

Factors Influencing Adolescents' Knowledge, Practices, and Attitudes Towards Oral Health in the Rupa-Rupa District, Peru

Katherin Miluska Espinoza-Andres¹, Julissa Amparo Dulanto-Vargas², Kilder Maynor Carranza-Samanez²

¹School of Dentistry, Universidad Científica del Sur, ²Scientific Research Department, Research Group in Dental Sciences, School of Dentistry, Universidad Científica del Sur, Lima, Perú

ABSTRACT

Aim: This study aimed to identify factors associated with adolescents' knowledge, practices, and attitudes (KPA-OH) regarding oral health in the Rupa-Rupa district, a high jungle region of Peru. **Materials and Methods:** An analytical study was conducted with a sample of 408 adolescents (aged 13–17 years) from seven public schools in the Rupa-Rupa district (elevation: 649 meters above sea level). The sample was stratified by sex, age, and school. Data were collected using a 49-item questionnaire, which included sections on knowledge (10 items), practices (10 items), and attitudes (13 items) toward oral health, as well as 16 sociodemographic variables. The reliability of the questionnaire was confirmed (KMO \geq 0.537, Bartlett's test: $P < 0.001$, $\omega \geq 0.7$). Multiple linear regression models were used to analyze associations, with significance set at $P < 0.05$, using Jamovi software. **Results:** Correct knowledge regarding oral health was highest for understanding the functions of teeth (speech, chewing), the link between caries and bacteria-sugar interaction, the relationship between gingivitis and gum inflammation, fluoride as a remineralizing agent, and the use of dental floss for cleanliness (73.3%–99.8%). Appropriate oral health practices, such as using an individual toothbrush, replacing it quarterly, and brushing twice a day for 2 minutes (89.8%–99.8%), were associated with being the only child and not having reading difficulties ($P \leq 0.03$). Positive attitudes toward brushing and dental visits for caries and gingivitis prevention were more prevalent in females ($P < 0.001$). Multiple regression analyses revealed that demographic factors explained 21.4% of the variance in oral health knowledge ($F = 2.05$, $P < 0.001$), but had no significant predictive value for oral health practices ($P = 0.127$) or attitudes ($P = 0.230$). Significant predictors of better knowledge included being female ($\beta = 0.3257$, $P = 0.026$), aged 15–17 years ($\beta = 0.6477$ – 0.8246 , $P \leq 0.006$), and having part-time employed parents ($\beta = 0.5097$, $P = 0.007$). Negative associations with knowledge were observed in adolescents with reading difficulties ($\beta = -0.6376$, $P = 0.018$) and comorbidities ($\beta = -0.5405$, $P = 0.031$). **Conclusion:** Factors such as sex, age, sibling position, general health, reading abilities, and parental employment status were found to influence adolescents' oral health knowledge, practices, and attitudes. Clinically, these findings suggest that targeted oral health education programs should consider these demographic factors, especially for adolescents with reading difficulties and comorbidities, to improve oral health outcomes in underserved populations. The results also highlight the need for interventions that

Address for correspondence: Dr. Julissa Amparo Dulanto-Vargas, Universidad Científica del Sur, Panamericana Sur 19, Villa EL Salvador 15067, Perú.
E-mail: jdulanto@cientifica.edu.pe

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Espinoza-Andres KM, Dulanto-Vargas JA, Carranza-Samanez KM. Factors influencing adolescents' knowledge, practices, and attitudes towards oral health in the rupa-rupa district, Peru. *J Int Soc Prevent Communit Dent* 2024;14:469-78.

Access this article online

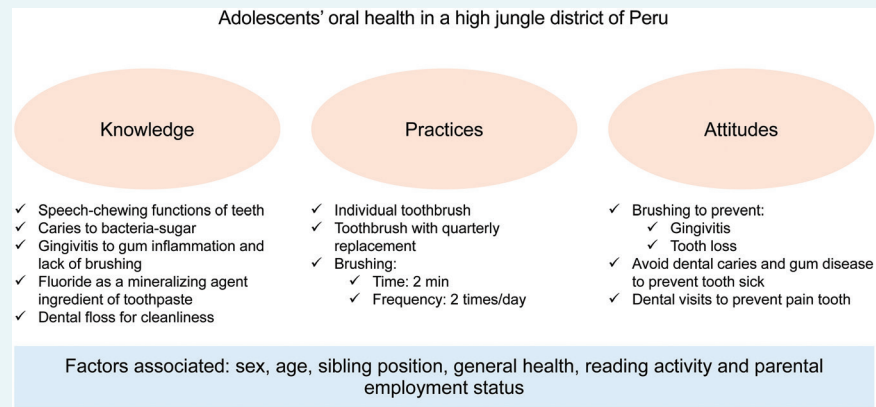
Quick Response Code:



Website: <https://journals.lww.com/jpcd>

DOI: 10.4103/jispcd.jispcd_152_24

emphasize preventive oral health practices, particularly among younger adolescents and those from lower socioeconomic backgrounds.



KEYWORDS: *Adolescents, attitudes, knowledge, oral health, practices*

Received : 22-Aug-2024

Revised : 22-Sep-2024

Accepted : 19-Nov-2024

Published : 27-Dec-2024

INTRODUCTION

Adolescence is a transitional phase of growth and development, which takes place between 10 and 19 years of age according to the World Health Organization and is characterized by rapid biopsychosocial changes and a search for autonomy in decision-making.^[1] Adaptation is crucial in this step toward adulthood,^[2] as inappropriate health behaviors acquired unsupervised can lead to a state of vulnerability.^[3] About 90% of school-going children worldwide present with dental caries, which is more prevalent in Asia and Latin America.^[4]

Adolescents in countries with increasing economic development have multiple determinants of oral health (OH), which affects their quality of life. This results in a high need for dental treatment,^[5] the impact of which on social communication activities and schoolwork has been described previously.^[1,3] This age group is more exposed to oral diseases as they become more independent from parental control. Inadequate oral hygiene practices and consumption of cariogenic foods are frequent causes of dental tissue damage with negative outcomes, such as gingival bleeding and tooth loss.^[6-8]

Some studies evaluating OH in adolescents have recommended assessing social, cultural, and economic conditions.^[4,6] Inequality is defined as unfavorable education, adverse social environment, and lack of access to dental services.^[6] Information regarding the knowledge,^[2,7,9,10] practices,^[2,7,9-12] and attitudes^[2,7,9] of adolescents regarding OH demonstrates the diagnostic basis of oral care^[10] and are influenced by sex, age, socio-economic status, and access to dental care.^[2,10-12]

1. OH education helps prevent occurrence of oral diseases, and thus, it is important to identify which factors affects OH, pertaining to daily life, in order to help in the planning of dental programs in a school setting. Therefore, this study aimed to determine the factors associated with the knowledge, practices, and attitudes of OH (KPA-OH) among adolescents in public schools in an upper jungle district of Peru.

SUBJECTS AND METHODS

STUDY DESIGN AND ETHICAL ASPECTS

This cross-sectional analytical study was approved by the Institutional Research Ethics Committee of the Universidad Científica del Sur (N°083-CIEI-CIENTÍFICA-2022) and was carried out in coherence with the STROBE guideline and the ethical principles of the Declaration of Helsinki. All adolescent participants and their parents provided informed consent.

POPULATION AND SAMPLE

The population included 4439 secondary school children enrolled in 2022 in public schools in the district of Rupa-Rupa in Peru ($n = 7$) (Source: ESCALE, Ministry of Education of Peru). The district of Rupa-Rupa is located in the high jungle at 649 meters above sea level and has a poverty rate of 42.2% (Source: ENAHO 2022, Peru). A non-probabilistic sample comprised 420 adolescents aged 13–17 years of age distributed proportionally by sex, age, and school. Adolescents with the ability to independently and completely answer the questionnaire were included.

Parents of school children who are associated with dentistry and supplied incomplete questionnaires were excluded. The minimum sample size of 406 participants was obtained with G*Power 3.1.9.7, according to the multiple linear regression estimation of a previous pilot study with low effect size (0.059), confidence level (95%), power (90%), and number of predictors ($n = 15$).

PILOT, VALIDATION, AND RELIABILITY

A questionnaire on KPA on OH was subjected to expert judgment by three dentists based on four criteria (clarity, consistency, relevance, and adequacy) rated by levels of compliance (no, low, moderate, and high) with an Aiken V score of 1 (acceptable). The questionnaire was administered to 165 public-school children in a similar district (modular code 1336528). Construct validity was assessed with exploratory factor analysis using the principal component extraction method and varimax rotation for the three variables separately, resulting in an acceptable Kaiser–Meyer–Olkin score ($KMO=0.572–0.883$) and significant in the Bartlett’s test of sphericity ($P = 0.001$). Reliability assessed with McDonald’s omega coefficient was acceptable to good in the pilot study ($\omega=0.654–0.879$).

ADAPTATION AND APPLICATION OF THE INSTRUMENT

The KPA-OH questionnaire [Supplementary Material S1] was developed by adapting information from previous studies^[2,9,12] and selecting 49 questions (Q). Adolescents answered 33 questions in-person at school: 10 on knowledge, 10 on practices, and 13 on attitudes about OH. Parents answered in-person at school ($n = 6$ schools) and remotely at home ($n = 1$ school) regarding the secondary variable data on five demographic, four socio-economic, and seven lifestyle variables. Responses on knowledge and practices were open-ended (Q1, Q2, Q11, Q12, Q16, and Q20) and single or multiple closed-ended (Q3–P10, Q13–P15, and Q17–P19) and on attitudes were expressed with Likert-type responses from strongly disagree (1) to strongly agree (5).

The survey was administered in the second quarter of 2022.

STATISTICAL ANALYSIS

Descriptive statistics included frequency (n), percentage (%), median (Me), interquartile range (IQR), and quartile 1–quartile 3 (Q1–Q3). Inferential statistics included the nonparametric Kruskal–Wallis, Mann–Whitney U test, Spearman correlation, and

Pearson’s chi-square tests. Multiple linear regression models were used to analyze KPA-OH as continuous predictor scores to study associated demographic, socioeconomic, and lifestyle factors. Data were analyzed with IBM-SPSS v.22.0 for Windows (IBM Corp., Armonk, NY, USA) and Jamovi v.2.3.24 (The Jamovi Project) statistical software at a significance level of 0.05.

RESULTS

This study distributed 452 questionnaires, of which 20 were not returned and 12 were incomplete (response rate 92.92%). Demographics about socio-economics and lifestyles are shown in Table 1. Demographic and socioeconomic characteristics of the adolescents included being older/intermediate children (63.8%), from a nuclear/single-parent family (74.1%), from households with $5,02 \pm 1,76$ residents, parents with a secondary education (57.4%), working (76%), no reading difficulties (90.5%), and using social networks (61.4%). Lifestyles involved adolescents with a body mass index of $20,88 \pm 2,78$ kg/m², normal nutritional status (77.6%), night sleep $8,12 \pm 1,13$ h, physical exercise $1,70 \pm 0,97$ h/day, no comorbidity (89.3%), public dental care (55.2%), and previous OH education (50.7%). Among all the characteristics, males were more frequently associated with greater weight ($\uparrow 3.15$ kg) and height ($\uparrow 6$ cm), inadequate nutrition (13.9%), and better parental education level (42%) than females ($P < 0.05$).

KPA-OH scores in adolescents are presented in Figure 1. The median scores for knowledge were 8 (IQR = 7–9), practice 5 (IQR = 5–6), and attitudes 50 (IQR = 46–55) in OH.

Table 2 shows the outcomes of knowledge, practices, and attitudes about OH. Most adolescents had adequate knowledge in identifying the functions of teeth in speech and chewing, relating caries to bacteria and sugar, and gingivitis to gum inflammation and lack of brushing, recognizing fluoride as a mineralizing agent and toothpaste ingredient and flossing to cleaning (73.3 to 99.8%). Appropriate practices were frequent in having an individual toothbrush with replacement every 3 months and brushing 2 min/2 times/day (89.8%–99.8%). Attitudes showed greater agreement with the importance of brushing and visiting the dentist to avoid dental caries and gingivitis.

Table 3 presents the comparison of KPA according to characteristics in adolescents. There were significant associations with OH knowledge and age, employment

Table 1: Demographics about socioeconomics and lifestyles in adolescents

Characteristic demographics		Male (n = 210)		Female (n = 210)		P value‡	Total (n = 420)		P value¥
		n	%	n	%		n	%	
Demographics									
Modular school code	0290759	30	7.1%	30	7.1%	1.000	60	14.3%	1.000
	0575761	30	7.1%	30	7.1%		60	14.3%	
	0812586	30	7.1%	30	7.1%		60	14.3%	
	1,177,492	30	7.1%	30	7.1%		60	14.3%	
	1,311,737	30	7.1%	30	7.1%		60	14.3%	
	1,342,633	30	7.1%	30	7.1%		60	14.3%	
	1,740,125	30	7.1%	30	7.1%		60	14.3%	
Age (years)†		15.00	1.42	15.00	1.42	1.000	15.00	1.42	<0.001*
Age groups	13 years	42	10.0%	42	10.0%	1.000	84	20.0%	1.000
	14 years	42	10.0%	42	10.0%		84	20.0%	
	15 years	42	10.0%	42	10.0%		84	20.0%	
	16 years	42	10.0%	42	10.0%		84	20.0%	
	17 years	42	10.0%	42	10.0%		84	20.0%	
Family structure	Single-parent	76	18.1%	73	17.4%	0.646	149	35.5%	<0.001*
	Binuclear family	19	4.5%	14	3.3%		33	7.9%	
	Nuclear family	81	19.3%	81	19.3%		162	38.6%	
	Extended family	34	8.1%	42	10.0%		76	18.1%	
Number of residents in the household †		5,10	1,76	4,94	1,76	0.410	5,02	1,76	<0.001*
Position in the family	Only child	28	6.7%	23	5.5%	0.562	51	12.1%	<0.001*
	Youngest child	54	12.9%	47	11.2%		101	24.0%	
	Intermediate child	61	14.5%	73	17.4%		134	31.9%	
	Older child	67	16.0%	67	16.0%		134	31.9%	
Socio-economic									
Parental employment status	Does not work	46	11.0%	55	13.1%	0.562	101	24.0%	<0.001*
	Part-time work	97	23.1%	89	21.2%		186	44.3%	
	Full-time work	67	16.0%	66	15.7%		133	31.7%	
Level of parental education	Uneducated	10	2.4%	5	1.2%	0.038*	15	3.6%	<0.001*
	Elementary	24	5.7%	42	10.0%		66	15.7%	
	High School	130	31.0%	111	26.4%		241	57.4%	
	Technical/ senior	46	11.0%	52	12.4%		98	23.3%	
Reading difficulty	No	191	45.5%	189	45.0%	0.740	380	90.5%	<0.001*
	Yes	19	4.5%	21	5.0%		40	9.5%	
Use of social networks	No	83	19.8%	79	18.8%	0.688	162	38.6%	<0.001*
	Yes	127	30.2%	131	31.2%		258	61.4%	
Lifestyles									
Weight (kg)†		53.94	10.18	50.79	8.06	0.001*	52.36	9.31	<0.001*
Height (m)†		1.61	0.09	1.55	0.06	<0.001*	1.58	0.08	<0.001*
BMI (kg/m ²)†		20,76	2,87	21,00	2,69	0.231	20,88	2,78	0.010*
Nutritional status	Underweight	4	1.0%	1	0.2%	0.017*	5	1.2%	<0.001*
	Normal weight	152	36.2%	174	41.4%		326	77.6%	
	Overweight	44	10.5%	33	7.9%		77	18.3%	
	Obesity	10	2.4%	2	0.5%		12	2.9%	
Sleeping hours at night †		8,09	1,09	8,15	1,16	0.585	8,12	1,13	<0.001*
Physical exercise (h/day)†		1,80	1,05	1,61	0,87	0.078	1,70	0,97	<0.001*
Comorbidity	No	185	44.0%	190	45.2%	0.430	375	89.3%	<0.001*
	Yes	25	6.0%	20	4.8%		45	10.7%	
Type of dental care	Public	118	28.1%	114	27.1%	0.695	232	55.2%	0.032*
	Private	92	21.9%	96	22.9%		188	44.8%	
Oral health education information	No	107	25.5%	100	23.8%	0.494	207	49.3%	0.770
	Yes	103	24.5%	110	26.2%		213	50.7%	

SD = standard deviation, BMI = body mass index. †Valued with mean ± SD. ‡Pearson's chi-square or Mann-Whitney *U* test. ¥One-sample chi-square or Kolmogorov-Smirnov test. **P* < 0.05.

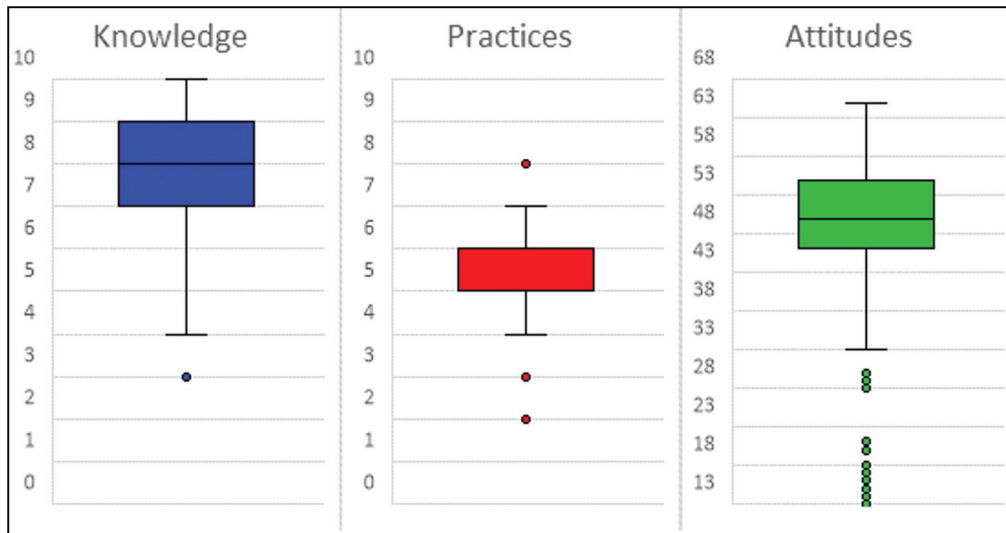


Figure 1: KPA-OH scores in adolescents

Table 2: Outcomes of knowledge, practices, and attitudes about oral health in adolescents

N	Oral health knowledge (n = 420)	Incorrect, n (%)	Correct, n (%)	P value
1	Number of deciduous teeth	311 (74.0%)	109 (26.0%)	<0.001*
2	Number of permanent teeth	267 (63.6%)	153 (36.4%)	<0.001*
3	Functions of teeth	1 (0.2%)	419 (99.8%)	<0.001*
4	Cause of tooth decay	34 (8.1%)	386 (91.9%)	<0.001*
5	Risk of tooth decay	19 (4.5%)	401 (95.5%)	<0.001*
6	Definition of gingivitis	79 (18.8%)	341 (81.2%)	<0.001*
7	Cause of gingivitis	29 (6.9%)	391 (93.1%)	<0.001*
8	Importance of dental fluoride	112 (26.7%)	308 (73.3%)	<0.001*
9	Supply of dental fluoride	69 (16.4%)	351 (83.6%)	<0.001*
10	Flossing	69 (16.4%)	351 (83.6%)	<0.001*
	Oral health practices (n = 420)	Inappropriate, n (%)	Appropriate, n (%)	
1	Number of times related to tooth brushing per day	20 (4.8%)	400 (95.2%)	<0.001*
2	Tooth brushing time in minutes	43 (10.2%)	377 (89.8%)	<0.001*
3	Oral hygiene products	339 (80.7%)	81 (19.3%)	<0.001*
4	Amount of the toothpaste applied	277 (66.0%)	143 (34.0%)	<0.001*
5	Tooth brushing technique	409 (97.4%)	11 (2.6%)	<0.001*
6	Toothbrush replacement	38 (9.0%)	382 (91.0%)	<0.001*
7	Frequent tooth brushing time	249 (59.3%)	171 (40.7%)	<0.001*
8	Individual toothbrush	1 (0.2%)	419 (99.8%)	<0.001*
9	Daily frequency of consumption of free sugars	350 (83.3%)	70 (16.7%)	<0.001*
10	Frequency of dental visits	209 (49.8%)	211 (50.2%)	0.922
	Oral health attitudes (n = 420)	Me	(Q1–Q3)	
1	Dental hygiene to prevent tooth decay	5	(4–5)	<0.001*
2	Dental hygiene to prevent gingivitis	4	(4–5)	<0.001*
3	Dental caries as a disease	4	(4–5)	<0.001*
4	Dental caries associated with tooth loss	4	(4–5)	<0.001*
5	Dental caries associated with wellbeing	4	(3–5)	<0.001*
6	Dental caries as a disease Tooth decay as a disease	4	(3–5)	<0.001*
7	Sugary foods associated with tooth decay	4	(3–5)	<0.001*
8	Healthy eating in schools	3	(3–4)	<0.001*
9	Caries lesion due to sugary diet	4	(3–5)	<0.001*
10	Importance of frequency of dental visits	4	(3–4)	<0.001*
11	Dental brushing to prevent bleeding gums	4	(3–4)	<0.001*
12	Flossing to prevent disease	4	(3–4)	<0.001*
13	Preventive importance of dental visits	4	(4–5)	<0.001*

Me: median. Q1: quartile 1. Q3: quartile 3. Knowledge and practices with scores from 0 to 10. Attitudes with scores from 13 to 65 (1. strongly disagree, 2. disagree, 3. neither agree nor disagree, 4. agree, and 5. strongly agree). One-sample chi-square or Kolmogorov–Smirnov test. *P < 0.05.

Table 3: Comparison of knowledge, practices, and attitudes according to characteristics in adolescents

Demographics (n = 420)		Knowledge score		Practice scores		Attitude score	
		Me (Q1–Q3)	P value	Me (Q1–Q3)	P value	Me (Q1–Q3)	P value
Sex	Male	8 (6–9)	0.065	5 (5–6)	0.55	48 (44–54)	<0.001*
	Female	8 (7–9)		5 (4–6)		51 (47–56)	
Age		rho=0.184	<0.001*	rho=-0.020	0.679	rho=0.033	0.494
Age groups	13 years	8 (6–8)a	0.003*	5 (5–6)	0.403	51 (45–57)	0.729
	14 years	8 (6–8)a		5 (5–7)		49 (45–55)	
	15 years	8 (7–9)b		5 (5–6)		50 (46–55)	
	16 years	8 (7–9)b		5 (4–6)		51 (47–55)	
	17 years	8 (7–9)b		5 (5–6)		51 (47–54)	
Family structure	Single - parent	8 (7–9)	0.072	5 (5–6)	0.916	51 (46–56)	0.349
	Binuclear family	7 (7–8)		5 (5–6)		48 (44–56)	
	Nuclear family	8 (7–9)		5 (5–6)		50 (45–54)	
	Extended family	8 (6–8)		5 (4–6)		51 (46–55)	
Number of residents in the household		rho=0.007	0.889	rho=0.05	0.305	rho=-0.053	0.278
Position in the family	Only child	8 (7–9)	0.758	6 (5–7)a	0.030*	50 (45–56)	0.881
	Youngest child	8 (7–9)		5 (5–6)ab		50 (46–54)	
	Intermediate child	8 (7–8)		6 (5–6)a		51 (45–56)	
	Older child	8 (7–9)		5 (4–6)b		50 (46–55)	
Parental employment status	Does not work	8 (7–9)a	0.047*	5 (5–6)	0.833	51 (46–55)	0.676
	Part-time work	8 (7–9)a		5 (5–6)		50 (45–54)	
	Full-time work	8 (7–8)b		5 (4–6)		50 (46–56)	
Level of parental education	Uneducated	7 (6–8)	0.33	6 (5–6)	0.193	49 (41–60)	0.137
	Elementary	8 (7–9)		5 (5–6)		50 (46–55)	
	High School	8 (7–9)		5 (4–6)		50 (45–54)	
	Technical/ senior	8 (7–8)		6 (5–6)		52 (47–56)	
Reading difficulty	No	8 (7–9)	0.001*	5 (5–6)	0.001*	50 (46–55)	0.569
	Yes	7 (5–8)		5 (4–5)		50 (44–55)	
Use of social networks	No	8 (6–9)	0.14	5 (5–6)	0.519	50 (46–56)	0.868
	Yes	8 (7–9)		5 (5–6)		51 (46–54)	
BMI		rho=0.062	0.202	-0.064	0.192	-0.017	0.723
Nutritional status	Underweight	8 (8–8)	0.848	5 (5–6)	0.363	50 (49–53)	0.478
	Normal weight	8 (7–9)		5 (5–6)		51 (46–55)	
	Overweight	8 (7–9)		5 (5–7)		50 (45–54)	
	Obesity	8 (7–9)		5 (4–6)		48 (45–52)	
Sleeping hours at night		rho=0.051	0.302	rho=-0.013	0.785	rho=<0.001	0.992
Physical exercise per day		rho=-0.019	0.703	rho=0.008	0.878	rho=-0.001	0.978
Comorbidity	No	8 (7–9)	0.012*	5 (5–6)	0.195	50 (46–55)	0.928
	Yes	7 (6–8)		5 (4–6)		50 (46–54)	
Type of dental care	Public	8 (7–9)	0.155	5 (5–6)	0.648	51 (46–55)	0.623
	Private	8 (7–9)		5 (5–6)		50 (45–55)	
Oral health education information	No	8 (7–9)	0.336	5 (5–6)	0.782	50 (45–55)	0.353
	Yes	8 (7–9)		5 (4–6)		51 (46–55)	

Me: median. Q1: quartile 1. Q3: quartile 3. Different letters indicate significant differences. Mann–Whitney *U* test or Kruskal–Wallis or Spearman correlation. * $P < 0.05$.

status, reading difficulty and comorbidity ($P \leq 0.047$), OH practices with family position and reading difficulty ($P = 0.001$ to 0.03), and attitudes with sex ($P < 0.001$).

Multiple linear regression of predictors of KPA in adolescents are shown in Table 4. The multiple regression models were significant with an independent variance explanation of 21.4% in OH knowledge

($F = 2.05$; $P < 0.001$), but not in OH practices ($F = 1.25$; $P = 0.127$), or OH attitudes ($F = 1.16$; $P = 0.230$). Significant predictors of OH knowledge was positive for females ($\beta = 0.3257$; $P = 0.026$), 15–17 years ($\beta = 0.6477$ – 0.8246 ; $P \leq 0.006$), and part-time parental work ($\beta = 0.5097$; $P = 0.007$), and negative for reading difficulty ($\beta = -0.6376$; $P = 0.018$) and comorbidity ($\beta = -0.5405$; $P = 0.031$).

Table 4: Multiple linear regression of predictors of knowledge, practices, and attitudes in adolescents

Predictor	Knowledge ($R^2 = 0.214$, $F = 2.05$, $P < 0.001^*$)			Practices ($R^2 = 0.142$, $F = 1.25$, $P = 0.127$)			Attitudes ($R^2 = 0.133$, $F = 1.16$, $P = 0.230$)		
	B	SE	P value	B	SE	P value	B	SE	P value
	Intercept ^a	46.526	1.213	<0.001*	410.924	1.039	<0.001*	404.376	7.112
Sex: Ref, Male									
Female	0.3257	0.146	0.026*	0.07982	0.125	0.524	27.972	0.856	0.001*
Age: Ref, 13 years									
14 years	0.1819	0.231	0.432	0.16336	0.198	0.410	-0.5728	1.356	0.673
15 years	0.6447	0.234	0.006*	0.13257	0.200	0.508	-0.0796	1.369	0.954
16 years	0.8246	0.243	<0.001*	-0.30822	0.208	0.139	-0.1910	1.424	0.893
17 years	0.7870	0.238	0.001*	0.12851	0.203	0.528	0.2391	1.393	0.864
Family structure: Ref, nuclear family									
Single-parent	0.1870	0.177	0.290	-0.11869	0.151	0.433	0.1483	1.036	0.886
Binuclear family	-0.2728	0.290	0.348	-0.03933	0.249	0.874	-0.2178	1.702	0.898
Extended family	-0.2326	0.208	0.264	-0.12033	0.178	0.500	0.2498	1.220	0.838
No. of residents in the household: Ref, 1 member									
2 members	0.6289	1.089	0.564	124.887	0.933	0.181	67.488	6.387	0.291
3 members	10.063	1.065	0.345	0.88045	0.912	0.335	100.581	6.246	0.108
4 members	12.956	1.061	0.223	0.96847	0.909	0.287	82.621	6.224	0.185
5 members	16.088	1.056	0.128	0.89467	0.904	0.323	100.651	6.190	0.105
6 members	12.586	1.062	0.237	0.93827	0.910	0.303	84.230	6.230	0.177
7 members	0.9801	1.082	0.365	135.125	0.926	0.145	71.940	6.342	0.257
8 members	10.486	1.102	0.342	108.729	0.943	0.250	81.155	6.460	0.210
9 members	21.244	1.385	0.126	169.420	1.186	0.154	36.524	8.124	0.653
10 members	17.394	1.218	0.154	0.24919	1.043	0.811	154.552	7.139	0.031*
11 members	25.240	1.784	0.158	333.041	1.527	0.030*	38.823	10.460	0.711
12 members	-18.683	1.827	0.307	256.851	1.565	0.102	-13.653	10.715	0.899
13 members	13.960	1.783	0.434	0.62990	1.526	0.680	99.697	10.452	0.341
14 members	0.0311	1.944	0.987	0.46408	1.664	0.781	239.474	11.397	0.036*
Position in family: Ref, only child									
Youngest child	-0.1246	0.275	0.651	-0.29021	0.235	0.218	-10.091	1.612	0.532
Intermediate child	-0.3161	0.273	0.247	-0.11149	0.233	0.633	-0.7322	1.598	0.647
Older child	-0.3677	0.278	0.186	-0.40234	0.238	0.092	0.1044	1.628	0.949
Employment status: Ref, Not working or housewife									
Part-time work	0.5097	0.186	0.007*	-0.14848	0.160	0.353	-0.8966	1.092	0.412
Full-time work	0.0731	0.200	0.715	-0.17484	0.172	0.309	-17.759	1.175	0.132
Level of education: Ref, no education									
Elementary	0.5717	0.433	0.188	-0.23177	0.371	0.533	-0.2262	2.542	0.929
High School	0.5512	0.392	0.160	-0.36484	0.336	0.278	-0.0662	2.298	0.977
Technical/ senior	0.4656	0.407	0.254	-0.13016	0.349	0.709	23.012	2.388	0.336
Reading difficulty: ref. no									
Yes	-0.6376	0.268	0.018*	-0.58856	0.230	0.011*	0.3438	1.573	0.827
Social media use: Ref, no									
Yes	0.1598	0.150	0.288	0.08087	0.129	0.530	0.0506	0.881	0.954
Nutritional status: Ref, Normal weight									
Overweight	0.4032	0.662	0.543	-0.32170	0.567	0.571	0.8398	3.885	0.829
Overweight	0.1994	0.197	0.311	0.04059	0.168	0.810	-0.3121	1.153	0.787
Obesity	0.3944	0.460	0.392	-0.80744	0.394	0.041*	-32.832	2.699	0.225
Sleeping hours at night: Ref, 5 h									
6 h	0.0659	0.590	0.911	154.140	0.505	0.002*	-0.8167	3.458	0.813
7 h	0.3334	0.485	0.492	0.92259	0.415	0.027*	27.439	2.843	0.335
8 h	0.3413	0.446	0.445	0.95620	0.382	0.013*	0.3488	2.616	0.894
9 h	0.6269	0.484	0.196	103.937	0.415	0.013*	0.0762	2.841	0.979
10 h	0.2771	0.507	0.585	108.176	0.434	0.013*	23.548	2.970	0.428
11 h	0.7295	0.670	0.277	102.923	0.574	0.074*	-17.866	3.927	0.649

Table 4. Continued

Predictor	Knowledge ($R^2 = 0.214$, $F = 2.05$, $P < 0.001^*$)			Practices ($R^2 = 0.142$, $F = 1.25$, $P = 0.127$)			Attitudes ($R^2 = 0.133$, $F = 1.16$, $P = 0.230$)		
	B	SE	P value	B	SE	P value	B	SE	P value
12 h	0.9840	0.852	0.249	0.19291	0.730	0.792	-14.240	4.995	0.776
Physical exercise per day: Ref, 1 h									
2 h	-0.0341	0.174	0.845	0.09526	0.149	0.524	0.1177	1.022	0.908
3 h	-0.1835	0.218	0.400	0.00171	0.187	0.993	0.4761	1.277	0.710
4 h	0.6008	0.402	0.135	0.06025	0.344	0.861	20.261	2.354	0.390
5 h	-0.6749	0.609	0.269	-0.53599	0.522	0.305	-18.068	3.573	0.613
6 h	-0.8359	1.024	0.415	0.27550	0.877	0.754	-149.603	6.006	0.013*
Comorbidity: Ref, no									
Yes	-0.5405	0.250	0.031*	-0.05826	0.214	0.786	0.0193	1.467	0.990
Type of dental care: Ref, public									
Private	0.1486	0.148	0.317	0.03504	0.127	0.783	-0.5219	0.870	0.549
Oral health education information: Ref, no									
Yes	0.2233	0.146	0.127	-0.04658	0.125	0.709	-0.7864	0.855	0.358

Reference variable ref. B. standardized coefficients. SE. standard error. R^2 . Coefficient of determination. * $P < 0.05$.

DISCUSSION

Peru is a developing country, where oral health problems have been observed in children,^[5,13] with less than 13% of children visiting a dentist.^[14] Unfortunately, this is observed in an economically disadvantaged family in the context of OH.^[2] This study included a representative survey of adolescents from all public schools in a district in the upper central jungle of Peru. Multivariate analysis showed that higher OH knowledge was related to females, older age, without comorbidity or reading difficulties, and having parents with part-time jobs, while bivariate model analysis showed better practices in only children and without reading difficulties and better attitudes in women.

The KPA-OH questionnaire used in this study passed the validity and reliability process and was applied in-person at schools, avoiding technological interference or interference from family members in its performance. Due to the age of the participants, the answers to the knowledge questionnaire were asked by avoiding yes/no and rather giving more difficulty with three alternatives. The items on practices and attitudes were developed with an exhaustive literature search, allowing assessment of what school children do and what they think.

Most of the adolescents in this study had high knowledge scores, in line with populations from Saudi Arabia,^[10,15] China,^[16] India,^[17] Nepal,^[18] Portugal, Romania, Sweden,^[19] Qatar,^[4] and Yemen,^[20] but differed from results described in Bangladesh,^[9] India,^[21] and Nigeria.^[2] As in other studies, the adolescents identified dental function with speech and

chewing,^[4,10] associations of dental caries with bacteria and sugar^[4,10,16,19,20] and gingivitis to inflamed gums and lack of brushing,^[4,8,10,16,20] recognized fluoride as a mineralizer and toothpaste ingredient,^[19] and the association of dental flossing to oral cleanliness.^[4,8,20]

The adequate knowledge found in this study represents a strength for OH education that schools should help maintain. However, similar to previous studies, this result in adolescents had positive predictors for females,^[2,22] those of older age,^[18] and parents working part-time and negative predictors for comorbidity^[23] and reading difficulty.^[3] Learning about OH is an ongoing process but should be initiated early in both sexes equally and be reinforced by teachers in the face of health or reading adversity.^[3,4] In this scenario, the role of parents is also important. Although the economic situation is relevant, the quality of the time they provide toward their children's learning is also important.^[3,23,24]

The intermediate OH practice scores found in this study were similar to those observed in populations in China,^[16] India,^[17] Nepal,^[18] and Pakistan,^[25] but higher than those in Iranian^[12] and Nigerian populations.^[2] Similar to other studies, our results were enhanced by use of individual toothbrushes with quarterly replacement^[18,26] and performed at the appropriate time and frequency,^[9,27] but weakened by inadequate brushing techniques, amount of toothpaste, products, or timing of application,^[18,26] failure to avoid cariogenic foods,^[18,28] or failure to visit the dentist.^[18,28]

In this study, few adolescents were only children or had reading difficulties, yet these factors were associated with OH practices. It is likely that their majority status as

older children lessens OH care by parents.^[3,4] Likewise, reading problems restrict the ability of adolescents to move from theory to practice, a neurobiological process not unrelated to OH education.^[29] Clearly, literacy gaps would indicate an inability to comprehend information about care to maintain good health.^[3]

The OH attitudes found were acceptable, as in previous studies,^[12,15,16,19] valuing dental hygiene and visits to the dentist to prevent caries, gingivitis, and tooth loss.^[2,7,12] However, they were indifferent to unhealthy foods,^[7] reflecting the lack of protection, in Peru, of laws restricting access to sugary foods in the school environment. On the other hand, women had better attitudes in OH probably due to their greater esthetic motivation for oral care.^[2,16,18,22]

Our results expose the strengths and weaknesses of KPA-OH in adolescents in a public-school setting where although knowledge and attitudes were acceptable, practices were not adequate. This result was consistent with those of some previous studies,^[12,18,22] with the limitation that only half of the samples in this study reported visiting public dental care clinics or having received information on OH in the last 6 months. This reflects that promoting public health in countries does not always result in well-developed OH programs. According to the literature, a simple intervention is not conclusive in obtaining population change, in contrast to the effectiveness of interventions on OH care behaviors and preventive treatments.^[8,9,30]

Previous studies included participants aged 13 to 17 years, like in the present study; however, many participants were younger than 10 to 12 years^[2,4,7,9,10,15-19,25] or older than 18 to 21 years.^[2,15,19,20] Most backgrounds surveyed adolescents from public schools,^[2,4,7,9,12,15-17,20-22,25] compared to private^[4,15,18,19,21] and semi-governmental schools.^[9,10] These differences could limit comparisons with the results of this study.

The results of this study were representative of the population of Peruvian adolescents in public schools of both sexes and ages 13–17 years from a district in the upper central jungle of Peru. However, these results do not reflect data from a private-school setting that may have different social characteristics. Despite the multivariate designs applied, the cross-sectional design represents a limitation to the dynamism over time of the variables.

CONCLUSIONS

Within the limitations of this study, it was concluded that higher knowledge of OH among adolescents was

associated with females, older age, no comorbidity or reading difficulties, and parents working part-time. Better practices were associated with only children and no reading difficulties, while better attitudes were associated with females.

ACKNOWLEDGEMENT

The authors express their gratitude to Licencees Agustin Pachas, Carito Ríos, Madeley Flores, Gilmer Chuquiyaury, Fernando Portilla, Humberto Lanares y Vilma Venancio (UGEL Leoncio Prado) for their support for obtaining authorizations in the schools.

FINANCIAL SUPPORT AND SPONSORSHIP

JADV and KMCS were supported by Universidad Científica del Sur (RD N°008-DGIDI-CIENTÍFICA-2024). The institution had no influence on the outcomes of the research.

CONFLICTS OF INTEREST

There are no conflicts of interest.

AUTHORS CONTRIBUTIONS

KMEA wrote the manuscript and performed the data collection in compliance with the requirements for a professional degree in Peru. JADV and KMCS contributed to the concepts, study design, statistical analysis and review and editing of the manuscript. All authors gave their final approval the manuscript.

ETHICAL POLICY AND INSTITUTIONAL REVIEW BOARD STATEMENT

Institutional Research Ethics Committee of the Universidad—Peru reviewed and approved this work (N°083-CIEI-CIENTÍFICA-2022).

PATIENT DECLARATION OF CONSENT

All study participants accepted and signed the informed consent.

DATA AVAILABILITY STATEMENT

Data are available upon request.

REFERENCES

1. Pazos CTC, Austregésilo SC, Goes PSA. Self-esteem and oral health behavior in adolescents. *Cien Saude Colet* 2019;24:4083-92.
2. Lawal FB, Oke GA. Clinical and sociodemographic factors associated with oral health knowledge, attitude, and practices of adolescents in Nigeria. *SAGE Open Med* 2020;8:2050312120951066.
3. Lopes RT, Neves EB, Dutra LDC, Gomes MC, Paiva SM, Abreu MHNG, *et al.* Socioeconomic status and family functioning influence oral health literacy among adolescents. *Rev Saude Publica* 2020;54:30.
4. Al-Darwish MS. Oral health knowledge, behaviour and practices among school children in Qatar. *Dental research journal* 2016;13:342-53.
5. Horton M, Zolfaghari S, Bernabé E, Andrews L, Alarcón J, Echevarría M, *et al.* An assessment of pediatric dental caries

- and family quality of life in an informal Amazonian community. *Ann Glob Health* 2021;87:87.
6. Knorst JK, Sfredo CS, Meira GF, Zanatta FB, Vettore MV, Ardenghi TM. Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis. *Community Dent Oral Epidemiol* 2021;49:95-102.
 7. Zhang M, Lan J, Zhang T, Sun W, Liu P, Wang Z. Oral health and caries/gingivitis-associated factors of adolescents aged 12-15 in Shandong province, China: A cross-sectional oral health survey. *BMC Oral Health* 2021;21:288.
 8. Diamanti I, Berdouses ED, Kavvadia K, Arapostathis KN, Polychronopoulou A, Oulis CJ. Oral hygiene and periodontal condition of 12- and 15-year-old Greek adolescents. Socio-behavioural risk indicators, self-rated oral health and changes in 10 years. *Eur J Paediatr Dent* 2021;22:98-106.
 9. Haque SE, Rahman M, Itsuko K, Mutahara M, Kayako S, Tsutsumi A, *et al.* Effect of a school-based oral health education in preventing untreated dental caries and increasing knowledge, attitude, and practices among adolescents in Bangladesh. *BMC Oral Health* 2016;16:44.
 10. Al-Qahtani SM, Razak PA, Khan SD. Knowledge and practice of preventive measures for oral health care among male intermediate schoolchildren in Abha, Saudi Arabia. *Int J Environ Res Public Health* 2020;17:703.
 11. Mayze L, Pawlak J, Rogers M, Smith M. Oral health of adolescents in the Colac-Otway Shire. *Aust J Rural Health* 2019;27:93-8.
 12. Rad M, Shahravan A, Haghdoost AA. Effective factors on oral health behaviors of 12-year-old children in cities and villages of Iran: A path analysis. *J Dent (Shiraz)* 2018;19:225-31.
 13. Pulache J, Abanto J, Oliveira LB, Bönecker M, Porras JC. Exploring the association between oral health problems and oral health-related quality of life in Peruvian 11- to 14-year-old children. *Int J Paediatr Dent* 2016;26:81-90.
 14. Hernández-Vásquez A, Bendezu-Quispe G, Azañedo D, Santero M. Use of oral health care services in Peru: Trends of socioeconomic inequalities before and after the implementation of Universal Health Assurance. *BMC Oral Health* 2019;19:1-10.
 15. AlSubait AA, Alousaimi M, Geeverghese A, Ali A, El Metwally A. Oral health knowledge, attitude and behavior among students of age 10–18 years old attending Jenadriyah festival Riyadh; a cross-sectional study. *Saudi J Dent Res* 2016;7:45-50.
 16. Deng L, Yang ZY, Cai T, Li YH, Lü XY, Ding XB, *et al.* Investigation of oral health knowledge, attitude, behavior of 12-15 years old children in Chongqing. *Hua Xi Kou Qiang Yi Xue Za Zhi* 2020;38:42-7.
 17. Jebaraj S, Sakthi S, Sathiyawathie RS. Oral health attitudes, behavior, and knowledge among 10–15-year-old school children in Chennai. *Drug Invention Today* 2019;12:601-5.
 18. Silwal S, Uprety P. Assessment of oral health knowledge, attitude and practice among school children in Kathmandu Metropolitan City, Nepal. *RRJoST* 2019;8:1-10.
 19. Graça SR, Albuquerque TS, Luis HS, Assunção VA, Malmqvist S, Cuculescu M, *et al.* Oral health knowledge, perceptions, and habits of adolescents from Portugal, Romania, and Sweden: A comparative study. *J Int Soc Prev Community Dent* 2019;9:470-80.
 20. Al-Tayar BA, Ahmad A, Sinor MZ, Harun MH. Oral health knowledge, attitude, and practices among Yemeni school students. *J Int Oral Health* 2019;11:15-20.
 21. Nagarajappa R, Naik D, Ramesh G. Sources of oral health information and its relationship on knowledge among Indian adolescents. *Pesqui Bras Odontopediatria Clín Integr* 2021;21:e0099.
 22. Abdulrahim M, AlKandari M, Alomari Q, Baskaradoss JK. Oral health knowledge, attitude and practice among adolescents in Kuwait. *Int J Adolesc Med Health* 2020;34:437-42.
 23. Camacho-Thompson DE, Gillen-O'Neel C, Gonzales NA, Fuligni AJ. Financial strain, major family life events, and parental academic involvement during adolescence. *J Youth Adolesc* 2016;45:1065-74.
 24. Vallés A, Lluch C, Munné C, Veloso A, Paglia L, Guinot F. Comparison of knowledge between Italian and Spanish parents about the oral health of their preschool children. *Eur J Paediatr Dent* 2022;23:194-200.
 25. Ali MS, Hussain T, Ara G, Zehra N. Oral health awareness and practices of school going children aged 11 to 16 years in a squatter settlement of Karachi. *J Dow Univ Health Sci* 2015;9:71-5.
 26. Tortora G, Farronato M, Gaffuri F, Carloni P, Occhipinti C, Tucci M, *et al.* Survey of oral hygiene habits and knowledge among school children: A cross-sectional study from Italy. *Eur J Paediatr Dent* 2023;24:194 - 200.
 27. Dag H, Fenercioglu AK, Ozyildiz EA, Karınca H, Can G, Karatekin G. Knowledge and attitudes towards oral and dental health among seventh and eighth grade students compared with their teeth examination. *Eur J Paediatr Dent* 2021;22:199-203.
 28. Castro-Cabrera S, Calle-Prado M. Relación entre el número de cepillados por día y la autopercepción periodontal en escolares ecuatorianos de 12 años. *Rev Cient Odontol (Lima)* 2021;9:e044.
 29. Larsen B, Luna B. Adolescence as a neurobiological critical period for the development of higher-order cognition. *Neurosci Biobehav Rev* 2018;94:179-95.
 30. Xiang B, Wong HM, Perfecto AP, McGrath CPJ. The effectiveness of behavioral interventions to improve oral health in adolescents at different periods of follow-up: A systematic review and meta-analysis. *Patient Educ Couns* 2020;103:725-33.


SUPPLEMENTARY MATERIALS: KNOWLEDGE, PRACTICE, AND ATTITUDES ON ORAL HEALTH (KPA-OH) SURVEY USED IN THIS STUDY (ENGLISH AND SPANISH VERSION).

QUESTIONNAIRE

Oral Health Knowledge

1. How many teeth do children have?:.....
.....(20 teeth)
2. How many teeth do adults have?:.....
...(32 teeth)
3. Why are teeth important?
 To be able to think and read
 To be able to smell and breathe
 To be able to talk and chew
4. What is tooth decay?
 It is when bacteria attack your teeth
 It is when a worm damages your teeth
 It is when teeth break
5. Why does tooth decay occur?
 Eating calcium-rich foods
 Eating too many sugary foods
 Brushing my teeth
6. What is gingivitis?
 It is an inflammation of the lips
 Gingivitis is an inflammation of the gums
 It is a sore throat
7. What causes gingivitis?
 When they do not brush their teeth
 When they take lozenges
 When they drink coffee or tea
8. What is dental fluoride for?
 I don't know what fluoride is.
 It strengthens teeth and prevents tooth decay
 Crumbles and breaks down my teeth
9. Which of the alternatives contains fluoride?
 Soft drinks
 Biscuits
 Toothpaste
10. Which of the alternatives can be used to remove food debris between teeth?
 Fingernails
 Dental floss
 Toothpicks or toothpicks oral health knowledge

Oral health practices

11. How many times a day do you brush your teeth?:.....(Appropriate from 2)
12. How many minutes does it take you to brush your teeth?:.....(Appropriate from 2)
13. What do you use to clean your teeth? (You can check several) (Appropriate at least toothbrush and toothpaste) (Appropriate at least toothbrush and toothpaste)
 Toothbrush
 Toothpaste
 Dental floss
14. How much toothpaste do you use for your toothbrushing? (See reference image)

 A pea
 Half of the bristles
 Total bristles
15. How do you brush your teeth? (You can check several) (Appropriate at least upright and rounded)
 Left to right/ right to left
 From top to bottom/ bottom to top
 Rounded
16. How often do you change your toothbrush?.....
(Appropriate up to 3 months)
17. What is the brushing time that you always do? (You can check several) (Appropriate for at least two meals)
 After breakfast
 After lunch
 After dinner
18. With whom do you share your toothbrush?
(Appropriate individual use)
 Only I use it
 With my siblings
 With my parents
19. How often do you consume foods containing sugar (sweets, snacks, sweets, biscuits, soft drinks, industrial juices) on a daily basis?
 I do not consume these foods
 Once at day
 Two or more times at day
20. How many months ago did you go to the dentist?.....(Appropriate up to 6 months ago)

Attitude in Oral Health					
Questions	Strongly disagree	Disagree	Neutral	Agree	I fully agree
21.If I don't brush my teeth, my teeth can get sick with tooth decay.					
22.If I don't brush my teeth, my gums can get sick.					
23.If I have tooth decay, it will cause severe pain and I will get sick.					
24.If I have tooth decay or gum disease, my teeth may become weak or fall out.					
25.If I have tooth decay or gum disease, it will affect my appearance.					
26.If I don't eat sweet foods, it will help prevent tooth decay.					
27.If I don't drink sweet drinks, it will help prevent tooth decay.					
28.No sweet foods or drinks should be sold at school.					
29.If I eat sweet things, my teeth will have holes in them.					
30.If I visit the dentist at least twice a year, I will prevent my teeth from getting sick.					
31.If I brush my teeth, my gums won't bleed.					
32.If I floss, my teeth won't get sick.					
33.If I visit the dentist, I will avoid getting a toothache.					

CUESTIONARIO

Conocimientos en salud oral

- ¿Cuántos dientes tienen los niños?:
.....(20 dientes)
- ¿Cuántos dientes tienen los adultos?:
.....(32 dientes)
- ¿Por qué son importantes los dientes?
 - Para poder pensar y leer
 - Para poder oler y respirar
 - Para poder hablar y masticar
- ¿Qué es la caries dental?
 - Es cuando una bacteria ataca los dientes
 - Es cuando un gusano daña los dientes
 - Es cuando se rompen los dientes
- ¿Por qué aparece la caries dental?
 - Por comer alimentos ricos en calcio
 - Por comer demasiados alimentos azucarados
 - Por lavarme los dientes
- ¿Qué es la gingivitis?
 - Es una inflamación de los labios
 - Es una inflamación de las encías
 - Es un dolor de garganta
- ¿Qué causa la gingivitis?
 - Cuando no se lavan los dientes
 - Cuando toman pastillas
 - Cuando toman café o té
- ¿Para qué sirve el flúor dental?
 - No conozco ni sé qué es flúor
 - Fortalece los dientes y previene la caries
 - Desmorona y rompe mis dientes
- ¿Cuál de las alternativas contiene flúor?
 - Gaseosas
 - Galletas
 - Pastas dentales
- ¿Cuál de las alternativas sirve para retirar los restos de comidas entre los dientes?
 - Las uñas de las manos
 - Hilo dental
 - Palillos o mondadientes

Attitude in Oral Health					
Questions	Strongly disagree	Disagree	Neutral	Agree	I fully agree
21.If I don't brush my teeth, my teeth can get sick with tooth decay.					
22.If I don't brush my teeth, my gums can get sick.					
23.If I have tooth decay, it will cause severe pain and I will get sick.					
24.If I have tooth decay or gum disease, my teeth may become weak or fall out.					
25.If I have tooth decay or gum disease, it will affect my appearance.					
26.If I don't eat sweet foods, it will help prevent tooth decay.					
27.If I don't drink sweet drinks, it will help prevent tooth decay.					
28.No sweet foods or drinks should be sold at school.					
29.If I eat sweet things, my teeth will have holes in them.					
30.If I visit the dentist at least twice a year, I will prevent my teeth from getting sick.					
31.If I brush my teeth, my gums won't bleed.					
32.If I floss, my teeth won't get sick.					
33.If I visit the dentist, I will avoid getting a toothache.					

Prácticas en salud oral

- 11. ¿Cuántas veces al día te cepillas tus dientes?: (Apropiada a partir de 2)
- 12. ¿Cuántos minutos te demoras en cepillarte tus dientes?:(Apropiada a partir de 2)
- 13. ¿Qué usas para limpiarte los dientes? (Puede marcar varios) (Apropiada por lo menos cepillo y pasta dental)
 - Cepillo de dientes
 - Pasta dental
 - Hilo dental
- 14. ¿Qué cantidad de pasta dental utilizas para tu cepillado? (Ver imagen referencial)



- De una arveja
- Mitad de las cerdas
- Total de las cerdas
- 15. ¿Cómo te cepillas los dientes? (Puede marcar varios) (Apropiado por lo menos vertical y redondeado)
 - De izquierda a derecha/ de derecha a izquierda
 - De arriba abajo/ de abajo a arriba

Redondeado

- 16. ¿Cada cuántos meses cambias tu cepillo de dientes?:(Apropiada hasta 3 meses)
- 17. ¿Cuál es el momento de cepillado que siempre realizas? (Puede marcar varios) (Apropiada por lo menos dos comidas)
 - Después del desayuno
 - Después del almuerzo
 - Después de la cena
- 18. ¿Con quién compartes tu cepillo de dientes? (Apropiada uso individual)
 - Solo yo lo uso
 - Con mis hermanos
 - Con mis padres
- 19. ¿Con qué frecuencia diaria consumes alimentos que contengan azúcar (golosinas, snacks, dulces, galletas, gaseosas, zumos industriales)?
 - No consumo esos alimentos
 - Una vez por día
 - Dos o más veces por día
- 20. ¿Hace cuántos meses fuiste al odontólogo?: (Apropiada hasta hace 6 meses)