Oral health services use among schoolchildren/teens with developmental disabilities in Colombia's capital district, 2015

Utilización de servicios de salud bucal por escolares con discapacidad intelectual del distrito capital, Colombia, 2015

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Keywords: oral health, education of people with developmental disabilities, developmental disabilities, accessibility to health services, health services

ABSTRACT

Introduction: the use of oral health services is affected by aspects like age, sex, education, income, occupation, socioeconomic status, availability of services, geographic location, cultural aspects, attitudes towards health, values, lifestyles, previous health care experiences, presence or absence of symptoms, and disabilities. The aim of this study was to identify the determinants to oral health services use among a group of schoolchildren and adolescents with developmental disabilities in the city of Bogota (Colombia). ***Methods:*** a descriptive cross-sectional study was conducted. A survey on determinants to the use of oral health services was applied to 102 parents of schoolchildren and adolescents with developmental disabilities in the city of Bogota (Colombia) during the first quarter of 2015 through probabilistic sampling. The inclusion criteria were as follows: parents in charge of schoolchildren and adolescents aged 4 to 18 years with an intellectual disability who were in cognitive, psychological and physical ability to respond. Bivariate and multivariate analysis were performed using the R software version 3.2.0. ***Results:*** there was a significant association between enabling factors like consulting for bleeding gums (p = 0.009), visiting a physician for dental problems (p = 0.081), knowledge of health rights (p = 0.001) or consulting the dentist for regular checkups (p = 0.006) and the use oral health services by schoolchildren and adolescents with developmental disabilities ***Conclusion:*** it is important to establish improvement strategies by articulating private or public health services providers with institutions devoted to the education of persons with disabilities, in order to reduce the access barriers in this minority group.

Palabras Claves: salud bucal; educación de las personas con discapacidad intelectual; discapacidad intelectual; accesibilidad a los servicios de salud, servicios de salud

RESUMEN

Introducción: la utilización de servicios de salud bucal se ve afectada por aspectos como: edad, sexo, educación, ingreso, ocupación, estatus socioeconómico, disponibilidad de servicios, ubicación geográfica, aspectos culturales, actitudes frente a la salud, valores, estilos de vida, experiencias previas de atención y presencia o ausencia de síntomas, y por la discapacidad. El objetivo del presente estudio consistió en identificar los factores determinantes de la utilización de los servicios de salud bucal de un grupo de escolares en condición de discapacidad intelectual en la ciudad de Bogotá (Colombia). ***Métodos:*** se realizó un estudio descriptivo de corte transversal. Se administró una encuesta sobre factores determinantes de la utilización del servicio de salud bucal a 102 padres de niños y adolescentes con discapacidad intelectual escolarizados en la ciudad de Bogotá (Colombia) durante el primer trimestre del año 2015 mediante muestreo probabilístico. Los criterios de inclusión utilizados fueron: padres cuidadores de niños y adolescentes escolarizados entre 4 y 18 años en condición de discapacidad intelectual y que estuvieran en capacidad cognitiva, psicológica y física para responder. Se realizó análisis bivariado y multivariado utilizando el programa R versión 3.2.0. ***Resultados:*** hubo una asociación significativa entre factores de capacidad tales como: la consulta por sangrado de las encías (p=0,009), la consulta al médico por problemas dentales (p=0,081), el conocimiento de los derechos de salud general (p=0,001) y la consulta al odontólogo por revisión periódica (p=0,006) con la utilización de los servicios de salud bucal de los escolares con discapacidad intelectual. ***Conclusión:*** es importante establecer estrategias de mejoramiento a partir de la articulación de la prestación privada o pública de servicios de salud con las instituciones educativas de personas con discapacidad con el fin de contribuir a la reducción de las barreras de acceso de este grupo humano minoritario.

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INTRODUCTION

The American Association on Intellectual and Developmental Disabilities (AAIDD) defines intellectual disability through different aspects of the individual, including psychological, emotional, physical, health and environmental factors, with a score below 70 in the intelligence quotient (IQ) scale. It can be classified as mild, moderate, severe, profound and unspecified.[1] Recently, the World Health Organization (WHO) reported that nearly 3% of the world's population has some kind of intellectual disability.[2] In addition, the World Bank reported in 2010 that more than one billion people (15% of the world's population) suffer from some form of disability, of which about 110 to 190 million have significant restrictions on their motor or intellectual capacity. It should be noted that oral health problems in children and adolescents worldwide are persistent;[3] it has been reported that, along with the problems connected to the disability, disabled people have less access to health services[4] and tend to have poor oral hygiene, which causes the onset of periodontal and dental disease and produces even more unmet needs in this regard.[5]

In most countries around the world, dental treatments are a costly burden for health systems, especially for low-income families. Currently, there exist marked inequalities in children and adolescents' oral health within and between countries and regions.[6-8] In India, for example, adolescents in urban slums are more likely to develop cavities and tooth loss than middle-class adolescents.[9] In the United States, there are racial and ethnic inequalities that affect children's oral health, with Hispanic and Afro-descendant kids in disadvantaged homes and neighborhoods being the most affected.[10-12] Inequalities in oral health are also present in all European state welfare regimes.[13]

Inequalities in oral health appear differently in different age groups, with children in disadvantageous socioeconomic conditions being the most vulnerable.[14] In Colombia, the situation is worsened in the presence of intellectual disabilities, as both children and their caregivers face multiple geographical, architectural, transport and financial barriers, among other social problems such as exclusion.[15-17] If these barriers are identified as part of oral health determinants, it becomes possible to establish differential factors in the use of oral health services as an indicator of equity.

The Aday & Andersen's behavioral health services model[18] distinguishes between three types of individual factors that facilitate or impede access to and utilization of health care services: predisposing factors, i.e. those inherent in the individual; enabling factors, i.e. those that facilitate or hinder the use of health services; and need factors, which can influence the search for dental care.[19] The Aday & Andersen model adapted for oral health by Kiyak[20] was used in this study, including predisposing factors like age, sex, marital status, education level, and occupational status; enabling factors, or the ones that guarantee health coverage and access to transportation and information; and need factors, or perceived problems like oral/periodontal diseases and restorative treatments and surgeries.

This project responds to the need for studies on the use and provision of oral health services in Latin America, which must be formulated and implemented from the social determinants of health approach in order to understand the political and social context of the absence of the State

in the formulation of public health policies seeking the interests of most citizens.

Therefore, the objective of this study was to identify determinants as strong predictors of the use of oral health services in a group of schoolchildren and adolescents with developmental disabilities in three of the most important special education institutions for children and adolescents in Colombia's capital city.

METHODS

A cross-sectional study was conducted during the first quarter of 2015 in three special education institutions in the city of Bogotá: Corporación Síndrome de Down and the foundations Ludus and Cepytin.

The theory used for the selection of variables and their measurement was the behavioral health services model adapted for oral health by Kiyak HA.[20] The exposure variables were quantitative, discrete, and continuous, as well as qualitative ordinal, and nominal in more than 70%. The variables were grouped into determinants for access to oral health services, as follows: predisposing factors: sex, age range, type of affiliation to a health system, place in the family, number of people in the household, number of siblings in the household, current disability diagnosis, marital status, socioeconomic stratum, current working status, and type of employment relationship of parents. Enabling factors: the most common co-morbidities among schoolchildren; reasons for consultation, such as toothache, bleeding gums, and loss of dental fillings; consulting an oral hygienist or oral health professional in relation to the quality of healthcare received; the most demanded dental services, such as follow-up appointments or dental fillings; and knowledge of their rights in general health and oral health. Finally, factors of need: the relationship between quality of life and oral health because of speech difficulties, the anxiety caused by problems in teeth or mouth; geographical accessibility; the influence of dentists on the use of services; the quality of service offered by health personnel, infrastructure, and privacy at the dentist's office. The resulting variable was "has seen a dentist in the last twelve months". To control systematic bias, or the constant difference between sample results and the theoretical results of the entire population, parents with homogeneous socioeconomic and educational characteristics were selected, i.e. parents with income not exceeding four minimum wages, with completed high school studies, and in charge of kids with developmental disabilities aged 4 to 18 years.

Simple random sampling was used in a population of 137 parents of schoolchildren and adolescents with intellectual disabilities, obtaining a final sample of 102 subjects. A pilot study was conducted with 5 surveys not included in the sample in order to check the clarity of language used, difficulties in completion, and the time for completing the questionnaire. Participation in the survey was voluntary and all respondents were informed that their participation would be anonymous, that they had the right to refuse to participate during and after the survey, and that confidentiality would be guaranteed. All participants signed and consented to participate according to Colombian resolution 8430 of 1993, which establishes the scientific, technical, and administrative standards for health research. This study was approved by the Research Committee of the Master of Public Health and Social Development at Fundación Universitaria del Área Andina.

The predisposing, enabling, and need factors were associated with the use of oral health services through bivariate and multivariate analyses in order to obtain an explanatory model of the individual determinants of the Aday & Andersen model adapted by Kiyak for oral health. Chi-squared statistic test was used for the bivariate analysis, and the binomial logistic regression model was used for the multivariate analysis, using the variables that had a *p* value with a significance level lower than 0.10 and confirming the null hypothesis according to Hosmer and Lemeshow. To measure force of association and statistical significance with the logistic regression model, the Wald test was applied. Confounding and effect modification were checked. The Microsoft Excel databases were exported to the R software versión 3.2.0.

RESULTS

The use of oral health care services showed similar percentages in both girls and boys, as well as for different age ranges, with more dental visits by kids affiliated to the special (81.8%) and subsidized (78.3%) health care regimes. The use of oral health services was also more common among schoolchildren/teens occupying the third place or higher in the family (77.6%), and in those with more than four people in the household (75%), separated parents (85.7%) of a low socioeconomic stratum (78.6%), and employed parents with a fixed-term contractual relationship (71.4%).

There was no association between the use of oral health services and predisposing factors, but there was association with enabling and need factors. However, concerning the predisposing factors, it is worth mentioning that two-thirds of the study population were males and under 12 years of age. Half were affiliated to the contributory health system, with salaried parents under permanent (n = 41) and fixed-term (n = 14) contracts. Half of the schoolchildren/teens were the last children in their families. Households normally had more than three people. Most parents were living together, either married or in common law marriage. Thirty schoolchildren/teens were diagnosed with mild intellectual disability and 39 with moderate intellectual disability (Table 1).

Table 1. Distribution of schoolchildren/teens with developmental disabilities according to predisposition for using oral health services and visits to the dentist or oral hygienist in the last 12 months. Colombia's Capital District

Predisposing factors		Visits to the dentist or oral hygienist in the last 12 months					
		No		Yes		Total	*p* value
		n	%	n	%	n	
Sex	Male	20	29.4	48	70.6	68	0.756
	Female	9	26.5	25	73.5	34	
Schoolchildren age ranges (years)	3-5	6	40.0	9	60.0	15	0.639
	6-11	12	24.5	37	75.5	49	
	12-15	6	33.3	12	66.7	18	
	16-18	5	25.0	15	75.0	20	
Health regime	Contributory	20	35.7	36	64.3	56	0.321
	Special	4	18.2	18	81.8	22	
	Subsidized	5	21.7	18	78.3	23	
	Doesn't know. No answer	0	0.0	1	100.0	1	

Predisposing factors		Visits to the dentist or oral hygienist in the last 12 months					
		No		Yes		Total	*p* value
		n	%	n	%	n	
Place in the family	First child	7	29.2	17	70.8	24	0.154
	Second child	9	45.0	11	55.0	20	
	Third or higher	13	22.4	45	77.6	58	
Number of people in the household	2	2	33.3	4	66.7	6	0.933
	3	8	32.0	17	68.0	25	
	4	9	25.0	27	75.0	36	
	5 or more	10	28.6	25	71.4	35	
Number of siblings in the household	0	6	26.1	17	73.9	23	0.667
	1	14	33.3	28	66.7	42	
	2	8	27.6	21	72.4	29	
	3 or more	1	12.5	7	87.5	8	
Current disability diagnosis	Mild intellectual disability	11	36.7	19	63.3	30	0.596
	Moderate intellectual disability	9	23.1	30	76.9	39	
	Severe intellectual disability	2	50.0	2	50.0	4	
	Profound Intellectual Disability	1	20.0	4	80.0	5	
	Unspecified intellectual disability	6	25.0	18	75.0	24	
Marital status	Single	2	28.6	5	71.4	7	0.200
	Married	13	24.5	40	75.5	53	
	Domestic partnership	12	42.9	16	57.1	28	
	Widow/er	0	0.0	0	0.0	0	
	Separated	2	14.3	12	85.7	14	
Socioeconomic stratum	Low	9	21.4	33	78.6	42	0.399
	Mid	18	32.7	37	67.3	55	
	High	2	40.0	3	60.0	5	
Currently working	Yes	24	30.4	55	69.6	79	0.419
	No	5	21.7	18	78.3	23	
Type of parents' working relationship	Laborer	0	0.0	0	0.0	0	0.536
	Employee with permanent contract	9	22.0	32	78.0	41	
	Employee with fixed-term contract	4	28.6	10	71.4	14	
	Self-employed	7	41.2	10	58.8	17	
	Informal worker	4	33.3	8	66.7	12	
	Other	2	50.0	2	50.0	4	

Concerning the enabling factors for the use of oral health services, a statistically significant relationship was found. The use of oral health services was associated with a) bleeding gums as a reason for dental visits, b) problems related to the quality of health care service received, c) the most demanded dental services, like routine check-ups and fillings, and d) knowledge on general and oral health rights (Table 2).

Table 2. Distribution of schoolchildren/teens with developmental disabilities according to ability to use oral health services and attend visits to the dentist or oral hygienist in the last 12 months. Colombia's Capital District

		visits to the dentist or oral hygienist in the last 12 months					
		No		Yes		Total	*p* value
		n	%	n	%	n	
Schoolchildren/teens' co-morbidities							
Hypoglycemia	Yes	1	100.0	0	0.0	1	0.111
	No	28	27.7	73	72.3	101	
Reasons for consulting							
Toothache	Yes	11	37.9	18	62.1	29	0.180
	No	18	24.7	55	75.3	73	
Bleeding gums	Yes	3	10.3	26	89.7	29	0.011
	No	26	35.6	47	64.4	73	
Failed restorations	Yes	1	100.0	0	0.0	1	0.111
	No	28	27.7	73	72.3	101	
Practitioner consulted							
Dentist or oral hygienist	Yes	23	25.8	66	74.2	89	0.129
	No	6	46.2	7	53.8	13	
None	Yes	3	50.0	3	50.0	6	0.227
	No	26	27.1	70	72.9	96	
Quality of health care service received							
Problems	Long waiting times	5	27.8	13	72.2	18	0.066
	The problem resolved on its own or patient feels better now	1	50.0	1	50.0	2	
	Went to the dental appointment but was not treated	0	0.0	1	100.0	1	
	The appointment is expensive, or patient had no money	1	50.0	1	50.0	2	
	Schedules didn't fit, or patient didn't have time	2	66.7	1	33.3	3	
	Poor health care service	4	100.0	0	0.0	4	
	Too much paperwork related to health service provider (EPS/ARS/IPS)	4	13.3	26	86.7	30	
	Luck of trust in practitioners or others providing service, or patient thinks they cannot help him/her	1	33.3	2	66.7	3	
	Was not able to get an appointment, or it was scheduled for a very late date	6	25.0	18	75.0	24	
	The service was not covered or authorized	2	25.0	6	75.0	8	
	Patient doesn't like to be treated	2	50.0	2	50.0	4	
	Patient didn't know that he/she had the right	0	0.0	1	100.0	1	
	Patient doesn't know where services are provided	0	0.0	1	100.0	1	
	Patient thought there was no need to consult	1	100.0	0	0.0	1	
Dental services required							
Check-up or examination	Yes	20	41.7	28	58.3	48	0.005
	No	9	16.7	45	83.3	54	
Dental fillings	Yes	4	13.3	26	86.7	30	0.029
	No	25	34.7	47	65.3	72	
Do you know your rights as a patient?							
Do you know your rights in general health care?	Yes	9	19.1	38	80.9	47	0.055
	No	20	36.4	35	63.6	55	
Do you know your rights in oral health care?	Yes	5	16.7	25	83.3	30	0.089
	No	24	33.3	48	66.7	72	

Regarding the need factors affecting the use of oral health services, there was also a statistically significant relationship. The use of oral health services was associated with a) altered quality of life due to difficulties in pronunciation because of dental problems, b) mobility, specifically when the child/teen goes to the health center accompanied by parents or guardians, and c) compliance with the instructions given by the dentist in previous appointments (Table 3).

Table 3. Distribution of schoolchildren/teens with developmental disabilities according the need for oral health services and visits to the dentist or oral hygienist in the last 12 months. Colombia's Capital District

		Visits to the dentist or oral hygienist in the last 12 months					
		No		Yes		Total	*p* value
		n	%	n	%	n	
Quality of life and oral health							
Have had trouble pronouncing words because of problems with teeth	Yes	15	22.7	51	77.3	66	0.084
	No	14	38.9	22	61.1	36	
Feel nervous due to problems with teeth or mouth	Yes	10	22.2	35	77.8	45	0.217
	No	19	33.3	38	66.7	57	
Geographic accessibility							
Means of transportation used to get to the health center providing dental care	Transmilenio/SITP	22	31.4	48	68.6	70	0.087
	Taxi	3	25.0	9	75.0	12	
	Inter-municipal bus	0	0.0	1	100.0	1	
	Own vehicle	2	11.8	15	88.2	17	
	Walking	2	100.0	0	0.0	2	
	None	7	35.0	13	65.0	20	
Influence of the dentist							
The dentist provided instructions to follow after the appointment	Yes	26	89.7	49	67.1	75	0.020
	No	3	10.3	24	32.9	27	

The multivariate analysis showed a statistically significant relationship only between the use of oral health services and enabling factors, like consulting for bleeding gums, seeing a physician for dental problems, knowing general health rights, and seeing a dentist for routine check-ups. For instance, the schoolchildren/teens who used oral health services for bleeding gums use the service 51 times more than those who consult for other oral health problems; those who consult their physician for dental problems also use oral health services 22 times more than those who do not see the physician for that reason; those who know their general health rights use the oral health service 32 times more; finally, those who consult only for routine check-ups or examinations use the oral health service more often than those who consult other specialties, like periodontics, orthodontics, or endodontics (Table 4).

Table 4. Determinants for oral health services use among schoolchildren/teens with developmental disabilities based on multiple logistic regression. Colombia's Capital District

Model	OR	95% CI		*p*-value
Bleeding gums				
Yes	51.14	2.62	996.97	0.009
No	1.00			
Seeing a physician				
Yes	22.08	0.68	716.03	0.081
No	1.00			
Reason for consulting: check-up or examination				
Yes	0.01	0.00	0.14	0.001
No	1.00			
Knowledge of general health care rights				
Yes	32.84	2.70	399.25	0.006
No	1.00			
Quality of fit				
Omnibus test		$p = 0.000$		
Hosmer-Lemeshow test		$p = 0.998$		
Nagelkerke's R^2		0.604		

It should be noted that the results yielded no incorrect or invalid effect estimation, neither variability in measurement due to inaccuracies in the instrument.

DISCUSSION

It is worth noting that we found no studies on the use of oral health services among children with developmental disabilities in Latin America. However, there is some evidence of the issue raised in the present study among minority groups and children, which helps initiate a discussion and take a stance concerning the need to carry out this type of studies on determinants for the use of oral health services in persons with disabilities.

A study by Palencia-Sánchez et al[22] on health care needs in the city of Bogotá showed that, being Colombia's capital city, with fewer administrative barriers to access to health services, Bogotá is also the city where transportation issues and high health care costs prevent the use of services. This agrees with the findings of the present study, which show an association between the use of oral health services and transportation means in the city, affecting the mobility of schoolchildren/teens and their parents and adding extra expenses.

Concerning the dental visits due to bleeding gums as one of the determinants for the use of oral health services, this finding differs from an analysis by Agudelo-Suárez et al[23] on the National Health Survey in Colombia, in which children aged 6 to 15 years belonging to minority groups report the highest use of oral health services due to periodontal diseases, most likely because of the condition of intellectual disability of the schoolchildren/teens in this study.

The association between visits to the physician and the use of oral health services yielded by the multivariate analysis in this study can be explained by the bibliographic review of De la Luz,[24] which shows that physicians are motivators for dental visits, as in their consultation they include oral health topics that induce the use of dental service.

The findings of our study concerning need factors agree with those of a study by Rocha-Buelvas et al,[25] in which young people who do not see their quality of life affected by disabilities tend to use the oral health services less frequently. In this study, the disabled schoolchildren with difficulties to speak due to dental problems used oral health services. The findings of the study by González-Penagos et al[26] also agrees with our findings, as it shows higher levels of oral health services when health rights are known.

It is well known that failure to use and access oral health services by people with

special needs results in poorer oral health conditions in any society.[27] The periodontal disease symptom most widely consulted by parents is bleeding gums, as it is currently known as a clear clinical indicator of gingivitis and other supporting tissues diseases; also, the literature reports that the risk for these diseases increases when disabled people are institutionalized, most likely because of the lack of articulation between the oral health service offered by state and/or private providers and the programs of these special education institutions. Indeed, this population is prone to delayed treatments, chronic dental pain, emergency dental care, tooth loss, and recurrence of moderate and advanced periodontal disease.[28] This vulnerability increases as limited access to education, parents' unemployment or informal working conditions, poverty, poor availability and organization of social-health services, inability to make payments, absence of public policies for health promotion and primary health care, and lack of knowledge on health rights affect the conditions and lifestyles of all Colombians,[29] including the majority of people with disabilities.

This study had two limitations. The first one refers to the small number of studies on oral health services use among schoolchildren/teens with intellectual disabilities, as it limits a more in-depth discussion. The second limitation has to do with difficulties in reaching out to the schoolchildren's parents for a questionnaire due to working and financial limitations. As for achievements, this study shed scientific evidence on a little-studied subject and placed a vulnerable population—also little studied—on the scientific research agenda of dentistry and public health. Access to oral health services for the minorities and vulnerable populations is clearly limited, as has been demonstrated with a differential personal, social and economic impact among countries and regions.[30]

CONCLUSIONS

This study represents an exploration of the issue of oral health services use among schoolchildren/teens with intellectual disabilities, as there are not enough published studies in this regard in Latin America, not to mention the use of the theoretical model of Aday & Andersen[18] adapted by Kiyak. Therefore, the results of this study seek to highlight the importance of monitoring and preserving equity criteria in oral health, such as equal access to health care for those in equal need of such care, equal use of health goods and services for those who have equal need of such goods and services, and equitable health outcomes regardless of physical and mental health.

It is unavoidably necessary to establish state strategies to articulate the private and/or public provision of oral health and general health services with educational institutions for people with intellectual and physical disabilities, as suggested by this study as a solution. All this considering that this strategy is one of many other methods to effectively reduce access barriers.

CONFLICTS OF INTEREST

The authors state that they have no conflict of interest.

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