



CLINICAL RESEARCH:

Utilization of Dental Services in the Adolescent Population of Chiapas, Mexico

Utilización de servicios odontológicos en población adolescente de Chiapas, México

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ABSTRACT: Health systems face the challenge of guaranteeing access to dental health services, which are often selective. Disparities in access and use of these services in Latin America are linked to socioeconomic factors. This study seeks to analyze the use of dental services among adolescents in Ocozocoautla de Espinosa, Chiapas, considering the social and economic context. A cross-sectional study was conducted with a sample of 353 high school students in Ocozocoautla, Chiapas. Online surveys were used to analyze the use of oral health services and sociodemographic variables. Data were analyzed using SPSS 25.0, with a chi-square test to determine associations. The study complied with relevant ethical protocols. The sample had an equal gender distribution, and most students were between 16 and 17 years old, lived in urban areas, and were not affiliated with a health service. The majority of students came from middle-income families, with parents who worked in the productive sector and had a basic education. Regarding the use of dental services, 61.8% of the students used them in the previous year, primarily at private clinics and due to pain. A total of 58.4% did not perceive their oral health as good. Students with health insurance, a higher socioeconomic level, more educated parents, and a better perception of their oral health showed a higher use of these services. Addressing socioeconomic inequalities and strengthening health education and infrastructure is vital to improving access and a preventive culture in this population group.

KEYWORDS: Community health indicators; Health services utilization; Dental health services; Adolescents; Mexico.

RESUMEN: Los sistemas de salud enfrentan el desafío de garantizar el acceso a servicios de salud dental, que a menudo son selectivos. Las disparidades en el acceso y uso de estos servicios en América Latina están vinculadas a factores socioeconómicos. Este estudio busca analizar la utilización de servicios dentales en adolescentes de Ocozocoautla de Espinosa, Chiapas, considerando el contexto social y económico. Se realizó un estudio transversal con una muestra de 353 estudiantes de bachillerato en Ocozocoautla, Chiapas. Se aplicaron encuestas en línea para analizar el uso de servicios de salud bucal y variables sociodemográficas. Los datos se analizaron con SPSS 25.0, usando chi-cuadrada para determinar asociaciones. El estudio cumplió con los protocolos éticos pertinentes. El estudio se realizó con 353 estudiantes de una preparatoria en Chiapas, México. La muestra tuvo una distribución equitativa de género y la mayoría tenía entre 16 y 17 años, vivía en zonas urbanas y no tenía afiliación a servicios de salud. La mayoría de los estudiantes provenían de familias de nivel socioeconómico medio, con padres que trabajaban en el sector productivo y tenían educación básica. En cuanto a la utilización de servicios dentales, el 61.8% de los estudiantes los usó el año anterior, principalmente en clínicas privadas y por dolor. Un 58.4% no percibía su salud bucal como buena. Los estudiantes con seguro de salud, un nivel socioeconómico más alto, padres con mayor educación y una mejor percepción de su salud bucal mostraron una mayor utilización de estos servicios. Abordar las desigualdades socioeconómicas y fortalecer la educación e infraestructura sanitaria es vital para mejorar el acceso y la cultura preventiva en este grupo poblacional.

PALABRAS CLAVE: Indicadores de salud comunitaria; Utilización de Servicios de Salud; Servicios de Salud Dental; Adolescentes; México.

INTRODUCTION

In order to improve the health of the population, health systems are responsible for managing and providing primary care for the population (1), including, in most countries, dental health services (2). The discussion about access to this type of services in Mexico and other Latin American countries is important because, although guaranteed by law, it continues to be selective and exclusive (3). Therefore, providing access to dental health services represents a challenge for health systems.

According to various studies (4-8), the accessibility and utilization of dental health services in Latin America reflect disparities among different social groups. As a result, these disparities have been linked to factors such as gender and age, as well as sociodemographic variables like income, educational level, having private insurance, and geographic location. These factors contribute in

varying degrees to these disparities, resulting in lower socioeconomic classes using oral health services less frequently. This also fulfills the "inverse care law" declared by Hart (9), which states that those who need medical care the most are the ones least likely to use it.

Regarding the age variable, the adolescent group has attracted the attention of the World Health Organization (WHO) (10), because it represents an essential stage for health promotion, since it is a period marked by considerable physical, sexual, cognitive and emotional changes, where habits and behavior change, remaining in the future and influencing both their general health and their oral health (11).

Freeman (2019) mentions that, among adolescents, oral health behaviors are also influenced by the social contacts they have, so they tend to adopt behaviors similar to those of their peers

(12). It has also been shown that low socioeconomic status and conditions related to emotional state may increase the risk of adopting health risk behaviors (13). In addition, unhealthy habits such as smoking, consumption of sweets and physical inactivity are associated with a lower number of dental visits and higher curative needs (14).

Therefore, and given the structural transformations in the National Health System that have occurred in recent years in Mexico, together with fiscal austerity measures (15), it is crucial to analyze whether access to primary oral health care services, which used to be low, has had an impact on the pattern of use of dental services in a population group such as adolescents, especially in a locality with a low percentage of access to health services (39.5%) and with social backwardness and with medium social backwardness, such as Ocozocoautla de Espinosa in the state of Chiapas, Mexico (16). Therefore, the aim of this study was to determine the degree of utilization of dental health services and their associated factors in the adolescent population of this town in the state of Chiapas, Mexico.

MATERIAL AND METHODS

The design of the study was cross-sectional, which included persons enrolled during the 2024-2025 school year in all grades (N=820) of a high school in the municipality of Ocozocoautla de Espinosa, Chiapas, Mexico. The sample size was calculated using the finite population formula for proportions, resulting in a sample size of 353. Subsequently, to select each unit of analysis, a random sampling by strata was applied in each school grade. To compensate for non-response, controlled random substitution was applied in the corresponding stratum.

Data collection was performed through the application of surveys as the central methodological technique, where to each selected subject, after obtaining acceptance to participate in the study and receiving the informed consent (from parents) and assent (from minors) documents, participants were provided with the link to the online form created in Google Forms, which contained essential sociodemographic variables, including: age, sex, geographic location of residence, occupation of primary household breadwinner, socioeconomic status (classified according to AMAI 2022 standards) (17) and health service entitlement; Oral health service utilization (OHSU) was assessed by inquiring about dental visits in the 12 months prior to the study. This indicator included: type of service used, reason for the visit, frequency of visits to the dentist per year, in addition to questions on the perception of oral health, oral health knowledge and oral hygiene habits, using for the latter, the Oral Hygiene Habits Scale (OHHS) of Moral and Rodriguez as a validated instrument (18).

Once the information was obtained, a database was created in the SPSS 25.0 program to empty the completed surveys. Subsequently, univariate descriptive analysis was performed, consisting of absolute and relative frequencies for categorical variables. Finally, a bivariate analysis was performed to measure the degree of relationship between the OHSU and the different variables of interest using the chi-square statistic (χ^2), where a confidence level of 95% was considered. A p-value of less than 0.05 was considered a statistically significant result.

Regarding ethical protocols, for the present study, all procedures complied with the Helsinki recommendations for biomedical research of the World Medical Association (19) and with the Mexican

General Health Law (20). Furthermore, the study was approved by the Research Ethics Committee of the School of Dentistry and Public Health under protocol number CI-03-2024. Furthermore, each participant's involvement was approved via a signed informed assent form from the student and a signed informed consent form from their parent or legal guardian.

RESULTS

SOCIODEMOGRAPHIC CHARACTERISTICS

The sample consisted of 353 students from the "Escuela Preparatoria del Estado No. 1 Ocozacoautla de Espinosa" in Chiapas, Mexico, enrolled for the 2024-2025 school year. In terms of sex, the proportions were similar for males and females; slightly more than half (55%) were between 16 and 17 years old, 74.2% resided in an urban area, and 36.3% declared having a health institution affiliation, predominantly those affiliated with the Mexican Social Security Institute (IMSS).

According to the AMAI classification rule 2024 to determine the socioeconomic level of the students' families, 56.1% came from a family with a middle socioeconomic stratum, where 55.8% of the head of household was employed in some production-related activity (mostly workers in agricultural, livestock, and forestry activities), and almost half (47.6%) had at most a basic level of schooling (Table 1).

UTILIZATION OF DENTAL HEALTH SERVICES

Of the total population participating in the study ($n=353$), 61.8% ($n=218$) reported utilizing dental services during the previous year. Within this group, 45.9% accessed private institutions and 63.3% of the visits were motivated by pain symptomatology. The predominant frequency was one visit per year (59.2%). Among those who did not report using dental services ($n=135$), 57.8% attributed their non-attendance to lack of perceived need (Table 2).

PERCEPTION OF ORAL HEALTH AND ORAL HYGIENE HABITS SCALE (OHHS)

58.4% do not perceive themselves as having good oral health; in addition, with regard to OHHS, the highest proportion was in the medium category (67.4%) and the lowest was in the low category (4.5%) (Table 3).

ASSOCIATION OF VARIABLES WITH THE OHSU

When analyzing the possible association of the different variables under study with the OHSU, we found that those who are entitled to some health service, come from a family with a medium or high socioeconomic level, with a head of household with a medium or higher level of education, with a good perception of oral health and with a high level of OHHS, presented a higher proportion in the OHSU ($p < 0.005$) (Table 4).

Table 1. Sociodemographic characteristics of the participating students.

Variable	Categorías	n	%
Sex	Male	176	49.9
	Female	177	50.1
Age	14-15 years	146	41.4
	16-17 years	194	55
	18-19 years	13	3.7
Type of locality of residence	Urban	262	74.2
	Rural	91	25.8
Entitlement to health services	ISSSTE	5	1.4
	ISSTECH	9	2.5
	IMSS	97	27.5
	Private insurance	17	4.8
	No entitlement	225	63.7
Occupation of head of house	Profesionals	21	5.9
	Administrative and support occupations	51	14.4
	Commercial occupacitions	57	16.1
	Service occupations	27	7.6
	Production occupations	197	55.8
Schooling of head of household	No schooling	43	12.2
	Basic level	168	47.6
	Intermediate level	89	25.2
	Upper level	53	15.0
Socioeconomic level	High	36	10.2
	Upper middle	70	19.8
	Medium	72	20.4
	Low Medium	85	24.1
	Low high	51	14.4
	Low medium	38	10.8
	Very low	1	.3

Source: Data obtained during the present study.

Table 2. Characteristics of utilization of dental health services.

Variable	Categories	n	%
Utilization of dental services (n=353)	Yes	218	61.8
	No	135	38.2
Type of service used (n=218)	Public service	77	35.3
	Private service	100	45.9
	Social security	41	18.8
Reason for use (n=218)	Pain or discomfort	138	63.3
	Prevention	55	25.2
	Treatment review	25	11.5
Frequency of use per year (n=218)	Once a year	129	59.2
	Twice a year	49	22.5
	Three times a year	40	18.3
Reason for non-use (n=135)	Did not have the need	17	12.6
	Lack of time	40	29.6
	Lack of resources		

Source: data obtained during the present study.

Table 3. Perception of oral health and OHHS.

Variable	Categories	n	%
Perception of oral health	With good perception	147	41,6
	No good perception	206	58.4
OHSS	Low	16	4.5
	Medium	238	67.4
	High	99	28.0

Source: Data obtained during the present study.

Table 4. Variables associated with OHSU.

		OHSU		p
		Yes	No	
Entitlement to health services	Yes	98 (76.6)	30 (23.4)	0.000
	No	120 (53.3)	105 (46.7)	
Level of schooling	No schooling	22 (51.2)	21 (48.8)	0.005
	Basic level	94 (56)	74 (44)	
	Intermediate level	68 (76.4)	21 (23.6)	
	Upper level	34 (64.2)	19 (35.8)	
Socioeconomic level	High	19 (52.8)	17 (47.2)	0.000
	Medium	145 (73.2)	53 (26.8)	
	Low	54 (45.4)	65 (54.6)	
Perception of oral health	With good perception	107 (72.8)	40 (27.2)	0.000
	Without good perception	111 (53.9)	95 (46.1)	
OHHS	Low	6 (37.5)	10 (62.5)	0.032
	Medium	143 (60.1)	95 (39.9)	
	High	69 (69.7)	30 (30.3)	

Source: Data obtained during the present study.

DISCUSSION

This study analyzes the frequency and characteristics of the use of dental health services, as well as the variables associated with it, in the adolescent student population of a high school in the municipality of Ocozocoautla de Espinosa, in the state of Chiapas, Mexico. The sociodemographic characterization of the student sample is consistent with the parameters reported by the Secretaría del Bienestar for that municipality (21). This is demonstrated by the comparison according to the different variables analyzed: sex (women: 50.1% vs. 50.6%), health services entitlement (no entitlement: 63.7% vs. 60.0%), occupation of the head of household (commerce and services activities: 21.1% vs. 24.3%) and socioeconomic level of the family (low: 25.5% vs. 23.9%). Therefore, although absolute population inference is not feasible, the sample used is a good approximation,

considering that the permanence of these factors generates inequity despite health policy reforms.

Scientific evidence in Mexican population indicates that the utilization of dental services in the last year presents a variability from 31% to 65% in pediatric and juvenile groups (7,22,23) being consistent with the percentage of OHSU reported for our study (61.8%), which at the same time was very similar to that found in another Latin American context, in the research conducted by Davoglio *et al.* (2013) (24) with adolescent population of the metropolitan region of Porto Alegre, Brazil (68.9%). Understanding these similarities can help to design effective strategies to improve oral health in diverse populations, without neglecting that this frequency can fluctuate depending in a general way on factors such as geographic location, socioeconomic level and oral health education. In the case of the study area, reforms

in the Mexican health system have sought to democratize access to dental services; however, structural gaps persist.

Analyzing the pattern of use, it is important to consider that consultations in primary health care services in public institutions are responsible for providing basic care, i.e., attending to and preventing the most common oral diseases. Therefore, they do not include rehabilitation, orthodontic and esthetic treatments; consequently, people are forced to resort to private ones in order to have access to this type of services. Thus, the fact that a significant proportion (45.9%) made use of private services suggests the existence of barriers related to the low availability of public dental care services in the locality, even though they were not available to meet the basic needs of this sector of the population. Therefore, it is of vital importance to prioritize decentralized strategies and preventive as a key to optimize utilization and reduce dependence on private services.

On the other hand, the reasons for both utilization and non-utilization may tell us how far the study population is from adopting a preventive approach; in other words, it seems that most of these young people only seek medical care when they already have some disease or experience pain, which coincides with the main cause of demand for care noted in other research (25,26). From this perspective, as commented by Zelocuatcatl-Aguilar *et al.* (2019) (27) oral problems are considered as situations that do not put people's lives at risk, so they are not assumed as "sick", as occurs with other conditions, which reduces the importance of seeking care. In addition to factors such as distrust of the dentist and fear of pain during treatment (in particular, needles, injections, high speed, sharp instruments and mistreatment by the dentist) (4,28).

Authors who have addressed this issue point out that inequalities in the OHSU have been

associated with variables that reflect inequities, such as socioeconomic level, level of schooling, and entitlement to health services (6,29,30), which is consistent with what was found in our study and could indicate that people with a less favorable socioeconomic profile tend to use these services less and may face greater obstacles to accessing them.

Regarding this analytical axis, when analyzing a selection of 18 national health surveys of countries belonging to the Organization for Economic Cooperation and Development (OECD), significant inequalities were found in access to dental services according to income (Devaux, 2015). Therefore, having higher incomes could enable the acquisition of health services, including dental services, which are perceived as high-cost. Righolt *et al.* (2018) examined global data on health spending and concluded that countries with higher per capita income invest the most in oral health (32), this same pattern has been found at the individual level (33). Therefore, regular access to dental health services may be even more complicated for individuals who are economically disadvantaged, as presented in our study population.

Finally, the OHSU also presented statistical association with the variables, perception of oral health and with the EHHO, regarding this point, Mills and collaborators (2023) emphasized that the oral health of people is largely determined by subjective elements such as behaviors and perceptions (34), the perception of health, in turn, is a variable that encompasses multiple dimensions, influenced by factors both internal and external to the individual (35). Therefore, the relationship between the OHSU and patient perception can be considered complex and multifaceted. Thus, from this approach, improving the perception of oral health through hygiene education, for example, could increase the utilization of dental services. In summary, a positive perception of oral health is often associated with a higher OHSU, whereas

a negative perception may lead to avoidance of these services.

CONCLUSIONS

Adolescent and youth health is fundamental to social, economic, and political progress. For this reason, including this age group in the oral and comprehensive health plans of Latin American countries has become a recent concern, which is becoming increasingly necessary and urgent due to the proportional increase of this population sector, especially in countries considered to be developing. Implementing policies that strengthen education, facilitate financial access and improve dental health infrastructure can contribute to better oral health in young people.

Socioeconomic variables are considered key factors in OHSU, therefore, addressing these inequalities is critical to improving access to and use of dental care, especially among vulnerable groups such as adolescents. The adolescent population faces high risks of preventable oral pathologies through self-care and specific protection. The insufficient effectiveness of primary care strategies -despite their benefits- reveals the urgency of providing this group with comprehensive knowledge to promote a culture of prevention. Educational interventions are required to provide relevant information for healthy choices, capable of modifying attitudes and behaviors.

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