ASSOCIATION BETWEEN THE LEVEL OF INDIFFERENCE TO DENTAL TREATMENT AND HABITS OF ORAL HYGIENE IN ADULTS.

Asociación entre el nivel de indiferencia al tratamiento dental y los hábitos de higiene bucal.

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ABSTRACT:

Introduction: Inadequate oral hygiene habits such as lack of tooth brushing, use of irrigators, fluoridated toothpastes, and dental floss, as well as the importance of worrying about going to the dentist in the event of any problem in the oral cavity and the continuity of treatment are factors that could increase the risk in patients.

Objetive: To determine the association between the level of indifference to dental treatment and the oral hygiene habits of those surveyed adults.

Material and Methods: An observational, analytical and cross-sectional study. The level of indifference to dental treatment was evaluated using a translated virtual questionnaire and subsequently internally validated (Cronbach's alpha: 0.91). There were a total of 249 participants, 150 males and 99 females with a mean age of 30.69 years. For the association of the qualitative variables and the report of the crude and adjusted odds ratio (OR), a logistic regression was used. We worked with a level of statistical significance of $p<0.05$ and a confidence interval of 95%.

Results: A high level of indifference to dental treatment was obtained in 57.83% of the respondents. Likewise, a statistically significant association was found between indifference to dental treatment and education ($p = 0.012$). Regarding oral hygiene habits, a statistically significant association was found with flossing (OR = 2.22; 95% CI: 1.10-4.46) ($p = 0.025$) and brushing before sleeping (OR = 5.26; 95%: 2.26-12-22) ($p<0.001$).

Conclusion: There is a statistically significant association between the level of indifference to dental treatment with oral hygiene habits, flossing and brushing before sleeping. It is advisable to carry out activities in the communities to promote oral health care to reduce levels of indifference to dental treatment.

KEYWORDS:

Attitude to health; Dental care; Oral health; Self-report; Habits; Oral hygiene.

RESUMEN:

Introducción: Los inadecuados hábitos de higiene bucal como la falta de cepillado dental, uso de irrigadores, pastas dentales fluoradas e hilo dental, así como la importancia de preocuparse por acudir al odontólogo ante cualquier problema en la cavidad oral y la continuidad del tratamiento son factores que podrían agravar el riesgo en los pacientes.

Objetivo: Determinar la asociación entre el nivel de indiferencia al tratamiento dental y los hábitos de higiene bucal de los encuestados en adultos en edades comprendidas entre los 18 a 45 años de la urbanización Buenos Aires de Villa en Chorrillos, Perú.

Material y Métodos: Se realizó un estudio observacional, analítico y transversal. El nivel de indiferencia al tratamiento dental fue evaluado mediante un cuestionario virtual traducido y posteriormente validado internamente (alpha de Cronbach: 0.91). Se tuvo un total de 249 participantes, entre ellos 150 hombres y 99 mujeres con una media edad de 30,69 años. Para la asociación de las variables cualitativas y el reporte de las Odds Ratio (OR) crudas y ajustadas, se empleó una regresión logística. Se trabajó con un nivel de significancia estadística de *p*<0.05 y un intervalo de confianza del 95%.

Resultados: Se obtuvo un alto nivel de indiferencia al tratamiento dental en el 57.83% de los encuestados. Asimismo, se encontró una asociación estadísticamente significativa de la indiferencia al tratamiento dental con la educación (*p*=0.012). Respecto a los hábitos de higiene bucal, se encontró asociación estadísticamente significativa con uso de hilo dental (OR=2.22; IC del 95%: 1.10-4.46) (*p*=0.025) y el cepillado antes de dormir (OR=5.26; IC del 95%: 2.26-12-22) (*p*<0.001).

Conclusión: Se concluyó que existe una asociación estadísticamente significativa entre el nivel de indiferencia al tratamiento dental con los hábitos de higiene bucal uso de hilo dental y cepillado antes de dormir. Se aconseja realizar actividades en las comunidades para promover el cuidado de la salud bucal con la finalidad de reducir los niveles de indiferencia al tratamiento dental.

PALABRAS CLAVE:

Actitud frente a la salud; Atención odontológica; Salud bucal; Autoinforme; Hábitos; Higiene bucal.

INTRODUCTION.

Oral diseases are among the main public health concerns. They share risk factors with chronic diseases such as: hypertension, cancer, asthma, diabetes, among others.[1] These health conditions usually start their manifestation in the oral cavity and can have repercussions such as pain, abscesses, damage to the periodontal ligament, and loss of teeth if they do not receive adequate treatment.[1,2]

The World Health Organization (WHO) defines Oral Health as the adequate oral health status of the oral cavity, that is, the absence of pain or factors that affect the well-being of the individual such as missing teeth, swollen and bleeding gums, halitosis and poor hygiene.[1] The most common pathology is dental caries, which is a chronic disease caused by the interaction between tooth tissue, bacterial biofilm, and dietary sugars.[2]

Another common pathology is periodontal disease, caused by poor oral hygiene, consumption of certain types of medications such as anticonvulsants and immunosuppressants, and harmful habits such as tobacco and alcohol consumption.[3,4]

Indifference to dental treatment is defined as the lack of compliance with instructions, underestimation of damage to dental tissue, and lack of interest in one's own well-being, that usually begins as a multifactorial personal decision.[4]

There are some studies that have evaluated the level of indifference to treatment. A study carried out in Scotland reported a 56% indifference to dental treatment.[4] Another study carried out in the United Kingdom in 2014 in 700 inmates of a penitentiary institution, reported that 94% of adults between the ages of 20 and 35 presented indifference to dental treatment.[5]

Another study carried out in Ecuador in 2019 reported 92% indifference to dental treatment in a population of 400 inhabitants.[6] Likewise, inadequate oral hygiene habits (such as tooth brushing, the use of irrigators, fluoridated toothpastes, dental floss, and brushing frequency), as well as the importance of going to the dentist for any problem in the oral cavity and maintaining continuity of treatment are factors that, together with the absence of preventive measures, aggravate the risk for the population in this study.[7] It is worth highlighting the scarce literature on the association of these two variables. For all of the above, the need arises to associate indifference to dental treatment with oral hygiene habits.

MATERIALS AND METHODS.

This was an observational, analytical, and cross-sectional study. The universe consisted of the adults of the community of Buenos Aires de Villa in the district of Chorrillos, Peru, during the year 2020. To calculate sample size, the comparison formula of proportions was used, using the value of high and low levels of indifference to dental treatment as registered in the National Health Service (15.5%) and (33.40%),[4] so the sample consisted of 180 people.

However, as it was known that by sending the survey to only 180 people, many would not respond, it was decided to send it to 60%, therefore, the final sample size was larger than the one required.

Data were processed using the Stata statistical program version 16.0 (College Station, Statacorp, TX, US), with a confidence level of 95%, power of 80%, and an Alpha of 0.5. The sample was non-probabilistic for convenience. The unit of analysis was each resident who completed the virtual survey and met the inclusion and exclusion criteria of the research.

All young adults of both genders with ages ranging between 18 and 45 years, who were residents of the Buenos Aires neighborhood of Villa de Chorrillos, were considered for the study.

Participants who did not complete the questionnaire in full, dentistry students residing in the Buenos Aires de Villa neighborhood, and residents who did not consent to participate in the survey were excluded.

Voluntary participation was confirmed by accepting an informed consent. Once the participants accessed the link where the survey was published, they were informed about the research and its objective. Only those who agreed with and provided informed consent were allowed to answer the questions.

This study was approved by the Ethics Committee of the Universidad Peruana de Ciencias Aplicadas, (PI139-20). The well-being of those who participated in this study, integrity, and anonymity were always respected by the researchers. This study fully complied with ethical standards of the Declaration of Helsinki 1964 (revised in Fortaleza, Brazil, 2013).

To identify the variable level of indifference to dental treatment, the validated and free access questionnaire obtained from the article of Nuttall *et al.*,[4] was used. In this questionnaire, reliability was determined by means of the Cronbach's alpha coefficient test, where a value of 0.71 was obtained for all the dimensions of the questionnaire.

The instrument had eight multiple-choice questions. It was classified into three categories according to the score obtained:

Low (score from 0 to 1);

Medium (score from 2 to 4);

High (score from 5 to 8).

These values are obtained from the sum of the scores of the 8 questions mentioned above. The questions of the questionnaire of indifference to dental treatment by Nuttall *et al.*,[1] were revised in the original language and sent to a prestigious institution to be translated, so that all the terms found in the original survey are expressed correctly in Spanish.

Likewise, an internal validation was carried out through an expert judgment made up of seven dentists from different specialties, with at least

five years of experience, who currently work at Universidad de Ciencias Aplicadas and in private practices. The degree of agreement of the experts was measured by means of the Aiken V statistic, which yielded a value of 0.96, indicating adequate content validation.

To record the data on oral hygiene habits, the validated and free access questionnaire obtained from Silvina[12] was used. The confidence of the survey was measured using the Kurder-Richardson coefficient test (KR-20), yielding a value of 0.604 for all the dimensions of the questionnaire.

It was decided to carry out a pilot test in 25 residents of the Buenos Aires neighborhood of Villa de Chorrillos to corroborate the understanding of the instrument's questions, which had previously been approved by expert judgment. The test-retest technique was performed with a difference of three weeks to measure the reliability of the instrument using Cronbach's alpha statistic, achieving a score of 0.94, which confirms its reliability.

Likewise, Cohen's kappa statistic was performed, obtaining a value of 0.91, which indicates a very solid strength of agreement between the questions at both times. The following covariates were also evaluated: family monthly income, occupation, and level of education.[3]

Statistic analysis

The database was created using Microsoft Excel®. For the univariate analysis, descriptive statistics were applied, including absolute and relative frequency of the qualitative variables of the study, and the quantitative variables were evaluated using mean and standard deviation.

The variables indifference to dental treatment, oral hygiene habits, monthly wage income, level of education, occupation, and gender were evaluated qualitatively, and the variable age was evaluated quantitatively. For the bivariate analysis, the chisquare test was used to determine the association between the categorical variables.

Likewise, for the multivariate analysis, a logistic regression was used through a crude and adjusted analysis, reporting odds ratio (OR). For the crude analysis, the association between oral hygiene habits and the level of indifference to dental treatment was determined. For the adjusted model, the intervening variables age, gender, family monthly income, occupation, and educational level were considered.

The analysis was performed with a 95% confidence interval, considering a statistically significant difference when the p-value was less than 0.05. The database was analyzed using Stata version 16.0 software (College Station, Statacorp, TX, US).

RESULTS.

Table 1 shows the general and sociodemographic characteristics of the study population. Two hundred and forty-nine inhabitants participated; including 150 (60.24%) males and 99 (39.76%) females, with a mean age of 30.69 years. Regarding socioeconomic level, it was observed that 115 (46.18%) had a monthly income of 2,480 to 3,970 soles and 106 (42.57%) were employees.

Regarding oral hygiene, 93.98% brushed their teeth after each meal, 68.67% brushed before going to sleep, 51% used dental floss, and 58.23% replaced their toothbrush every four to six months. Most of the respondents presented a high level of indifference to dental treatment.

Table 2 shows the general characteristics according to the level of indifference to dental treatment of the respondents. In this, there is a high level of indifference to dental treatment shown by women (64.65%) as well as men (58.33%). Regarding educational level, a high level of indifference to dental treatment was observed in the respondents who had secondary education (66.25%) and non-university higher education (68.92%), a statistically significant asso-ciation was found between the educational level and the level of indifference to dental treatment (p=0.012).

In relation to occupation, the domestic workers had a high level of indifference to dental treatment with 78.95%, as well as the majority of employees had a high level of indifference to dental treatment (53.77%).

Finally, in Table 3, oral hygiene habits were analyzed according to the level of indifference to dental treatment. It was observed that 45% of those who did not use dental floss presented a high level of indifference to dental treatment.

In relation to brushing before going to sleep, it was found that the respondents who did not perform this action had a high level of indifference with 67 (85.9%), in which statistically significant associations were found ($p \leq 0.001$).

Subsequently, the association between oral hygiene habits and the level of indifference to dental treatment was analyzed. It was observed in the crude analysis that people with a medium level of indifference to dental treatment are 2.59 times more likely to use dental floss compared to those with a high level of indifference to dental treatment (OR=2.59; CI of 95%: 1.42-4.70) (p=0.002).

Likewise, it was observed that people with a medium level of indifference to dental treatment

Table 1. General characteristics and habits of adults between the ages of 18 and 45 of the community of Buenos Aires de Villa in the district of Chorrillos in 2020.

Variables			n	(%)
Mean age of participant	(standard deviation)		30.69	(7.43)
Gender	Male		150	(60.24)
	Female		99	(39.76)
Educational level	Primary education		80	(32.13)
	Higher non-university education		74	(29.72)
	Higher university education		80	(32.13)
	Graduate education		15	(6.02)
Monthly family income	Level I (2481 to 7021 soles)		67	(26.91)
	Level II (1301 to 2480 soles)		115	(46.18)
	Level III (1300 soles or lower)		67	(26.91)
Occupation	Employer		9	(3.61)
	Independent		67	(26.91)
	Employee		106	(42.57)
	Laborer		14	(5.62)
	Non-salaried person working in family business		34	(13.65)
	Domestic worker		19	(7.63)
Oral hygiene habits	Brushing after every meal	Yes	234	(93.98)
		No	15	(6.02)
	Brushing before going to sleep	Yes	171	(68.67)
		No	78	(31.33)
	Daily use of dental floss	Yes	127	(51)
		No	122	(49)
Replacement of oral hygiene accessories	Every 3 months		31	(12.45)
	Every 4 to 6 months		145	(58.23)
	More than 6 months		71	(28.51)
	Does not use a toothbrush		2	(0.8)
Recategorized level of indifference to dental treatment	Level of indifference to dental treatment - Medium		105	(42.17)
	Level of indifference to dental treatment - High		144	(57.83)

Table 2. General characteristics according to the level of indifference to dental treatment of adults aged between 18 and 45 years of the community of Buenos Aires de Villa in the district of Chorrillos in 2020

Variables		LEVEL OF INDIFFERENCE TO DENTAL TREATMENT		
		Medium n (%)	High n (%)	p-value*
Gender	Male	70 (46.67)	80 (53.33)	0.209
	Female	34 (35.35)	64 (64.65)	
Educational level	Primary education	27 (33.75)	53 (66.25)	0.012
	Higher non-university education	23 (31.08)	51 (68.92)	
	Higher university education	47 (58.75)	8 (53.33)	
	Graduate education	33 (41.25)	7 (46.67)	
Family Monthly Income	(7021 or more soles)	1 (25)	3 (75)	0.191
	(3971 to 7020 soles)	1 (25)	3 (75)	
	(2481 to 3970 soles)	32 (54.24)	27 (45.76)	
	(1301 to 2480 soles)	51 (44.35)	64 (55.65)	
	(1300 soles or lower)	20 (29.85)	47 (70.15)	
Occupation	Employer	5(55.56)	4(44.44)	0.463
	Independent	23(34.33)	44(65.67)	
	Employee	49(46.23)	57(53.77)	
	Laborer	8(57.14)	6(42.86)	
	Non-salaried person working in family business	16(47.06)	18(52.94)	
	Domestic worker	4(21.05)	15(78.95)	

p<0.05: Level of statistical significance. *: Chi square test.

Table 3. Logistic regression of the level of indifference to dental treatment with oral hygiene habits

Oral hygiene habits	LEVEL OF INDIFFERENCE TO DENTAL TREATMENT						
	Medium n (%)	High n (%)	p-value*	Crude analysis ** O.R (CI 95%)	p-value	Adjusted analysis *** O.R (CI 95%)	p-value
Brushing after every meal							
Yes	99 (42.31)	135 (57.69)	0.056	0.60 (0.17-2.15)	0.431	0.44 (0.10-1.87)	0.269
No	6 (40.00)	9 (60.00)					
Use of dental floss							
Yes	75 (59.06)	52 (40.94)	<0.001	2.59 (1.42-4.70)	0.002	2.22 (1.10-4.46)	0.025
No	30 (24.59)	92 (75.91)					
Brushing before going to sleep							
Yes	94 (89.52)	77 (53.47)	<0.001	4.82 (2.21-10.51)	<0.001	5.26 (2.26-12.22)	<0.001
No	11 (10.48)	67 (46.53)					
Toothbrush replacement							
Every 3 months	19 (61.29)	2 (100)	0.056	1.26 (0.80-1.97)	0.324	1.27 (0.78-2.07)	0.342
Every 4 to 6 months	62 (42.76)	83 (57.24)					
More than 6 months	22 (30.99)	49 (69.01)					
Does not use toothbrush	2 (100)	0 (0)					
Domestic worker	4 (21.05)	15 (78.95)					

*: Chi square test. **: Binary logistic regression, all values correspond to OR (95% CI). Crude model only includes the exposure variable.

***: Adjusted model includes variables: Age, Gender, Family monthly income, occupation, educational level.

are 4.82 times more likely to brush before going to sleep than those with a high level of indifference to dental treatment (OR=4.82; 95% CI %: 2.22-10.51) (p≤0.001).

In the adjusted model, it was shown that there is a positive, statistically significant association between the level of indifference to dental treatment and the use of dental floss (OR=2.22; 95% CI: 1.10-4.46) (p=0.025) and brushing before going to sleep (OR=5.26; 95% CI: 2.26-12.22) (p≤0.001). (Table 3)

DISCUSSION.

Regarding the prevalence of indifference to dental treatment, the results of this study show that 57% of the population has a high level of indifference to dental treatment. These data are similar to Nuttall[4] in Scotland, who reports that 59% of the respondents presented a high level of indifference to dental treatment. This is also in line with the research conducted by Naula et al.,[6] in Ecuador, who reports that 92% of the population has indifference to dental treatment.

This indifference to dental treatment could be related to the fact that, since the beginning of dentistry, a large part of the procedures has caused pain and fear, although with the advances in science and technology, this has been minimized. However, due to the increasing costs of treatments, many patients have stopped their visits to the dentist and left their treatments unfinished. (8)

Regarding oral hygiene habits, it was possible to establish that brushing before going to sleep was carried out by most of the respondents, while a smaller number of participants used dental floss. This coincides with a study carried out by Cárdenas et al.,[9] who reported that brushing before going to sleep was performed by 64.2% of the participants. A recent study showed that the number of people who do not brush their teeth before going to sleep decreases over time.[10]

Not brushing before going to sleep can be a risk factor for the presence of caries and perio-dontitis.[11] Regarding the use of dental floss, the results of this study differ from those obtained in a study conducted in Argentina by Silvina,[12] in which 70.6% of the respondents did not use dental floss on a daily basis. This may be due to the fact that the patient's lifestyle and the little instruction received on flossing techniques can prevent the acquisition of this habit, since the use of dental floss requires skills and training to perform it correctly and routinely.[8,13]

On the other hand, in the present study it was observed that 66% and 41% of the respondents who had completed primary education and higher university education, respectively, presented a high level of indifference to dental treatment. This agrees with what was published by Marshman et al.,[5] who reported that in a penitentiary center in England, 94% of inmates showed indifference to dental treatment, of which 39.8% had a secondary or only primary level of education.

It is known that the population that has a high educational level and people who are not at risk of poverty are the ones who most often use dental services, so a relationship could be established between the level of education and the level of indifference to dental treatment.[16]

In relation to brushing before going to sleep, it was shown that it can be a risk factor for indifference to dental treatment, which increases when adjusted with all the variables used in the study.[6,12] This rise in the odds ratio may be due to the fact that the variable educational level may have a statistically significant association with the level of indifference to dental treatment.

Additionally, in the present study this action is performed by most participants. However, this finding is not in agreement with the study carried out by Novrinda et al.,[13] in which a lower proportion of participants brushed their teeth before going to sleep (44.3%).This discrepancy may be due to improvements in the lifestyle and the economic conditions of people in this country.

Likewise, it has been shown that the habit of tooth brushing has been associated with the need to look good and have a feeling of freshness after

starting the day or eating some food.[13,14] Some of the limitations of the present study are that it consisted of a virtual survey, so there may be information bias,[15] which affects the associations between the study variables. However, a measure to counteract this limitation was the use of an instrument with excellent reliability and internal validity. Likewise, it is recommended to carry out studies that involve clinical evaluations to compare the results obtained with the instrument and to be able to determine the causal factor.

The results of the present study suggest a high prevalence of indifference to dental treatment, so it is necessary to carry out more studies to extrapolate the results to different locations. Healthcare institutions and professionals are recommended to carry out activities in their communities to promote oral health care and reduce the levels of indifference to dental treatment.

CONCLUSION.

It was determined that 53% of the men who participated in this research have a high level of indifference to dental treatment. Likewise, 64% of women presented a high level of indifference to dental treatment.

An association was found between educational level and indifference to dental treatment, revealing that 66% of those with primary education have a high level of indifference to dental treatment.

An association was found between the use of dental floss and indifference to dental treatment, revealing that 63% of those who do not use dental floss have a high level of indifference to dental treatment.

An association between brushing before going to sleep and indifference to dental treatment was established, showing that 46% of those who do not brush their teeth at bedtime have high indifference to dental treatment.

People with a medium level of indifference to dental treatment are 2.59 times more likely to use dental floss compared to those with a high level of indifference to dental treatment. People with a medium level of indifference to dental care are 4.82 times more likely to brush their teeth before going to sleep compared with those with a high level of indifference to dental care.

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