ARTICLE

Caries prevalence in teenagers from the Integral Dental Attention Program for fourth-year secondary school students of the Trehuaco and Lota communes, 2018.

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Abstract: *Introduction:* Caries and periodontal diseases are the most common infectious diseases that affect the human being. Currently in Chile, caries has a high prevalence and constitutes an important public health issue. Therefore, in 2015 the Integral Dental Attention Program was introduced for fourth-year secondary school students. *Objective:* to determine the prevalence of caries in the Trehuaco and Lota communes in fourth-year secondary school students. *Materials and methods:* the selected population consisted of teenagers from the Integral Dental Attention Program for fourth-year secondary school students at public and semi-private schools, with a total universe of 114 teenagers, 70 of which belong to the Lota commune. Clinical records were analyzed to obtain the variables, which were DMFT index, FONASA (public health insurance) coverage level, medical records and sex. *Results:* DMFT value was 6.2 for teenagers from Trehuaco and 5.41 for teenagers from Lota; 4.9 for men and 6.7 for women; 5 for the D coverage level of FONASA and over 6.86 for the other levels. *Conclusion:* Caries prevalence was higher in teenagers from the Trehuaco commune. Regarding sex, female teenagers were more affected. Likewise, regarding FONASA coverage level, the more affected were those from the A, B and C levels.

INTRODUCTION

Caries is considered the biggest oral health issue in most industrialized countries. In Latin America and Asia, it affects between 60 to 90% of the school population and most of the adults *(Moncada & Urzúa, 2008)*. Currently in Chile, caries presents a high prevalence, which increases continuously with age, reaching almost 100% in adult population *(MINSAL, 2010)*.

While the mortality rate due to oral diseases is low, oral health affects the quality of life of the individuals. Teeth play a key role in facial appearance and their illness can lead to pain, discomfort, limitation, social and functional disability *(MINSAL, 2017)*. Additionally, oral diseases decrease the quality of life of children: they experience pain, discomfort, disfigurement, acute and chronic infections, sleep and eating disorders, as well as a higher hospitalization risk *(Sheiham, 2005)*.

Health policies are, therefore, oriented at the prevention and promotion of oral health and, thus, improving the quality of life of people. For oral diseases supervision, the World Health Organization suggests the following ages: 5-6 years old, 12 years old, 15 years old, 35 to 44 years old and 65 to 74 years old *(MINSAL, 2017)*.

In Chile, since dental attention after the age of 12 was not prioritized, the

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Integral Dental Attention Program for fourth-year secondary school students was introduced in 2015. This program benefits fourth-year secondary school students from public and semi-private schools and since 2016 it includes the third-year secondary school students. This program seeks to benefit more than 180,000 teenagers, so that they can enter adulthood in good oral health conditions (*MINSAL, 2017)*. Since this program started only four years ago and there are not any prevalence studies on teenagers from that age range, the objective of this study was to evaluate the prevalence of caries and associated factors in teenagers from the Trehuaco and Lota communes, who take part in the Integral Dental Attention Program for fourth-year secondary school students during 2018.

MATERIALS AND METHODS

Descriptive observational, cross-sectional study. Approval was obtained from the Research and Bioethics Committee of the School of Dentistry at the Universidad Bolivariana.

The selected population were digital and printed clinical records from male and female teenagers taking part in the Integral Dental Attention Program for fourth-year secondary school students from public and semi-private schools, incomplete clinical records were excluded. The population of interest was n=114 teenagers, 70 of which belong to the Lota commune and 44 to the Trehuaco commune of the Biobio and Ñuble regions, respectively. No incomplete clinical records were found so the total population was included.

The studied variables were: caries history through DMFT index, FONASA *(public health insurance system)* coverage level, medical records and sex. Digital and printed clinical records were analyzed, where sex and caries history were obtained. Then, using RAYEN software the medical background and FONASA coverage levels were collected.

Data were collected by three researchers during the month of December in both communes. Data were registered on a Microsoft Office Excel 2013 *(MicroSoft Corp., USA)* database and analyzed using STATA 12/SE *(Stata Corp., USA)* statistical package.

RESULTS

114 clinical records from teenagers were evaluated, 55.26% of which corresponded to men and 50.79% were from Lota. Table 1 shows the clinical and sociodemographic characterization of the analyzed sample. In Lota, the average DMFT value was 5.41 and in Trehuaco 6.2. Table 2 shows the caries history according to FONASA coverage level.

TABLE 1. Clinical and sociodemographic characteristics of the sample.

		SEX		TOTAL
		Female	Male	
Commune	Lota	38	32	70
	Trehuaco	13	31	44
FONASA coverage level	A	22	31	53
	B	13	18	31
	C	10	8	18
	D	6	6	12
Presence of disease	Yes	9	4	13
	No	42	56	101
Caries history	D	1.5	1.8	3.3
	F	4.5	2.9	7.4
	M	0.6	0.2	0.8
	DFMT	6.7	4.9	11,6

TABLE 2. Caries history according to FONASA coverage level and sex.

FONASA Coverage Level	DMFT	Sex	
		Female (SD)	Male (SD)
A	D	1.86 (3.2)	1.96 (2.6)
	F	4.5 (3.2)	3 (3)
	M	5 (1.3)	0.16 (0.6)
	DMFT	6.86 (4.4)	5.12 (3.9)
B	D	1.30 (1.7)	1.94 (2.3)
	F	4.61 (2.9)	2.33 (2.6)
	M	1 (2)	0.11 (0.3)
	DMFT	6.92 (3.7)	4.38 (3.8)
C	D	1.3 (1.4)	0.87 (1.8)
	F	5.19 (4.4)	3.75 (3.2)
	M	0.40 (0.8)	0.5 (1.4)
	DMFT	6.9 (4.7)	5.12 (5.4)
D	D	1.33 (1.7)	2.33 (2.8)
	F	3 (2.8)	3.16 (2.4)
	M	0.66 (1.2)	0 (0)
	DMFT	5 (4.8)	5.5 (2.8)

DISCUSSION

Regarding the data obtained through this study, a higher DMFT average was found in relation to a study performed in Mexico in 2011 *(Vásquez et al., 2011)*, where the average was 1.68 in children between 13 and 18 years old, and the results obtained from a study carried out in Chile between the years 2006 and 2007 with an average DMFT of 2.8 in children aged 12 years *(Cereceda et al., 2010)*. However, the results are similar to other reported in Colombia in 2016 with an average index of 5.3 in teenagers between 17 and 18 years old *(Corchuelo et al., 2016)*.

It is known that fluoride is key for preventing caries, which is why in Chile since 1962 the Public Health Service has recommended the incorporation of fluoride in concentrations between 0.7 and 1.2 mg/L in drinking water *(OPS/OMS, 2013)*. Lota, as well as Trehuaco, are communes in which drinking water is not fluoridated. An analysis carried out in Chile's Metropolitan region *(OPS/OMS, 2018)* after eight years of water fluoridation *(1996-2004)* on children aged 6-8 years showed that the DMFT index decreased from 1.17 to 0.59, which equals to 16.9%. When comparing the results obtained in this study with the results of caries prevalence on schoolchildren aged 6 to 15 years on Easter Island *(Gómez et al., 2012)*, the average DMFT index of Lota and Trehuaco is higher than the results obtained in Easter Island, where the DMFT average reached 1.19, considering that both studies shared the lack of fluoridation of drinking water.

Additionally, a greater damage in female teenagers was observed, with a DMFT of 6.66, which is similar to what was reported in Costa Rica in 2006 *(Montero et al., 2011)*, as well as by Corchuelo et al. *(2016)*. Furthermore, many studies have documented that caries prevalence is comparatively higher in women than in men *(Vásquez et al., 2011)*.

Trehuaco is an eminently rural commune, which represents two thirds of the population. In addition to this, the geographical dispersion justifies the presence of rural

health posts. This results in prolonged isolation situations due to the difficulty in access and the distance between localities, with public transport only two times per week. Likewise, according to the results of the CASEN (*Socio-Economic Characterization Survey)* conducted in 2006, the commune presents 17.2% illiteracy, higher than the regional average *(GORE Biobio, 2017)*.

One limitation of this study was the population size, which is limited, since data only correspond to two CESFAM *(Public Health Centers)*, which the participants of the Integral Dental Attention Program for fourth-year secondary school students attend, excluding the population that does not attend for multiple reasons. Another limitation is the use of a secondary database, since some writing errors can occur during digitalization of printed clinical records and the subjectivity of each professional must be considered. However, the findings establish a baseline for decision making regarding public health. Nevertheless, it is suggested to perform prospective studies in this age group with a higher population number.

CONCLUSION

Caries prevalence was higher in youngsters from the Trehuaco commune. Regarding sex, female teenagers were more affected. Likewise, regarding FONASA coverage level, the more affected belonged to the A, B and C coverage levels.

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