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Research Article

Sustainable Human Development in Oral Health Services in Northeast Mexico

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Abstract

Objective: The healthy system in Mexico is the satisfaction of the necessity on health of the population; eventually, the access to the dental care follow one reverse rule: who more need is who don't receive. Given this situation, our objective is to analyze sustainable human development in oral health services in Northeast Mexico.

Materials and Methods: Transversal design (Quiz); probabilistic sampling, stratified, multistage, and also for conglomerates (n = 1,575). Logistic regression applied (odd ratio), variables: access to the services of dental health (under one year) and determinants to the significates (statistically).

Results: If a person has oral disease, the chance of them visiting the dentist within a year is 1,657 times greater than if they do not have any oral disease. The opportunity to the person have access to the services of dental health under of one year in 0.204 times for cultural questions related who don't like attend or check, because that people don't have culture health related whit dental cleaned for another question or situation.

Conclusion: The population of Northeast Mexico don't have cultural conditions for the access to the dental service. For this situation, the problematic of the dental health most too include in the politic diary and motived to the persons who formulated the politics of health's, to the dental professionals and trainers dentist's, too base in one form more explicit the decisions in consideration's to the social justice which propitiate to know the epidemiologic indicators and what's interventions are more cost-effective.

Keywords: *Health Services Accessibility; Sustainable Development Indicators; Public Health Services; Oral Health, Barriers to Access of Health Services*

Introduction

Sustainable Human Development refers to the expansion of freedoms and the overcoming of the deprivations that prevent human beings—both today and in future generations—from achieving development. In this regard, among the factors that limit these freedoms are what we now know as the social determinants of health, reflected in the social conditions in which people are born, grow up, live, and age; these conditions cause changes that are harmful to health and lead to inequities in access to health services [1]. From this perspective, health policies must evaluate and assess well-being based on a person's ability to perform or achieve outcomes that they value. The lens of Sustainable Human Development is crucial for the implementation of fair and equitable public policies, in which the social determinants of health among populations are taken into account and government decision-makers ensure support for the development of vulnerable groups; where justice plays a role in promoting equity by addressing social inequalities; it also establishes favorable environments where freedom contributes to the capabilities or opportunities that lead to social well-being; such freedom, within a community, plays an important role in the country's social justice [2,3].

In this regard, in the area of public health, Sustainable Human Development aims to reduce social inequalities, morbidity, and promote equitable access to health services. With the participation of the government and public policy makers, and based on the social determinants of the population's health, this leads to a state of well-being in the country. Thus, people's health is not only at risk when they are vulnerable to disease; rather, multiple aspects of their daily lives also pose threats to the exercise of their freedom. Therefore, for a country to achieve Sustainable Human Development, it must guarantee the right to health [4]. This aligns with the United Nations' 2030 Agenda for Sustainable Development, which states that reducing the prevalence of disease is a key factor in achieving these goals [5].

Oral health needs in Mexico are evolving alongside rising poverty and are exacerbated by population growth and the government's inability to address these present and future needs in communities. To receive oral health care, the Mexican population must pay out of pocket to visit dental clinics, as the growing number of adults with systemic health problems requires more specialized and costly oral care. Likewise, sustainable human development in Mexico, as reflected in oral health services, helps bridge the gaps created by government reforms, fostering a free market in our country where service prices are determined by supply and demand; this transforms patients into consumers with rights, thereby helping to reduce social inequalities. Oral health policies in Mexico must implement care models targeted at vulnerable groups such as children, workers, pregnant women, older adults, and patients with systemic health problems; as well as train the staff of these institutions to improve employment opportunities for dentists, thereby sustaining the job market for dentists and enhancing access to oral health services to better meet oral health needs. Programs that are appealing and have a high social impact should be designed, which can be funded by the government [6,7]. Given this situation, our objective is to analyze sustainable human development in oral health services in northeastern Mexico.

Materials and Methods

A cross-sectional study was conducted. The study population consisted of residents of northeastern Mexico, a region that includes the states of Coahuila, Nuevo León, and Tamaulipas; the sample size was 1,575 individuals. The sampling design was probabilistic, stratified, multistage, and cluster-based. The following selection criteria were taken into account: Inclusion criteria were: being a parent with a school-aged child (ages 6-12) and being present on the day of the home visit. Exclusion criteria: Individuals with any condition that would interfere with the survey's administration, and individuals under the influence of alcohol or drugs or exhibiting violent behavior. Elimination criteria: Individuals who did not complete the questionnaire.

The survey instrument consisted of the following variables: socioeconomic profile, available health services, perception of oral health, oral health needs, and barriers to access. Finally, there was a section of questions that the parent or guardian answered on behalf of the child. The instrument was validated with a Cronbach's alpha coefficient of 0.8. This research complied with the Regulations of the General Health Law regarding Health Research, as well as with the guidelines of the Declaration of Helsinki and the Belmont Report. The project was approved by the Ethics Committee of the School of Dentistry at the Autonomous University of Nuevo León under registration number:

FOUANL_00363. For the purposes of this study, authorization was obtained from the head of oral health at the Nuevo León Ministry of Health; furthermore, participants signed informed consent forms and were informed of the study's objective.

Using the SPSS v.25 statistical software, a descriptive analysis of the sociodemographic variables was performed. Mean and standard deviation were calculated for the quantitative variables. Frequencies and percentages were used for the qualitative variables. 95% confidence intervals were calculated. A bivariate analysis will be conducted to establish the relationship between the use of dental services and each of the sociodemographic variables. The chi-square test will be applied, and variables found to be significant at a p-value <0.05 will be considered determinants of service use. A binary logistic regression analysis was conducted to identify the determinants of early and equitable access to oral health services.

Results

The following data were found: According to the sociodemographic profile (Table 1), 60.19% of those interviewed were female; 37.46% are engaged in unpaid work; 43.16% have a monthly household income of 12,000 or more; and 20.13% receive some form of support from a federal or state government program.

	Frequency	Percentage
Gender		
Male	625	39.68%
Female	948	60.19%
Place of Birth		
Nuevo León Mexico	525	33.33%
Coahuila Mexico	525	33.33%
Tamaulipas Mexico	525	33.33%
Occupation		
Paid	985	62.53%
Unpaid	590	37.46%
Monthly Household Income		
$0-$4,000	211	13.39%
$4,001-$8,000	340	21.58%
$8,001-$12,000	344	21.84%
$12,001-$20,000	303	19.23%
$20,001 or more	377	23.93%
Government Assistance		
Welfare	26	1.65%
Female Heads of Household	37	2.34%
Life Insurance for Single Mothers	10	0.63%
65 and Older	59	3.74%
Decent Housing	28	1.77%
Student Grant	78	4.95%
Other	79	5.01%
None	1258	79.87%

Table 1: *Sociodemographic profile.*

Regarding oral health habits (Table 2), it is worth noting that only 44.48% of respondents are very concerned about their oral health, whereas 53.71% are very concerned about their overall health; 40.44% brush their teeth three times a day, 59.88% consume sweets, and 82.66% consume soft drinks; 10.15% state that there is no connection between oral hygiene and oral health, and 38.34% state that teeth do not last a lifetime.

	Frequency	Percentage
Toothbrushing		
Once a day	234	14.85%
Twice a day	664	42.15%
Three times a day	637	40.44%
Some days of the week	33	2.09%
Does not brush teeth	7	0.44%
Perception of the influence of diet on oral health		
Yes	1404	89.14%
No	171	10.85%
Consumption of sweets		
Yes	943	59.88%
No	632	40.12%
Frequency of sweets consumption		
Every day	186	11.80%

3 times a week	314	19.93%
Once a week	469	29.12%
Never	606	40.12%
Soft drink consumption		
Yes	1302	82.66%
No	273	17.33%
Frequency of soft drink consumption		
Every day	809	51.36%
3 times a week	317	20.12%
Once a week	184	11.17%
Never	265	17.33%

Table 2: *Oral health habits.*

In the area of oral health needs (Table 3), 28.3% and 23.55% of the population report an excellent perception of their general and oral health, respectively; 60.44% report having a systemic disease, with diabetes and cardiovascular diseases being the most common.

	Frequency	Percentage
Overall Health		
Excellent	446	28.31%
Fair	1075	68.25%
Poor	54	3.4%
Oral Health		
Excellent	371	23.55%
Fair	1051	66.73%
Poor	153	9.71%
Currently Ill		
Yes	952	60.44%
No	623	39.55%
Medical Conditions		
None	623	39.55%
Cardiovascular	168	10.66%
Diabetes	164	10.41%
Obesity	63	4%
Gastroesophageal Reflux	75	4.76%
Respiratory Disease	34	2.15%
Anorexia and/or Bulimia	1	0.09%
Other	447	28.38%

Table 3: *Oral health needs.*

Regarding access to oral health care (Table 4), 85% are enrolled in a public health care program; 48.63% had not visited a dentist in less than a year; and 14.66% went for a checkup. The main reasons they cited for not visiting the dentist were financial constraints and being too busy.

	Frequency	Percentage
Eligible for health care		
Yes	1353	85.9%
No	222	14.09%
Health care provider		
Public	1,011	64.21%
Public health insurance	232	14.73%
Private	332	21.06%
Last time you visited the dentist		
Less than a year ago	766	48.63%
One year ago	333	21.14%
More than one year ago	476	30.22%
Where did you go?		
Private practice	1085	68.88%
Healthcare facility	454	28.82%
Mobile dental clinic	36	2.28%
Reasons for not visiting the dentist		
None	14	0.88%
Checkup	231	14.66%
Cleaning	394	25.01%
For a filling	344	21.84%
To have a tooth extracted	212	13.46%
For dentures	54	3.42%
To have braces fitted	49	3.11%
For a gum problem	62	3.93%
A tooth fell out or broke	40	2.53%
Problems with removable dentures	19	1.20%
Problems with adjustments to fixed dentures	12	0.76%
Dental implant	6	0.38%
Pain or noises when opening or closing the mouth	3	0.19%
Root canal	97	6.01%
Other	38	2.41%
Are you still receiving treatment for your last dental problem?		
Yes	1337	84.88%
No	238	15.11%

Means of transportation to the dental office		
Bus	509	32.30%
On foot	132	8.38%
Car	934	59.30%
Available dentists		
Yes	1424	90.41%
No	151	9.52%
Available supplies		
Yes	1491	94.66%
No	84	5.33%
Quality of service		
Poor	50	3.74%
Fair	287	18.22%
Good	1237	78.04%
Reasons for not visiting the dentist		
Financial reasons	317	20.12%
Fear or dislike of dentists	248	15.74%
Little prior experience with dental care	87	5.52%
Too busy	393	24.95%
No dental problems	212	13.46%
Dental problem not serious enough	120	7.61%
No teeth	14	.88%
The dentist could not give you an appointment	20	1.26%
Interest in the appointment	106	6.72%
Other	58	3.68%

Table 4: *Access to oral health services.*

With regard to school-age children (Table 5), 44% brush their teeth once a day, 52.99% have entries in their health records regarding oral health, 74.41% have visited the dentist in the past year, and 53.96% went for a checkup; furthermore, parents mention that financial constraints are the main reason they do not take their children to the dentist.

	Frequency	Percentage
Brushing Frequency		
Once a day	693	44.00%
Twice a day	493	31.30%
Three times a day	316	20.06%
Some days of the week	26	1.65%
None	47	2.98%

Do you have an oral health record?		
Yes	840	52.99%
No	735	46.99%
Have you visited the dentist in the past year?		
Yes	1172	74.41%
No	403	25.58%
Reason for your last visit to the dentist		
Checkup	850	53.96%
Cleaning	286	18.15%
For a filling	158	10.03%
To have a tooth extracted	51	3.23%
To have braces fitted	78	4.95%
For a gum problem	5	0.31%
A tooth fell out or broke	22	1.39%
Pulpotomy	25	1.58%
Other	100	6.34%
Reason for not visiting the dentist		
Financial reasons	799	50.73%
Fear or dislike of dentists	322	20.44%
Little prior experience with dental care	37	2.34%
Too busy	85	5.39%
No dental problems	157	9.96%
Dental problem not serious enough	64	4.06%
The dentist could not give you an appointment	7	0.44%
Interest in the consultation	59	3.74%
Other	37	2.34%
Dentists from the Department of Health visited the school		
Yes	847	53.81%
No	727	46.18%

Table 5: *School-age children.*

Our study found a statistically significant association between the following variables:

- The municipality where they live and the last time they visited the dentist.
- Oral health status over the past 3 months and the municipality where the child currently lives.
- Dental visits and monthly household income.
- Use of oral health services and parents' average level of education.
- Reasons for the child's dental visits and the parents' monthly household income.
- Reasons for visiting the dentist and the child's dental hygiene.
- The child's oral health and dental hygiene.

- The child's oral health and frequency of toothbrushing.
- The child's oral health and consumption of soda in their diet.
- The child's oral health and general health.
- The child's oral health and the family's access to oral health services.

Based on the logistic regression analysis of our results, which considered the factors influencing whether people seek oral health care—specifically the variable "Time to Visit the Dentist"—the factors that proved statistically significant were:

- **Gender variable:** If the person is male, the likelihood of accessing oral health services is 0.724 times lower than if they were of another gender.
- **Years of education variable:** As the average number of years of education increases, the likelihood that a person will visit the dentist within less than a year is 1.049 times greater than if they have fewer years of education (on average).
- **Monthly household income variable:** Specifically: If a household's monthly income is between 4,000 and 12,000 pesos, the likelihood that the person will visit the dentist within less than a year is 0.444 times lower than if the household had a different income.
- **Oral health needs variable:** If a person has an oral health condition, the probability that they will visit the dentist within one year is 1.657 times higher than if they do not have an oral health condition.
- **Variable: Reason for not visiting the dentist:** If a person reports being too busy, the probability that they will visit the dentist within one year is 0.454 times lower than if they did not report this condition.

Discussion

Our study included individuals based on their sociodemographic profile; 20.13% reported receiving assistance from the federal or state government. In northeastern Mexico, the Bienestar program is a social policy through which the government combats social inequalities by allocating resources to older adults, education, nutrition, and access to public health services. In northeastern Mexico, efforts are being made to break the intergenerational cycle of poverty by using cash and food transfers as a means to improve social conditions [8,9]. Regarding place of birth, although in our study the sample was divided by the participants themselves among the three states in northeastern Mexico, it should be noted that the National System of Statistical and Geographic Information considers Nuevo León to be the state with the highest mobility nationwide and a high migration rate [10].

With regard to employment, 37.46% reported having an unpaid job; this type of employment is largely related to educational attainment, which in turn determines income. Regarding monthly household income, our study found that 34.39% have an income of less than 8,000 pesos; this proportion is similar to the income of the population in northeastern Mexico [11]. Regarding perceptions of oral health, we can highlight that 44.48% are very concerned about their oral health, and 53.71% are very concerned about their systemic health; 28.31% and 23.55% of the population have an excellent perception of their systemic and oral health, respectively; likewise, 60.44% report suffering from some systemic disease, with diabetes and high blood pressure being the most common; in northeastern Mexico, a link has been demonstrated between systemic health and oral health problems, and vice versa [12].

Similarly, the results based on their perception of the community indicate that 10.15% believe there is no connection between oral hygiene and oral health, and 38.34% believe that teeth do not last a lifetime. Cultural roles act as a barrier to access to oral health services; in northeastern Mexico, greater importance must be given to oral health needs within the health-disease continuum, and this, to a certain extent, determines the utilization of services as well as adherence to and continuity of dental surveillance processes [13]. One notable

indicator in our study population is that 66.10% consume fried foods, 59.88% consume sweets, and 82.66% consume soft drinks. Various studies indicate that frequent consumption of these foods, which are high in sugar or carbohydrates, poses a high risk for the development of dental caries, which is one of the most significant oral health problems in northeastern Mexico [14].

In general, children consume foods that are both non-nutritious and cariogenic during their time at school, and they often fail to brush their teeth three times a day, making them prone to developing oral diseases. A balanced diet is necessary for both general and oral health, taking into account risk factors such as sugar intake, the physical characteristics of food—including solubility, retention, and the ability to stimulate salivary flow—the pH of saliva, as well as texture, frequency of consumption, and the length of time food remains in the mouth [13]. 74.41% of the children in the study population visit the dentist once a year; of these, 53.96% go for a checkup, and 20.12% of the population report that the main reason parents do not take their children to the dentist is due to financial constraints. The World Health Organization states that children should visit the dentist twice a year; regular checkups allow for the identification of risk factors rather than merely detecting a lesion or waiting for the child to report pain, thereby avoiding the cost of treatment and absences from school [15]. Finally, in our population, 52.99% have records in their Oral Health Card, and 46.18% of the children were not examined by dentists as part of any prevention program run by the Ministry of Health at their school, contrary to the guidelines set forth in the School Oral Health Program proposed in 2023 by Mexico's federal Ministry of Health [16].

Conclusion

It can be concluded that Sustainable Human Development must occupy a prominent place in Mexico, as it establishes a new moral and ethical framework for the professional training of healthcare personnel who are more compassionate and humane. By showing greater respect for people and their rights and seeking the greater good, the dentist-patient relationship and the social commitment of healthcare professionals would be transformed.

Likewise, in Mexico, the Sustainable Human Development approach to oral health must aim to reduce social disparities, decrease oral diseases, and improve access to and the quality of health services. From this perspective, people's oral health needs are at risk not only when they are vulnerable to disease, but also because multiple aspects of their daily lives pose threats to the development of their freedom. Therefore, to achieve Sustainable Human Development, it is of the utmost importance to guarantee the right to oral health in all areas of life.

Conflict of Interest

None.

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