0

Table 3

Bivariate analysis of non-use of dental healthcare in the last 12 months and sociodemographic variables

Variable	Category	Children who do not go to the dentist (%)	Prevalence Ratio	95% IC	p-value
Sex	Women	30.3	1.00		
	Man	30.8	1.02	0.95-1.08	0.596
Residence area	Rural	29.1	1.00		
	Urban	31.8	1.09	1.02-1.16	0.009
Region	Sierra	29.7	1.00		
	Coastal	40.0	1.34	1.25-1.44	<0.001
	Amazon	25.2	0.84	0.78-0.92	<0.001
	Galapagos	20.5	0.69	0.53-0.89	0.002
Ethnicity	Mestizo	29.2	1.00		
	Indigenous	36.6	1.25	1.15-1.36	<0.001
	Afro-Ecuadorian	40.6	1.39	1.21-1.59	<0.001
School attendance	Yes	30.4	1.00		
	No	41.7	1.36	1.11-1.68	0.005
Family Composition	Lives with mom and dad	29.4	1.00		
	Lives only with mother	32.1	1.09	1.01-1.18	0.021
	Lives only with father	40.2	1.36	1.09-1.71	0.011
	Parents absent from home	40.2	1.37	1.20-1.57	<0.001
Mother's education	Higher	28.3	1.00		
	Secondary	32.8	1.15	0.92-1.45	0.197
	Primary	30.0	1.05	0.85-1.31	0.602
	None	38.8	1.37	1.01-1.85	0.042
Age (years)	5	36.0	1.00		
	6	30.6	1.17	1.06-1.29	0.001
	7	27.3	1.32	1.19-1.46	<0.001
	8	27.7	1.30	1.17-1.43	<0.001
	9	31.3	1.15	1.04-1.26	0.003
Socioeconomic Status (quintiles)	5 (least poor)	25.1	1.00		
	4	29.1	1.16	1.01-1.33	0.033
	3	29.9	1.19	1.04-1.36	0.009
	2	29.3	1.16	1.02-1.32	0.017
	1 (poorest)	34.9	1.39	1.23-1.57	<0.001

Table 4

Multivariate analysis of non-use of dental healthcare in the last 12 months and sociodemographic variables

Variables	Categories	Bivariate			Multivariate		
		Odds Raw Ratio	95% IC	p-value	Odds Adjusted Ratio	95% IC	p-value
Sex	Women	1.00					
	Man	0.97	0.88-1.07	0.596	1.04	0.94-1.14	0.406
Residence area	Rural	1.00			1		
	Urban	1.13	1.04-1.25	0.009	1.26	1.13-1.41	<0.001
Region	Sierra	1.00			1		
	Coastal	1.57	1.40-1.76	<0.001	1.55	1.37-1.74	<0.001
	Amazon	0.79	0.71-0.89	<0.001	0.71	0.63-0.81	<0.001
	Galapagos	0.61	0.44-0.84	0.002	0.68	0.48-0.94	<0.001
Ethnicity	Mestizo	1.00			1		
	Indigenous	1.40	1.22-1.59	<0.001	1.72	1.48-2.01	<0.001
	Afro-Ecuadorian	1.66	1.32-2.07	<0.001	1.26	0.99-1.59	0.052
School attendance	Yes	1.00					
	No	1.63	1.15-2.31	0.005	1.36	0.92-1.99	0.115
Family Composition	Lives with mom and dad	1.00					
	Lives only with mother	1.13	1.01-1.27	0.021	1.13	1.01-1.28	0.031
	Lives only with father	1.61	1.11-2.34	0.011	1.48	1.01-2.17	0.045
	Parents absent from home	1.62	1.29-2.02	<0.001	1.54	1.22-1.94	<0.001
Mother's education	Higher	1.00					
	Secondary	1.23	0.89-1.70	0.197	1.19	0.86-1.66	0.281
	Primary	1.08	0.80-1.76	0.602	0.99	0.72-1.35	0.971
	None	1.60	1.01-2.54	0.042	1.01	0.62-1.66	0.939
Age (years)	5	1.00			0.94 *	0.90-0.97	<0.001
	6	1.27	1.10-1.47	0.001			
	7	1.50	1.29-1.73	<0.001			
	8	1.47	1.27-1.70	<0.001			
	9	1.23	1.07-1.42	0.003			
Socioeconomic Status	5 (least poor)	1.00			0.89 *	0.86-0.93	<0.001
	4	1.22	1.01-1.48	0.033			
	3	1.27	1.06-1.52	0.009			
	2	1.23	1.03-1.47	0.017			
	1 (poorest)	1.60	1.35-1.89	<0.001			

*: * Variables are analyzed as numerical variables.

Children living in the coastal region were 34% less likely to use oral health services compared to those in the Sierra region (PR: 0.66; 95%CI: 0.61-0.72; $p < 0.001$) and those who lived in the Amazon (16%) and Galapagos (31%) regions. Children who identify as indigenous and Afro-Ecuadorian were 25% and 39% more likely not to use oral health services, respectively, compared to mestizo children (PR: 1.25; 95% CI 1.15-1.36; $p < 0.001$; PR: 1.39; 95% CI 1.21-1.59; $p < 0.001$). Children who were not attending school at the time of the survey were 36% less likely to participate in the dentist compared to children who did (PR: 0.64; 95% CI, 0.51-0.80; $p = 0.005$).

Children who lived only with the father, only with the mother, or in the absence of both parents were 9%, 36%, and 37% less likely to use oral health services, respectively, compared to those who lived with both parents.

Regarding the mother's educational level, it was observed that children whose mothers reported having no formal education were 37% less likely to use dental services compared to those whose mothers had higher education (PR: 0.63; 95% CI 0.41-0.97; $p = 0.032$). Children in economic quintiles 1, 2, 3, and 4 were 39%, 16%, 19%, and 16% more likely, respectively, to have not used dental services during the past year before the survey, compared with those in the highest economic quintile.

Table 4 presents the associations between non-utilization of oral health services and studied factors. Multivariate analysis showed significant associations with urban area (OR: 1.26; 95% CI 1.13-1.41; $p < 0.001$), Coast region (OR: 1.55; 95% CI 1.37-1.74; $p < 0.001$), self-identify as indigenous (OR: 1.72; 95% CI 1.48-2.01; $p < 0.001$), child living only with the mother (OR: 1.13; 95% CI 1.01-1.28; $p = 0.031$), only with the father (OR: 1.48; 95% CI 1.01-2.17; $p = 0.045$), or in the absence of both parents (OR: 1.54; 95% CI 1.22-

1.94; $p < 0.001$). For each year of increasing age, the odds of not using oral health services were reduced by 6% (OR: 0.94; 95% CI 0.90-0.97; $p < 0.001$). For each quintile that increased socioeconomic status, the probabilities of non-utilization of oral health services decreased by 11% (OR: 0.89; 95% CI 0.86-0.93; $p < 0.001$). The child's sex, school attendance, and mother's schooling did not show sufficient evidence to suggest an influence on the response variable after adjusting for other factors.

DISCUSSION

The present study employed a cross-sectional analysis to assess the prevalence of non-use of oral health services among a representative sample of Ecuadorian children. Based on secondary information from the National Survey of Health and Nutrition ENSANUT, our study showed that 3 out of 10 children did not use oral health services in the country. Additionally, this study showed that socioeconomic factors such as age, area, region, ethnicity, class attendance, family composition, and socioeconomic level of the children were associated with the non-use of oral health services.

The proportion of non-utilization of oral health services found in this study was lower than those reported in cross-sectional studies in Nicaragua, Mexico, and Brazil, which observed that 72.2%, 66.3%, and 61.0% of children aged 5 to 12 years, respectively, did not receive dental care.^{22,23} The associated factors were mainly low maternal educational level, lower family income, and limited infant oral hygiene practices.

The prevalence of non-use of oral health services varies widely among countries and

regions, as the use of oral health services in childhood results from a complex interaction between the child, parents/guardians, and the health system. High rates of non-use of oral health services, especially in poor populations and in low- and middle-income countries, have been reported.²⁴

In the case of Latin America, most of the studies evaluating the non-use of oral health services have been conducted in Brazil. Thus, a national survey with a representative sample of 7241 children of 5 years found that the prevalence of non-use of oral health services was 46.8%.²⁵ Another study conducted in the city of Pelotas-Brazil, with 1211 children aged between 8-12 years old, reported a prevalence of 24.3%.¹⁰

Another study conducted in Chile with a sample of 9203 students reported a prevalence of 43%; however, the age of the participants was between 12 and 21 years old.²⁶ In the case of high-income countries, the prevalence of non-use of oral health services also varies between countries. For example, a study conducted in the United States with a sample of 46,100 children showed a prevalence of non-utilization of oral health of 20.4%.²⁷ Other studies conducted in Spain, Canada and England showed prevalences of 31%, 38%, and 31.5%.^{8,28,29}

In the case of Ecuador, the prevalence of non-use of oral health services was 30.6%, a prevalence that was relatively like most of the studies mentioned above. Several studies have found that sociodemographic factors are crucial elements to understanding the non-use of oral health services, especially in low- and middle-income countries.³

In our analysis, sociodemographic factors such as age, area, region, ethnicity, class attendance, family composition, and socio-economic level were found to be associated

with the non-use of oral health services among the Ecuadorian child population. Most of these findings align with those factors identified in a systematic and integrative review addressing this topic.^{9,30}

These review studies highlight three components or groups of factors:

- 1) predisposing factors, such as demographic variables as age, sex, ethnicity, and parent's level of education;
- 2) enabling factors, such as family income, place of residence;
- 3) need factor, which involve subjective factors as pain or discomfort related to the visit.³¹

The bivariate analysis showed that a higher educational level of the mother was associated with lower attendance at oral health services; however, in the multivariate analysis this variable did not suggest an effect on the response variable. A study in girls aged 6 to 11 in Saudi Arabia and another in boys of the same age in Iran showed that the mother's level of education was a variable that directly influenced children's oral health, as people with better education place more importance on preventive care than curative care.^{32,33}

Based on our bibliographic search, we did not find articles on this analysis in the school population of Ecuador, but we did find articles in other Latin American countries, led by Brazil, with results like those cited.^{34,35} On the other hand, children who lived in a family without a mother or both parents had a higher prevalence of not attending the dentist. It is well known that the absence of fathers, especially mothers, is associated with a worse state of health of children.³⁶

In the case of oral health care, a study conducted in Nigeria showed that children

aged 8-11 years living with both parents used dental services more than those living with only one parent or guardian.^{37,38} Single parenthood can make it challenging for children to attend regular dental visits.

A factor of particular interest associated with the lack of visits to the dentist was self-identification as Indigenous and Afro-Ecuadorian. According to the 2010 population census in Ecuador, ethnic minorities comprised 22% of the population. Of the population under 18, 43% were defined as ethnic minorities, representing 37% of the Ecuadorian population.¹⁸ A meta-analysis of data collected from four cross-sectional studies established a statistically significant association between children belonging to a minority group and unmet oral health needs.³⁹

A systematic review that explored the severity of dental caries in South American Indigenous peoples found in 18 articles published between 1964 and 2018 shows that the prevalence of dental caries has increased, especially in the population of children and adolescents.⁴⁰ This study concluded that indigenous peoples' beliefs and limited health education can delay their first contact with a health facility.⁴¹ Our analysis also showed that the utilization of dental services was lower in younger than older children. Other studies have also demonstrated this pattern.²⁷ This could be because the dental attendance of young children mostly depends on the oral health behavior of their parents or caregivers.

Considering the enabling factors, our analysis showed that children from families with a low socioeconomic status had a higher prevalence of non-attendance to the dentist. Several studies have shown a significant relationship between socioeconomic status

and dental visits, with those with a higher socioeconomic status most frequently attending dental appointments, especially preventive care.^{42,43} The relationship between socioeconomic status and oral health has been widely studied, and a substantial body of evidence suggests a strong correlation between the two. Socio-economic status could influence oral health through access to private health systems, nutrition and diet, education, and other factors.

Limitations

A methodological limitation of this study is the use of data from the ENSANUT 2012, despite the existence of a more recent version (ENSANUT 2018) that incorporates a larger sample size. However, the use of ENSANUT 2012 was justified, firstly, because this version contains a specific and detailed module on dental care exclusively in children aged 5 to 9 years, which allowed a particular approach for this age group that has been of interest to us. Secondly, the 2012 sample design provided representative estimates at the national level and by socioeconomic and geographic strata. Therefore, our results provide a valuable indication of the magnitude of the phenomenon.

However, it is recognized that the results may not fully reflect the changes in access to and use of dental services that have occurred in the last decade. An essential precaution of this study is the interpretation of the results, as it is necessary to contextualize them. Ecuador has undergone demographic transformations, including population growth, increased urbanization, decreased fertility, and internal and international migratory phenomena, which may influence the representativeness of the

findings obtained. However, given that this analysis did not seek to directly extrapolate the results of 2012 to the present without considering the evolution in the magnitude and distribution of the child population and, on the other hand, that the specificity and methodological quality of this survey for the age group analyzed has been recognized, the data maintain internal validity and constitute a meritorious source for retrospective analyses.

Another limitation is the study's cross-sectional design and potential recall bias associated with questionnaire data. Finally, since the ENSANUT was designed primarily to obtain nutritional information, other oral health-related variables were not included in the study.

CONCLUSIONS

In 2012, three out of ten children aged 5 to 9 living in Ecuador did not visit the dentist in the previous year, according to the national survey ENSANUT 2012, a value lower than that registered in Latin American countries. Several sociodemographic factors were associated with the non-use of dental health care in Ecuadorian children, reflecting the complex interplay of social, economic, and demographic characteristics on oral health behaviors.

Understanding these factors is crucial for designing targeted interventions to improve dental attendance and oral health. Dental professionals should recognize and consider the obstacles and support mechanisms affecting parents' commitment to regular dental appointments and other aspects of professional advice for their children when offering guidance on oral health. In Ecuador, additional research is essential to explore the psychosocial factors influencing children's adherence from vulnerable populations to routine dental visits.

CONFLICT OF INTERESTS

The authors have no conflicts of interest.

ETHICS APPROVAL

This article was based on secondary data from the ENSANUT ECU-2012, so approval of an Ethics Committee was not required. The data source, the basis of the study, is secondary, publicly accessible and is available on the www.ecuadorencifras.gob.ec/encuesta-nacional-de-salud-salud-reproductiva-y-nutricion-ensanut-2012/ website.

The identification of participants is encrypted, ensuring their confidentiality.

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AUTHORS' CONTRIBUTIONS

Alexandro Cruz-Mariño: Conceptualization, Study Design, Formal Analysis, Writing – Original Draft, Writing – Review & Editing.

Jacqueline Cevallos-Salazar: Writing – Original Draft, Writing – Review & Editing.

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PEER REVIEW

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