

Relationship between dental crowding and the oral hygiene index in 12-year-old school children

Relación entre apiñamiento dentario y el índice de higiene oral en escolares de 12 años

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Abstract

Objective: To determine whether there is a correlation between dental crowding and the oral hygiene index in 12-year-old schoolchildren in the Gil Ramírez Cuenca-Ecuador 2016 parish. **Materials and methods:** A correlational and retrospective study was conducted with a quantitative, descriptive approach. The total population studied belongs to a database that corresponds to a macro study carried out in 2016 under the name Epidemiological Map of Oral Health in 12-year-old Schoolchildren in Cuenca-Ecuador. When the database was accessed, a probability sampling was done and a sample of 188 cards was obtained. The statistical analyses were carried out in the SPSS program. **Results:** Male and female 12-year-olds in the Gil Ramírez parish did not present dental crowding, giving a 53,71%. When the variables were correlated, we obtained a mathematical value of Kendall's Tau-b of -0,128 and a p-value of 0,053 for the entire sample studied. **Conclusions:** It was determined that there was no significant correlation between dental crowding and the oral hygiene index in 12-year-old schoolchildren in the parish of Gil Ramírez Cuenca-Ecuador 2016.

Keywords: crowding, oral hygiene index, malocclusion.

Resumen

Objetivo: Determinar si existe correlación entre apiñamiento dentario y el índice de higiene oral en escolares de 12 años de la parroquia Gil Ramírez Cuenca-Ecuador 2016. **Materiales y métodos:** Se realizó un estudio correlacional y retrospectivo con un enfoque cuantitativo, descriptivo. El total de la población estudiada pertenece a una base de datos que corresponde a un macro estudio realizado en el año 2016 con el nombre Mapa epidemiológico de salud bucal en escolares de 12 años Cuenca – Ecuador, al acceder a la base de datos se realizó un muestreo de tipo probabilístico y se obtuvo una muestra de 188 fichas. Los análisis estadísticos se llevaron a cabo en el programa SPSS. **Resultados:** Los escolares de 12 años de la parroquia Gil Ramírez tanto sexo masculino como femenino no presentaron apiñamiento dental otorgando un 53,71%, al correlacionar las variables obtuvimos un valor matemático de Tau-b de Kendall del -0,128 y un valor p de 0,053 a nivel de toda la muestra estudiada. **Conclusiones:** Se determinó que no existió correlación significativa entre apiñamiento dentario y el índice de higiene oral en escolares de 12 años de la parroquia Gil Ramírez Cuenca-Ecuador 2016.

Palabras clave: aglomeración, índice de higiene oral, maloclusión.

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Introduction

Dental crowding is an alteration that produces a disorder of the dental position, generating a malocclusion in either mixed or permanent dentition. That is why the World Health Organization (WHO) classifies it as an oral disease that occupies the third place, followed by caries and periodontal disease (1,2, 3, 4).

In turn, this can be due to the presence of hereditary, congenital factors, trauma, habits, diseases, etc. Several authors have classified it by its extension as localized or generalized, by its severity, mild, moderate or severe; and in turn it is represented by an alteration in the distance between the teeth and the space or length of the jaws, all this can be determined by radiographic studies and study of models (5, 6, 7, 8). The Oral Hygiene Index is a method that allows us to know the presence and absence of bacterial plaque and dental calculus, this was described by Greene and Vermillion in 1960 and over time the same authors simplified it so that this index was evaluated in 3 pieces in the upper jaw and 3 pieces in the lower jaw and thus be able to have a statistical result in which it indicates whether it is within the adequate, acceptable or

deficient (9,10).

It is mentioned in the literature that dental crowding can cause a deficit in oral hygiene, gum disease, cavities due to poor dental position and the difficulty of correctly handling hygiene instruments such as toothbrush, dental floss and rinsing mouth causing accumulation of plaque or calculus around the teeth (1,11-14).

Currently there is no global, national and regional information that directly relates crowding with the oral hygiene index, which is why the purpose of this research is to determine if there is a correlation between dental crowding and the oral hygiene index in 12-year-old schoolchildren. Gil Ramírez Cuenca-Ecuador 2016 parish.

Materials and methods

The present research is correlational and retrospective with a quantitative, descriptive approach. To obtain the population of the present study, a database was used that corresponds to a macro study carried out in 2016 with the name Epidemiological map of oral health in 12-year-old schoolchildren Cuenca - Ecuador, this database

rests in the Research Department of the Dentistry career of the Catholic University of Cuenca, to access this information, the bioethics commission of the dentistry career reviewed and analyzed the project stating that it does not compromise human beings so that bioethical principles are not being violated (Autonomy, beneficence, non-maleficence and justice) granting an approval and certificate of the same.

When accessing the database, a population of 188 files was obtained and for the sample a probabilistic sampling was carried out, obtaining the same value of the population corresponding to the Gil Ramírez parish of the city of Cuenca, afterwards we proceeded to filter the Data related to the study variables and co-variables to be recorded in an Excel database, were finally tabulated and analyzed.

Among the inclusion criteria, the anonymous data of the patients examined in 2016 was considered and in turn, data that were not complete or that presented some incoherence were excluded.

Study variables

The variables studied are: Independent Variable: Dental Crowding, Dependent Variable: Greene and Vermillon Simplified Oral Hygiene Index, Covariates: Age, sex, parish.

Analysis of data

For the data analysis, the statistical program SPSS (V25.0) was used in which the data of the variables were recorded, once the descriptive characteristics of the frequency distribution of the same were known, the correlation of variables was carried out by means of Kendall's Tau-b mathematical test and the significance value were expressed in probability language (p).

Results

In the distribution of the sample according to sex and its percentages, 188 schoolchildren were obtained in its entirety, the female sex being the most representative with a number of 127 schoolchildren equivalent to 67.57%, while the presence of overcrowding (Table 1) was not representative, obtaining a percentage of 46.29% of the entire population studied. According to the severity of the dental crowding (table 2), the most representative percentage is 53.72% since it shows that the population did not present severity, within the levels of oral hygiene index (table 3) only one girl presented a bad level giving 0.53% as a percentage.

At the time of correlating the variables with their respective data, a negative (inverse) correlation was obtained in both sexes, that is, the higher the crowding level, the lower the level of HOI we have, these values were obtained through Kendall's Tau-b

test, granting a very low correlation, which is why at the total level of the studied students a p value of 0.053 was obtained, giving us as a non-significant correlation, these data can be seen in table 4.

Table 1. Presence of Crowding

Presence of crowding	Female (n-%)	Male (n-%)	Total (n-%)
No	65 (34,57%)	36 (19,14%)	101 (53,71%)
Yes	62 (33%)	25 (13,29%)	87 (46,29%)
Total	127 (67,57%)	61 (32,43%)	188 (100%)

Table 2. Crowding Severity

Severity	Female (n)	Male (n)	Total n (%)
Mild	31	15	46 (24,46%)
Moderate	26	6	32 (17,03%)
Ausence	65	36	101 (53,72%)
Severe	5	4	9 (4,79%)
TOTAL	127(67,57%)	61(32,43 %)	188 (100%)

Table 3. Oral Hygiene Index Levels

Levels of OHI	Sex		Total n (%)
	Female (n)	Male (n)	
Bad	1	0	1 (0,53%)
Regular	21	11	32 (17,03%)
Good	80	40	120 (63,83%)
Excellent	25	10	35 (18,61%)
Total	127	61	188 (100%)

Discussion

According to the distribution of the present study, the sample was representative, obtaining 188, 67.57% corresponded to the female sex and 32.43% to the male, Giugliano analyzed 536 schoolchildren, 53% female and 47% male, Jauregui 109 58% corresponding to the female sex and 42% male, the rest focused on different age ranges, which is why the sample increased, Saliba analyzed 960 boys and girls of which only 160 were 12 years old, García analyzed 214 and Within the age, 13 were obtained, Quiñonez analyzed 54 of which only 4 were 12 years old, Kolawole analyzed 495 of which only 37 were 12 years old. (1,9,14, 15, 16, 17).

Lima and Lao mention that the absence of dental crowding in 12-year-old schoolchildren has a high percentage, agreeing with the present study since it represented 53.71%, while García mentions that the presence is high at that age since in his study obtained a value of 62%. (3,16,18).

According to the level of severity of crowding, this study presented a percentage of 24.46% that corresponds to the mild crowding section and 4.79% at the severe level, these percentages are similar to the study by García carried out in the city of Cuenca with a percentage of 35.3% at the mild level and 2.55% severe, Lima mentions a

Table 4. Correlations and Significance

		Female		Male		Total	
		Lev. of OHI	Lev. of Crowding	Lev. of OHI	Lev. of Crowding	Lev. of OHI	Lev. of Crowding
Levels OF OHI	Correlation coefficient	1	-0,109	1	-0,19	1	-0,128
	Sig. (bilateral)		0,174		0,106		0,053
	Number	127	127	61	61	188	188
Nivel de Apiñamiento	Correlation coefficient	-0,109	1	-0,19	1	-0,128	1
	Sig. (bilateral)	0,174		0,106		0,053	
	Number	127	127	61	61	188	188

percentage of 41.1% mild and 6.3% at the severe level, in the same way the study was carried out in the city of Basin. (16.18).

In the research of Jáuregui, it can be seen that the male sex represented a bad level of oral hygiene index with 0% and 1.6% in the female, Ibarra in the male sex also represented 0% and 0.54% female, these results are similar to the present study, giving 0% to the male sex and 0.53% to the female sex. (15.19).

In the present research, a non-significant correlation was obtained between dental crowding and the Oral Hygiene Index, obtaining a p-value of ≥ 0.053 , due to the lack of updated publications in our environment, it is suggested to carry out more research according to our topic in order to be able to compare to future and obtain more knowledge.

Conclusions

There was no significant correlation between dental crowding and the oral hygiene index in 12-year-old schoolchildren from the Gil Ramírez Cuenca-Ecuador 2016 parish.

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Contribution of the authors

All authors participated in the entire research process.

Interest conflict

We declare no conflict of interest.

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