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Article

Oral health-related quality of life of elderly people and associated sociodemographic factors.

Calidad de vida de los adultos mayores relacionada a su salud bucal y los factores sociodemográficos asociados.

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Abstract: Introduction: Oral health plays a key role in people's quality of life. This is especially relevant in vulnerable groups such as the elderly. **Objective:** To determine how the sociodemographic characteristics of the elderly in a city of Arequipa (Peru) are associated with Oral Health-related Quality of Life (OHRQoL). **Material and Methods:** A descriptive, prospective, cross-sectional study consisting of 240 older adults, was carried out between October and December of 2019. Sociodemographic characteristics were assessed by means of a questionnaire, while oral health-related quality of life was evaluated using the Oral Health Impact Profile (OHIP-14). A descriptive analysis was performed to study the distribution of oral health-related quality of life and sociodemographic characteristics. An inferential analysis was performed to determine the association between the study variables. **Results:** Most of the older adults were aged between 60-65 years (32.1%). Female participants were the most prevalent group accounting for 60.8%; 42.5% had completed secondary education; 45.4% were married; and 46.7% were covered by a Comprehensive Health Insurance system (SIS, for its acronym in Spanish); 42.9% lived in a extended-family household; and more than half of the respondents reported an income below the minimum living wage (64.2%). Most of the older adults perceived that their oral health did not have a negative impact on their quality of life, with excellent (45.4%) and moderate (34.6%) assessments of their oral health-related quality of life. The most affected dimensions were psychological discomfort (84.2%) and functional limitation (72.1%). Age, educational level, marital status, type of insurance, and level of income had a statistically significant relationship with oral health-related quality of life ($p<0.05$). **Conclusion:** Most of the sociodemographic characteristics analyzed are indeed related to the perception of older adults in this study as to how oral health impacted their quality of life.

Keywords: *aged; middle-aged; quality of life; oral health; sociodemographic factors; Peru.*

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Resumen: Introducción: La salud oral es un factor importante en la calidad de vida de las personas, lo cual toma especial relevancia en grupos vulnerables como son los adultos mayores. **Objetivo:** Determinar cómo las características sociodemográficas de los adultos mayores de una ciudad de Arequipa (Perú) se asocian con la Calidad de Vida Relacionada a la Salud Oral. **Material y Métodos:** Estudio descriptivo, prospectivo, transversal, conformado por 240 adultos mayores, realizado entre los meses de Octubre y Diciembre del año 2019. Se evaluaron las características sociodemográficas por medio de un cuestionario y la calidad de vida relacionada a la salud oral por medio del Oral Health Impact Profile (OHIP-14). Se realizó un análisis descriptivo para observar la distribución de la calidad de vida relacionada a la salud oral y de las características sociodemográficas, y un análisis inferencial con la finalidad de determinar la asociación entre las variables de estudio. **Resultados:** La mayor cantidad de adultos mayores tuvieron entre 60-65 años con 32,1%, el sexo femenino fue el más reportado con 60,8%, el 42,5% estudio hasta el nivel secundario, 45,4% fueron casados, el tipo de seguro que tuvo la mayoría fue el Seguro Integral de Salud (SIS), con 46,7%, el 42,9% tuvo un tipo de hogar extendido y más de la mitad de los encuestados percibieron ingresos menores al salario mínimo vital con 64,2%. La mayoría de los adultos mayores percibieron que su salud oral no tuvo un impacto negativo en su calidad de vida, con excelente (45,4%) y regular (34,6%) calidad de vida relacionada a la salud oral. Las dimensiones más afectadas fueron Malestar Psicológico (84,2%) y Limitación Funcional (72,1%). La edad, grado de instrucción, estado civil, tipo de seguro e ingreso económico tuvieron una relación estadísticamente significativa con la calidad de vida relacionada a la salud oral (p<0,05). **Conclusion:** La mayoría de las características sociodemográficas estudiadas tienen relación con la percepción de los adultos mayores de este estudio en como la salud oral influyó en su calidad de vida.

Palabras Clave: *anciano; persona de mediana edad; calidad de vida; salud bucal; indicadores demográficos; Perú*

INTRODUCTION.

Oral health has a significant influence on a person's overall health.[1,2] It is defined by the American Dental Association (ADA) as a complete state of functional, physiological, aesthetic, and psychosocial satisfaction with oral tissues.[3] Oral health can reflect a person's overall health status, but it also may affect other systems and organs.[4] In turn, the preventable nature of most oral diseases makes it possible to avoid their appearance and therefore neutralize their impact on the body.[5] This is of great relevance regarding the elderly population since it has been documented that there has been a worldwide increase in the continuous aging process of the population in recent decades.[6]

Approximately 11.0% of the total population belonged to this age group in 2016, with projections indicating that by 2050 this percentage will increase to 22.0%.[7] This rise along with the changes that occur in teeth and supporting tissues with aging[8,9] may contribute to the loss of teeth, can cause psychological problems, physical and social disability, and hamper the ability to carry out normal daily activities.[6,10]

Quality of life is defined by the World Health Organization (WHO) as the set of perceptions people have in relation to their expectations, standards, goals, and concerns, considering the context in which they live.[11] Quality of life is becoming more relevant to measure the results of health interventions and to implement adequate health programs.[12,13]

Evaluating the perception of how health has an impact on people's quality of life is not an easy task, especially when the goal is establishing an adequate validity for this measurement.[14] As oral health plays a key role in the perception of quality-of-life,[15] various assessment tools have been developed to measure its influence on the quality of life of the population.[9,13]

They have been focused on understanding an individual's perception of how their oral health influences their daily life.[1] Among these assessment

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tools, the most used is the Oral Health Impact Profile (OHIP),[16] due to its validity, reliability, and international acceptance.[17] It has been validated, translated and used in many countries with different sociodemographic and cultural backgrounds, such as India,[18] Taiwan,[19] Croatia,[20] Turkey,[21] Mexico,[22] Chile,[23] among others. This is due to the growing need to assess how the population perceives their oral health impacts their quality of life. It has been closely related to social, demographic, cultural, and economic factors.[13]

The relationship between oral health and quality of life is unquestionable; therefore, oral health profes-sionals can contribute to the quality of life of patients by improving their oral health through timely diagnosis, appropriate treatment, and efficient clinical practice.

The aim of this research was to determine how the sociodemographic characteristics of a city of Arequipa (Peru) are associated with the oral health-related quality of life of its elderly residents.

MATERIALS AND METHODS.

A descriptive, cross-sectional, and prospective study was carried out on older adults from the district of Chivay, Caylloma, Arequipa, a very poor district according to the Peruvian National Cooperation Fund for Social Development (FONCODES, for its acronym in Spanish). Data collection for this study was carried out between October and December of 2019.

Two hundred and forty older adults selected by convenience participated in the study. A sample from a population of 636 residents over 60 years of age, with a confidence level of 95% and a margin of error of 5%. Some of the inclusion criteria were the following: being over 60 years old, being physically and mentally able to answer the survey, agreeing to sign an informed consent to participate in the study.

The variables included were the following: oral healthrelated quality of life (OHRQoL) and socio-demographic characteristics (age, gender, educational level, marital status, health insurance, type of house-hold, and income).

These data were collected through a structured survey and the use of the Oral Health Impact Profile-14 (OHIP-14), developed by Slade and Spencer,[24,25] which is an abbreviated version of OHIP-49. The OHIP-14 was developed by Slade[12] improving on the limitations of the original, such as its length.[11] The OHIP-14, although short, is a reliable, coherent, and adequate questionnaire.[26]

It consists of 14 questions divided into seven dimensions: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap.[27,28] Each of the dimensions included two questions, and their responses were quantified on a Likert scale, from 0 to 4.[24]

The levels considered were:

4 = very frequently;

3 = frequently;

2 = occasionally;

1 = almost never;

0 = Never.[9]

Values 0 and 1 were considered to have no impact on quality of life (value=0), while, on the other hand, values 2, 3 and 4 were considered to have an impact on quality of life (value=1).

Subsequently, a summation of these values was carried out and three groups were established: excellent quality of life (0-4 points), moderate quality of life (5-9 points), and poor quality of life (10-14 points).

To perform the data analysis, the information obtained was processed through the statistical package SPPS 23.0, where the statistical calculation was performed.

Firstly, a descriptive analysis was carried out, which was presented in tables of distribution of absolute and percentage frequency to observe the distribution of oral health-related quality of life and sociodemographic characteristics.

Afterwards, an inferential analysis was carried out using the Chi-square test and the Spearman correlation coefficient to observe the correlation between the variables.

RESULTS.

It was found that of the 240 older adults surveyed, 45.4% reported having excellent oral health-related quality of life (OHRQoL), and 34.6% reported having moderate oral health-related quality of life. This indicates that 80.0% of the population over 60 years of age perceived that their oral health did not negatively impact their quality of life, while the remaining 20.0% reported poor OHRQoL, perceiving that their oral health had a negative impact on their quality of life. (Table 1)

Regarding the OHIP-14, it was found that the dimensions with the greatest negative impact on the quality of life of the elderly were: psychological discomfort (worry or stress due to problems in their mouth), and functional limitation (difficulty to pronounce words and feeling that the taste of food has changed), with 84.2% and 72.1% respectively.

On the other hand, the dimensions that had the least impact were: physical disability (changes or interruptions while eating due to problems in their mouth) with 61.7%, and social disability (irritability or difficulty to carry out daily activities due to problems in their mouth) with 51.7%. (Table 2)

Regarding the sociodemographic characteristics, it was observed that most older adults were aged between 60-65 years (32.1%). Female participants accounted for 60.8%; 42.5% had secondary educational level; 45.4% were married; 46.7% had a Comprehensive Health Insu-rance plan (SIS, for its acronym in Spanish); 42.9% lived with extended family; and more than half of the participants reported an income below the minimum living wage (64.2%).

The analysis of the relationship between quality of life and sociodemographic characteristics shows that, in relation to age, most older adults with excellent OHRQoL were between 60-65 years old (29.6%). On the other hand, the highest proportion of older adults with moderate OHRQoL were between 71-75 years old (11.7%).

The majority of older adults that reported having poor OHRQoL were between 76-80 years of age (8.3%). Consequently, results from the Chi-square test show that OHRQoL and age have a statistically significant relationship ($p<0.00$) with a high correlation between both variables (r=0.80), according to Spearman's Rho.

Table 1. Oral health-related quality of life

	Quality of life	n	%
Without negative impact	Excellent	109	45.4
	Moderate	83	34.6
With negative impact	Poor	48	20.0
Total		240	100

Table 2. Dimensions of oral health-related quality of life.

		Functional Limitation	Physical pain	Psychological discomfort	Physical disability	Psychological disability	Social disability	Handicap
Without impact	n	67	86	38	92	79	116	79
	%	27.9	35.8	15.8	38.3	32.9	48.3	32.9
With impact	n	173	154	202	148	161	124	161
	%	72.1	64.2	84.2	61.7	67.1	51.7	67.1

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Table 3. Oral health-related quality of life and their association with sociodemographic characteristics.

RSociodemographic Characteristics		Oral health-related quality of life Excellent N° (%)	Moderate N° (%)	Poor N° (%)	Total N° (%)	
Age	60-65	71(29.6)	6(2.5)	0(0.0)	77(32.1)	X_2=184.0
	66-70	35(14.6)	20(8.3)	0(0.0)	55(22.9)	*p*<0.001*
	71-75	3(1.3)	28(11.7)	15(6.3)	46(19.2)	Rho=0.80
	76-80	0(0.0)	24(10.0)	20(8.3)	44(18.3)	
	80-90	0(0.0)	5(2.1)	13(5.4)	18(7.5)	
Gender	Male	43(17.9)	34(14.2)	17(7.1)	94(39.2)	X_2=0.39
	Female	66(27.5)	49(20.4)	31(12.9)	146(60.8)	*p*=0.81
						Rho=0.02
Level of education	Without education	1(0.4)	5(2.1)	12(5.0)	18(7.5)	X_2=74.29
	Primary	22(9.2)	39(16.3)	24(10.0)	85(35.4)	*p*<0.001*
	Secondary	54(22.5)	36(15.0)	12(5.0)	102(42.5)	Rho=0.51
	Higher non-college education	17(7.1)	2(0.8)	0(0.0)	19(7.9)	
	College-education	15(6.3)	1(0.4)	0(0.0)	16(6.7)	
Marital status	Single	11(4.6)	7(2.9)	1(0.4)	19(7.9)	X^2=53.39
	Married	41(17.1)	42(17.5)	26(10.8)	109(45.4)	*p*<0.001*
	Cohabiting	31(12.9)	19(7.9)	4(1.7)	54(22.5)	Rho=0.10
	Widow	2(0.8)	9(3.8)	15(6.3)	26(10.8)	
	Separated	14(5.8)	6(2.5)	2(0.8)	22(9.2)	
	Divorced	10(4.2)	0(0.0)	0(0.0)	10(4.2)	
Insurance	Uninsured	14(5.8)	14(5.8)	7(2.9)	35(14.6)	X^2=23.09
	ESSALUD	57(23.8)	26(10.8)	8(3.3)	91(37.9)	*p*<0.001*
	SIS	37(15.4)	43(17.9)	32(13.3)	112(46.7)	Rho=0.20
	EPS	1(0.4)	0(0.0)	1(0.4)	2(0.8)	
Type of household	Nuclear	22(9.2)	28(11.7)	17(7.1)	67(27.9)	X^2=14.09
	Extended-Family	51(21.3)	29(12.1)	23(9.6)	103(42.9)	*p*=0.08
	Blended	17(7.1)	16(6.7)	7(2.9)	40(16.7)	Rho=0.20
	One-person	11(4.6)	4(1.7)	1(0.4)	16(6.7)	
	Non-nuclear	8(3.3)	6(2.5)	0(0.0)	14(5.8)	
Income	Lower than minimum wage	46(19.2)	66(27.5)	42(17.5)	154(64.2)	X^2=51.64
	Equal to minimum wage	21(8.8)	12(5.0)	5(2.1)	38(15.8)	*p*<0.001*
	Higher than minimum wage	42(17.5)	5(2.1)	1(0.4)	48(20.0)	Rho=0.44
Total		**109(45.4)**	**83(34.6)**	**48(20.0)**	**240(100)**	

***:** Statistically significant. **ESSALUD:** Social Health Insurance. **SIS:** Comprehensive Health Insurance. **EPS:** Health Provider Entities (Private).

Regarding the relationship between quality of life and gender, most respondents, both male and female, reported having an excellent OHRQoL, with 17.9% and 27.5%, respectively.

In accordance with the Chi-square test, OHRQoL and gender do not have a statistically significant relationship. In addition, according to Spearman's Rho the correlation between the two is practically null (r=0.02).

Regarding the level of education, it was observed that those who did not have formal studies mostly reported having poor OHRQoL, accounting for 5.0% of the participants. Respondents who only completed the primary educational level mostly reported having moderate OHRQoL, with 16.3%.

On the other hand, the majority of older adults that completed the secondary educational level, had a non-college higher education degree, and college education degrees, reported having an excellent OHRQoL, with 22.5%, 7.1%, and 6.3%, respectively.

Results from the Chi-square test show that level of education has a statistically significant relationship ($p<0.05$) with OHRQoL, showing a moderate co-rrelation (r=0.51) according to Spearman's Rho. Regarding the relationship between marital status and OHRQoL, results show that most married and cohabiting respondents reported having good OHRQoL, with 17.1% and 12.9%, respectively. On the other hand, widows/widowers and married respondents reported having the poorest OHRQoL, with 6.3% and 10.8%, respectively.

According to the Chi-square test, marital status and OHRQoL have a statistically significant relationship ($p<0.05$), and, according to Spearman's Rho, a practically null correlation (r=0.10). Regarding the relationship between health insurance and OHRQoL, results indicate that most older adults that reported having an excellent OHRQoL were insured by EsSalud, with 23.8%. In contrast, older adults that reported mostly having moderate and poor OHRQoL were covered by the Comprehensive Health Insurance (SIS), with 17.9% and 13.3%, respectively.

According to the Chi-square test, there is a statistically significant relationship between health insurance and OHRQoL, and a practically null correlation (r=0.20) according to Spearman's Rho. On the other hand, results from the analysis of the relationship between type of home and OHRQoL show that the majority of respondents that reported having excellent, moderate, and poor OHRQoL belonged to an extended-family household, with 21.3%, 12.1%, and 9.6%, respectively.

According to the Chi-square test, these variables do not have a statistically significant relationship ($p>0.05$), and their correlation is practically null (r=0.20) according to Spearman's Rho. Finally, when analyzing the relationship between the income of adults over 60 years of age and their OHRQoL, it was observed that the majority of those who had an income greater than or equal to the minimum living wage reported having an excellent OHRQoL, with 17.5% and 8.8%, respectively. In contrast, older adults with an income lower than the minimum living wage mostly reported having moderate OHRQoL, with 27.5%.

According to the Chi-square test, income and OHRQoL have a statistically significant relationship ($p<0.05$), and these variables have a low correlation (r=0.44) according to Spearman's Rho. (Table 3)

DISCUSSION.

The main contribution of this study is the association between oral health-related quality of life (OHRQoL) and sociodemographic charac-teristics, since age, educational level, marital status, type of insurance, and income have a statistically significant relationship with OHRQoL.

This is of great importance since oral health not only depends on biological factors, but also on the socioeconomic and demographic context that influences the quality of life of people, especially the most vulnerable groups,[15] such as the elderly. The results obtained in this study are similar to those found by Duque *et al.*,[15] and Masood *et al.*,[29] who reported that older people with a lower educational level perceived that oral health had a greater impact on their quality of life.

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Regarding age, other authors agree with this study, such as Da Mata *et al*.,[2] and Zucoloto *et al*.,[30] who reported that OHRQoL worsened with aging.

This is probably due to an increase in the appearance of diseases and conditions in oral health, such as the loss of teeth, which not only causes functional problems, but also shame, isolation, and a loss of self-esteem[31] On the other hand, there are discrepancies with the study carried out by Steele *et al*.,[32] on two adult populations.

They reported that, as age increases, the OHIP-14 scores decrease. Consequently, the overall perception is that oral health has a less negative impact on quality of life, which is surprising, since in most cases as a person ages it leads to tooth loss and edentulism, which has a significant relationship with subjective poor oral health.[10]

In turn, it is necessary to specify that this study was only carried out on people over 60 years of age, while the aforementioned study included adults of all ages, which could explain these discrepancies. On the other hand, a coincidence was found with the studies carried out by Leão *et al*.,[33] and by Top *et al*.,[34] in relation to educational level, since in their two studies they report that individuals with a higher level of education had lower scores in the OHIP- 14, which indicates a better OHRQoL.

This may be due to the fact that a higher level of education increases a person's awareness of the importance of their oral health and induces better self care in order to stay healthy. On the other hand, research conducted by Zahed *et al*.,[35] showed results that contradict the present study, since they indicate that a higher educational level raises the expectations regarding quality of life, which leads to people having the perception that their OHRQoL is worse.

These discrepancies could be due to the lack of homogeneity in both studies regarding educational level. It should also be noted that these authors carried out their research on patients with terminal hepatic cirrhosis. In relation to income, it was observed that a higher income resulted in a better perception of OHRQoL.

These results are similar to those obtained by Brennan *et al*.,[36] who reported that the OHIP score was higher in people with low income compared to those with a higher income, which indicates poor OHRQoL for the former.

The explanation for this is that economic resources facilitate the access to dental care, which becomes a barrier for people with low income, and that can consequently lead to inadequate oral health and, therefore, a poor quality of life.[37] In addition, many older adults incur out-of-pocket expenses to maintain their oral health, with dental care being in some cases unaffordable for this age group due to the high treatment costs.[31]

Results from the analysis of the association between marital status and OHRQoL show that this variable does indeed influence how older adults perceive that their oral health relates to their quality of life. This is similar to the results obtained in a study carried out by Colaço *et al*.[38]

They reported that older adults that were divorced or widowed indicated having poor OHRQoL, compared to those who were married. This could be related to the loneliness that comes with being widowed or divorced, which can make a person neglect their oral and overall health, thus reducing their quality of life.[39] Regarding health insurance, in the present study it was found that older adults that reported having a better OHRQoL were insured by EsSalud, and those who reported having a worse OHRQoL were affiliated to a SIS plan. The reason for this could be that EsSalud is an insurance company aimed mostly at employed or retired people in the formal sector, while the SIS is the subsidized or semi-subsidized state insurance company that provides care to the uninsured and most vulnerable citizens.[40] In addition, the income of individuals insured by EsSalud is higher than the average minimum wage.[41] positively influencing their quality of life.

When analyzing the dimensions of oral health-related quality of life it was found that older adults perceived that psychological discomfort and functional limitation had a greater negative impact on their OHRQoL, while physical and social

disability had the least negative impact. This is similar to the findings of Monaghan *et al.*,[28] in Wales, Echeverria *et al.*,[27] in Brazil, and Fuentes *et al.*,[24] in Mexico, as results from their research showed that psychological discomfort was one of the dimensions that had the greatest impact on OHRQoL.

Respondents were concerned and stressed about problems in their oral cavity, which could be due to the perception that oral conditions limit their ability to chew, speak, smile, and negatively affect their psychosocial well-being.[42]

This effect may in turn be bidirectional, as it is observed that an increase in psychological distress can negatively impact the health of older adults, negatively influencing their dietary habits and oral hygiene, leading to poor oral health.[43]

On the other hand, the aforementioned authors also found that one of the dimensions with the least impact was social disability, with respondents indicating that their oral health did not have a substantial impact on increasing their irritability or causing greater difficulty to carry out their daily activities.

Regarding the perception of older adults of how their oral health is related to their quality of life, it should be noted that in this study it was observed that the majority of older adults reported having an excellent OHRQoL, coinciding with the results from a study carried out by Koistinen *et al.*,[25]

This is probably because older people tend to consider that their oral problems are less serious or relevant as a consequence of having other overall health problems that they consider to have a greater impact on their well-being.

CONCLUSION.

In conclusion, age, educational level, marital status, type of insurance, and income have an impact on the perception of older adults in the district of Chivay, Arequipa, about how their oral health influences their quality of life.

Most of the respondents indicated that their perception of their oral condition did not have a negative influence on their quality of life.

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REFERENCES.

1. Duque-Duque VE, Tamayo-Castrillón J, Echeverri-Cadavid PA, Gutiérrez-Osorio AY, Sepúlveda-Correa D, Giraldo-Ramírez O, Agudelo-Suárez AA. Calidad de vida relacionada con la salud bucal en adultos mayores que consultana la IPS Universitaria de Medellín y sus factores asociados. Rev CES Odont. 2013; 26(1):10-23
2. da Mata C, Allen PF, McKenna GJ, Hayes M, Kashan A. The relationship between oral-health-related quality of life and general health in an elderly population: A cross-sectional study. Gerodontology. 2019 Mar;36(1):71-77. doi: 10.1111/ger.12384. PMID: 30536976.
3. Machado Luz FW, Silva AER, Perroni AP, Goettems ML, Boscato N. Impact of Seniors Centers on oral health-related quality of life of older adults. Rev Saude Publica. 2020;54:07. doi: 10.11606/s1518-8787.2020054001648.PMID: 31967276; PMCID: PMC6961966.
4. Padilla-Sánchez M, Saucedo-Campos G, Rosas ER, González-Pedraza A. Estado de dentición y su impacto en la calidad de vida en adultos mayores. CES Odontol. 2017; 30(2):16-22.
5. Mariño R, Albala C, Sanchez H, Cea X, Fuentes A. Self-assessed oral-health status and quality of life of older Chilean. Arch Gerontol Geriatr. 2013 May-Jun;56(3):513-7. doi: 10.1016/j.archger.2012.12.004. PMID: 23287605.
6. Sáez-Prado B, Haya-Fernández MC, Sanz-García MT. Oral health and quality of life in the municipal senior citizen's social clubs for people over 65 of Valencia, Spain. Med Oral Patol Oral Cir Bucal. 2016 Nov 1;21(6):e672-e678. doi: 10.4317/medoral.21305. PMID: 27694787; PMCID: PMC5116108.
7. Kanasi E, Ayilavarapu S, Jones J. The aging population: demographics and the biology of aging. Periodontol 2000. 2016 Oct;72(1):13-8. doi: 10.1111/prd.12126. PMID: 27501488.
8. Lamster IB, Asadourian L, Del Carmen T, Friedman PK. The aging mouth: differentiating normal aging from disease. Periodontol 2000. 2016 Oct;72(1):96-107. doi: 10.1111/prd.12131. PMID: 27501493.
9. Zusman SP, Kushnir D, Natapov L, Goldsmith R, Dichtiar R. Oral Health-Related Quality of Life in the Elderly in Israel--Results from the National Health and Nutrition Survey of the Elderly 2005-2006. Oral Health Prev Dent. 2016;14(2):117-23. doi: 10.3290/j.ohpd.a34998. PMID: 26525123.
10. Slade GD, Sanders AE. The paradox of better subjective oral health in older age. J Dent Res. 2011 Nov;90(11):1279-85. doi: 10.1177/0022034511421931. PMID: 21917599.
11. Paredes-Rodríguez VM, Torrijos-Gómez G, González-Serrano J, López-Pintor-Muñoz RM, López-Bermejo MÁ, Hernández-Vallejo G. Quality of life and oral health in elderly. J Clin Exp Dent. 2016 Dec 1;8(5):e590-e596. doi: 10.4317/jced.53317. PMID: 27957276; PMCID: PMC5149097.
12. Slade GD. Derivation and validation of a short-form oral health impact profile. Community Dent Oral Epidemiol. 1997 Aug;25(4):284-90. doi: 10.1111/j.1600-0528.1997.tb00941.x. PMID: 9332805.
13. Papaioannou W, Oulis CJ and Yfantopoulos J. The oral health related quality of life in different groups of senior citizens as measured by the OHIP-14 questionnaire. Oral Biol Dent. 2015; 3:1.doi.10.7243/2053-5775-3-1
14. Reissmann DR. Methodological considerations when measuring oral health-related quality of life. J Oral Rehabil. 2021 Mar;48(3):233-245. doi: 10.1111/joor.12983. PMID: 32325537.
15. Agudelo-Suárez AA, Vivares-Builes AM, Muñoz-Pino N, Martínez-Martínez JM, Reid A, Ronda-Pérez E. Oral Health-Related Quality of Life in Native and Immigrant Populations in the PELFI Study in Spain. Int J Environ Res Public Health. 2019 May 21;16(10):1796. doi: 10.3390/ijerph16101796. PMID: 31117196; PMCID: PMC6572568.
16. Su N, van Wijk A, Visscher CM. Psychosocial oral health-related quality of life impact: A systematic review. J Oral Rehabil. 2021 Mar;48(3):282-292. doi: 10.1111/joor.13064. PMID: 32761938; PMCID: PMC7984127.
17. Skośkiewicz-Malinowska K, Noack B, Kaderali L, Malicka B, Lorenz K, Walczak K, Weber MT, Mendak-Ziółko M, Hoffmann T, Ziętek M, Walter M, Kaczmarek U, Hannig C, Radwan-Oczko M, Raedel M. Oral Health and Quality of Life in Old Age: A Cross-Sectional Pilot Project in Germany and Poland. Adv Clin Exp Med. 2016 Sep-Oct;25(5):951-959. doi: 10.17219/acem/63952. PMID: 28028961.
18. Verma S, Sharma H. Translation and validation of hindi version of oral health impact profile-14, a measure of oral health-related quality of life of geriatrics. Indian J Dent Res. 2019 Mar-Apr;30(2):180-184. doi: 10.4103/ijdr.IJDR_729_17. PMID: 31169146.
19. Kuo HC, Chen JH, Wu JH, Chou TM, Yang YH. Application of the Oral Health Impact Profile (OHIP) among Taiwanese elderly. Qual Life Res. 2011 Dec;20(10):1707-13. doi: 10.1007/s11136-011-9901-z. PMID: 21472393.
20. Rener-Sitar K, Petricević N, Celebić A, Marion L. Psychometric properties of Croatian and Slovenian short form of oral health impact profile questionnaires. Croat Med J. 2008 Aug;49(4):536-44. doi: 10.3325/cmj.2008.4.536. PMID: 18717001; PMCID: PMC2525826.
21. Balci N, Alkan N, Gurgan CA. Psychometric properties of a Turkish version of the oral health impact profile-14. Niger J Clin Pract. 2017;20(1):19-24. doi: 10.4103/1119-3077.164353. PMID: 27958241.
22. Castrejón-Pérez RC, Borges-Yáñez SA, Irigoyen-Camacho ME. Validación de un instrumento para medir el efecto de la salud bucal en la calidad de vida de adultos mayores mexicanos. Rev Panam Salud Publica. 2010;27(5):321–9.
23. León S, Bravo-Cavicchioli D, Giacaman RA, Correa-Beltrán G, Albala C. Validation of the Spanish version of the oral health impact profile to assess an association between quality of life and oral health of elderly Chileans. Gerodontology. 2016;33(1):97-105. doi: 10.1111/ger.12124. PMID: 24612284.
24. Fuente-Hernández J, Sumano-Moreno Ó, Sifuentes-Valenzuela MC, Zelocuatecatl-Aguilar A. Impacto de la salud bucal en la calidad de vida de adultos mayores demandantes de atención dental Universitas Odontológica. 2010; 29(23): 83-92.
25. Koistinen S, Olai L, Ståhlnacke K, Fält A, Ehrenberg A. Oral health-related quality of life and associated factors among older people in short-term care. Int J Dent Hyg. 2020 May;18(2):163-172. doi: 10.1111/idh.12424. PMID: 31782889; PMCID: PMC7217038.

26. Diaz-Reissner Clarisse Virginia, Casas-García Irma, Roldán-Merino Juan. Calidad de Vida Relacionada con Salud Oral: Impacto de Diversas Situaciones Clínicas Odontológicas y Factores Socio-Demográficos. Revisión de la Literatura. Int J Odontostomat. 2017;11(1):n31-39. doi.10.4067/S0718-381X2017000100005.

27. Echeverria MS, Wünsch IS, Langlois CO, Cascaes AM, Ribeiro Silva AE. Oral health-related quality of life in older adults-Longitudinal study. Gerodontology. 2019 Jun;36(2):118-124. doi: 10.1111/ger.12387. PMID: 30565315.

28. Monaghan N, Karki A, Playle R, Johnson I, Morgan M. Measuring oral health impact among care home residents in Wales. Community Dent Health. 2017 Mar;34(1):14-18. doi: 10.1922/CDH_3950Morgan05. PMID: 28561552.

29. Masood M, Newton T, Bakri NN, Khalid T, Masood Y. The relationship between oral health and oral health related quality of life among elderly people in United Kingdom. J Dent. 2017 Jan;56:78-83. doi: 10.1016/j.jdent.2016.11.002. PMID: 27825838.

7. Zucoloto ML, Maroco J, Campos JA. Impact of oral health on health-related quality of life: a cross-sectional study. BMC Oral Health. 2016 May 12;16(1):55. doi: 10.1186/s12903-016-0211-2. PMID: 27176473; PMCID: PMC4866408.

31. Raphael C. Oral Health and Aging. Am J Public Health. 2017 May;107(S1):S44-S45. doi: 10.2105/AJPH.2017.303835. PMID: 28661797; PMCID: PMC5497890.

32. Steele JG, Sanders AE, Slade GD, Allen PF, Lahti S, Nuttall N, Spencer AJ. How do age and tooth loss affect oral health impacts and quality of life? A study comparing two national samples. Community Dent Oral Epidemiol. 2004 Apr;32(2):107-14. doi: 10.1111/j.0301-5661.2004.00131.x. PMID: 15061859.

33. de S Leao R, Maior JR, Pereira FC, Monteiro GQ, de Moraes SL. Impact of Oral Health and Sociodemographic Factors on Quality of Life: A Cross-sectional Study. J Contemp Dent Pract. 2018 Apr 1;19(4):438-442. PMID: 29728550.

34. Top M, Sönmez S, Aslan H. An Evidence-Based Approach to Outcome Measurement in Oral and Dental Health Services: Oral Health-Related Quality of Life and Oral Health Impact. Worldviews Evid Based Nurs. 2019 Oct;16(5):408-415. doi: 10.1111/wvn.12398. PMID: 31544360.

35. Zahed M, Ranjbar MA, Azad A. Oral Health-Related Quality of Life in Chronic Liver Failure Patients Measured by OHIP-14 and GOHAI. Biomed Res Int. 2020 Dec 26;2020:8835824. doi: 10.1155/2020/8835824. PMID: 33426077; PMCID: PMC7781717.

36. Brennan DS, Hanna K, Luzzi L. Subjective and objective social status: associations with psychosocial predictors and oral health. Community Dent Health. 2021 Feb 25;38(1):59-63. doi: 10.1922/CDH_00100-2020Brennan05. PMID: 33146471.

37. Wide U, Hakeberg M. Oral health-related quality of life, measured using the five-item version of the Oral Health Impact Profile, in relation to socio-economic status: a population survey in Sweden. Eur J Oral Sci. 2018 Feb;126(1):41-45. doi: 10.1111/eos.12393. PMID: 29131414.

38. Colaço J, Muniz FWMG, Peron D, Marostega MG, Dias JJ, Rösing CK, Colussi PRG. Oral health-related quality of life and associated factors in the elderly: a population-based cross-sectional study. Cien Saude Colet. 2020 Oct;25(10):3901-3912. doi: 10.1590/1413-812320202510.02202019.

39. Rouxel P, Heilmann A, Demakakos P, Aida J, Tsakos G, Watt RG. Oral health-related quality of life and loneliness among older adults. Eur J Ageing. 2016;14(2):101-109. doi: 10.1007/s10433-016-0392-1. PMID: 28579932; PMCID: PMC5435788.

40. Ramos Rosas E, Winkler V, Brenner S, De Allegri M. Identifying the determinants of health insurance coverage among Peruvian women of reproductive age: an assessment based on the national Peruvian demographic survey of 2017. Int J Equity Health.2020;19(1):195.

41. Llanos RQ, Ramírez RR, Palacios MT, Flores CF, BordaOlivas A, Castillo RA, et al. Health Survey in a Peruvian health system (ENSSA): design, methodology and general results. Rev Saude Publica. 2019;53:33. doi./10.11606/S1518-8787.2019053001135

42. Kim YS, Kim HN, Lee JH, Kim SY, Jun EJ, Kim JB. Association of stress, depression, and suicidal ideation with subjective oral health status and oral functions in Korean adults aged 35 years or more. BMC Oral Health. 2017;17(1):101

43. Dahl KE, Calogiuri G, Jonsson B. Perceived oral health and its association with symptoms of psychological distress, oral status and socio-demographic characteristics among elderly in Norway. BMC Oral Health. 2018;18(1):93.

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