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The Association Between Tooth Brushing and Gum Disease Through the National Health and Nutrition Survey

Hee Ja Na^{*}

Abstract

Objective: This study analyses the relationship between brushing and gum disease using the 8th KNHANES data of the Korea Centres for Disease Control and Prevention and provides basic data when establishing national policies in the future.

Methods: This study period is from March 1 to 30, 2023. It was conducted using raw data from the National Health and Nutrition Survey (KNHANES) by the Korea Centres for Disease Control and Prevention, and all household members aged 1 and 80 who meet the appropriate household members requirements in the sample survey were selected as subjects. The subjects of Deputy Professor, Department of Dental Hygiene, Honam University School of Health, and Science, Gwangsan-gu, Gwangju, Republic of Korea

*Corresponding Author: Hee Ja Na, Deputy Professor, Department of Dental Hygiene, Honam University School of Health, and Science, Gwangsan-gu, Gwangju, Republic of Korea.

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the study were 6,728 out of a total of 7,090 participants in the 8th 2021 National Health and Nutrition Survey, excluding 362 missing. 6,728 people were selected for treatment of gum disease, gender, tooth brushing for a day yesterday, tooth brushing timing, chewing problems related to oral health surveys, and gum disease.

Results: Age of this study * When to brush: Of the total 6,728 post-snack patients, 6265 "no" and 319 "yes" showed that most of them did not brush their teeth after a snack. The x2 statistical value is 502.389 significance probability .000, and at the significance level of .05, age * brushing timing: There is a significant difference from age in brushing after snacks (p<.05).

Conclusion: In the regression analysis of education level reclassification and tooth brushing period, the F statistics are 118.903, significance probability .000, whether or not to brush one day yesterday at the significance level of .05 (t=8.365, p=).000), when to brush: after a snack (t=2.989, p=.000), when to brush: before going to bed (t=12.214, p=.000), (adult) chewing problem (t=7.526, p=.000), whether there are complaints of copyright inconvenience (t=-5.643, p=.000), Treatment item: Treatment of gum disease (t=-4.119, p=.000) is significant. The total change in the education level reclassification code is explained by 136% (134% according to the correction coefficient).

Keywords: National health and nutrition survey; Gut disease; Gut brush; Chewing problem; Complaint of writing; Oral health.

Introduction

Oral health is part of systemic health, and digestion and nutrition are one of the most basic requirements for maintaining health [1]. Therefore, improving oral health requires a lot of attention and effort. Oral health behavior refers to all activities performed to maintain a healthy oral condition before oral disease occurs. In other words, it refers to an action that takes place even though there are no symptoms or symptoms of oral disease [2]. If oral health behavior is not carried out smoothly, diseases in the oral cavity may occur. Typical oral diseases include dental caries and periodontal disease. When a disease occurs, it has the characteristics of a chronic disease that continuously worsens, so preventive management throughout life is very important [3]. According to the National Health and Nutrition Survey used in this study, gender was classified as male and female among the health survey items, and age was classified as 1 year old or older. The health survey consists of a household survey, a health interview survey, and a health behavior survey. The household survey (interview survey) examines the number of household members, household types, and household income to one adult aged 19 or older per household [4]. According to the 2014 Health Insurance Review and Assessment Service's statistical indicators of medical expenses related to oral health, oral-related injuries, that is, periodontal diseases, ranked second and tooth decay sixth in the 10th place of the Multiple frequencies' injury list [5]. In order to maintain, improve, and save money on prevention should oral health. be prioritized over treatment. To this end, it is very important to acquire proper knowledge related to oral health, such as regular dental visits, proper brushing behavior, and proper

eating habits [6]. Among the methods to prevent these oral diseases, brushing is the most simple and effective way to practice and is a key oral health education project [7]. In addition, it can be said that it is more economical than treatment in terms of cost, and proper brushing behavior is expected to act as a very important factor in preventing oral diseases. A number of studies on the perception and education of oral health [8] and the oral health management behavior of foreign students [9-12] have been published. Accordingly, the 8th National Health and Nutrition Survey's raw data will be used to analyze how the general characteristics of the entire nation, oral health status according to the general characteristics of the entire nation, and the general characteristics and provide it as basic data for future oral health promotion projects.

Hypothesis (HO)

It is not associated with tooth brushing and gum disease treatment, discomfort and chewing problems.

Alternative hypothesis (H)

It is associated with tooth brushing and gum disease treatment, discomfort, and chewing problems.

Materials and methods

Institutional review board approval

This study period is from March 1 to 30, 2023, was conducted using raw data from the National Health and Nutrition Survey (KNHANES) of the Korea Centers for Disease Control and Prevention and was exempted from deliberation by Honam University's Institutional Bioethics Committee (1041223-202303-HR-01). The subjects of the study were all household

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members aged 1 or older and 80 who met the appropriate household member requirements within the sample survey area. The subjects of the study were 6,728 out of a total of 7,090 participants in the 8th 2021 National Health and Nutrition Survey, excluding 362 missing. 6,728 people were selected for treatment of gum disease, gender, tooth brushing for a day yesterday, tooth brushing timing, chewing problems related to oral health surveys, and gum disease [4].

Details of the investigation

Among the health survey items of the National Health and Nutrition Survey, gender was classified as male and female, and the age was classified from 1 year old or older to 80 years old. The level of education was classified into elementary, middle, high school, and college graduates or higher, household income was classified into lower, middle, middle, and upper grades, and basic living supply was classified as Yes or No.

The National Health and Nutrition Survey collects survey data through household member confirmation surveys, health surveys, examination surveys, and nutrition surveys. The household member confirmation survey is a basic survey for conducting the National Health and Nutrition Survey, which identifies the current status of all residences and households in the selected region through sample design and selects households (won) participate in health surveys, to examinations, and nutrition surveys. The health survey consists of a household survey, a health interview survey, and a health behavior survey. The household survey (interview survey) examines the number of household members, household type, and household income to one adult aged 19 or older per household. The health interview survey investigates morbidity, medical use, activity restrictions, education and economic activities, and physical activity, while the health behavior survey (self-written survey) investigates smoking, drinking, mental health, safety awareness, and oral health. The examination survey consisted of body measurement, blood pressure and pulse measurement, blood and urine tests, oral examinations, lung function tests, eye (eye) tests, and grip strength tests. The test items vary depending on age, so physical and oral tests were conducted on people aged 1 or older, blood pressure and pulse measurement, urine tests were conducted on those aged 6 or older, blood tests, and grip tests were conducted on those aged 10 or older. In addition, lung function tests and otolaryngological tests (from July 2019) were conducted on people aged 40 or older, eye tests were conducted on people aged 40 or older in 2019-2020, and 10-59 in 2021. The nutritional survey consists of the current status of dietary behavior, dietary supplements, nutritional knowledge, and food stability, and the contents of food intake one day before the survey (24- hour recall method), and a survey is conducted on people over the age of 1 (KNHANES) [4].

Oral examination

The variables used were o for "no", 1 for "yes", 9 for "don't know", o for "no", 1 for "after- snack", o for "no", 1 for "yes", 9 for "after-dinner", o for "no", 1 for "no", and 3 for "after- dinner", and 3 for "no", 3 for "no", 3 for "no", and 3 for "no". And when asked about gum disease treatment (including gum surgery), o was used on a three-point scale, 1 was used as "yes", 9 was used as "no", 1 was "very uncomfortable", 2 was "no inconvenience", 3 was "no inconvenience", 4 was "no inconvenience", 9 was "no inconvenience" on the ESK scale of "no" (no") [4].

Data analysis

The data collected in this study were analyzed using the SPSS 21.0 program. The categorical data of the general characteristics of statistical processing in the National Health and Nutrition Survey **Results** used descriptive statistics to obtain mean and standard deviation.05), Mannai * Toothbrushing time: x2(p<.05)after a snack, cross-analysis Mannai * Toothbrushing time: Before going to bed (p<.It was analyzed as 05), and the significance of all statistical processing (including children and adolescents) in the regression analysis of education level reclassification and tooth brushing was verified based on P<0.05.

Technical statistics							
		Minimum	Maximum				
	Ν	value	value	Average	Sd		
City. Province	7090	1	17	7.69	4.991		
Gender	7090	1	2	1.55	0.498		
Age	7090	1	8 0	46.46	22.667		
Oral examination nutritional weight	3928	926	39314	13118.89	8381.899		
Weight of health questionnaire, examination, and							
nutrition survey	5585	655	27971	9226.68	5863.498		
Average monthly gross household income	7055	17	1500	466.9	337.494		
Marriage status	7090	1	9	1.32	0.493		
Occupational reclassification and							
unemployment/non- economically inactive							
population status code	5528	1	7	4.84	2.281		
Training level reclassification code	6368	1	4	2.61	1.207		
Valid N (by list)	3182						

General matters of the study subjects

Table 1: General information of study subjects. 7090 people participated in the general matters of the study subjects, the average and standard deviation of 7.62 (4.991), the average and standard deviation of gender 1.55 (4.491), the average and standard deviation of age 46 (22.667), oral examination, nutrition weight average and standard deviation 13118.89 (8381.899), health examination, and average 9032.207).

	Case Handling Summary									
		Valid							the e	entire
	N	Percentage		Cross-analysis					Ν	100%
Gender *			Gender							
Did you			* Did you							
brush			brush your							
your			teeth				Ι	the		
teeth	6728	94.9%	yesterday		no	yes	don't	entire	7090	100%
yesterday			man		5	29	14	30		
					8	64		36		

			woman		3	36	41	36		
					0	21		92		
			the entire		8	65	55	67		
					8	85		28		
			x2=23.98	o (df=2, p=	.000)					
Gender *						yes		the	7090	
When to			Gender		no		I don't	entire		100%
brush:			* When to							
After a			brush: After							
snack	6728	94.9%	a snack							
			man		2844	17	14	30		
						8		36		
			woman		3421	22	42	36		
						9		92		
			the entire		6265	40	56	67		
						7		28		
			x2 =31.956 (df=	3, p=.000)						
Gender *										
When to			Gender							
brush:			* When to							
Before I			brush: Before				Ι	the		
go to bed	6728	94.9%	I go to bed		no	yes	don't	entire	7090	100%
			man		1561	14	14	30		
						61		36		
			woman		1720	10	42	26		
					-739	19	7-	ەر		
						11		92		
			the entire		3300	33	56	67		
						72		28		
			x2=38.48	9 (df=3, p=	.000)					
Gender *										
When to			Gender							
brush:			When to							
After		0.4	brush: After					the		
dinner	6728	94.9%	dinner		no	yes	l don't	entire	7090	100%
			man		1328	16	14	30		
						94		36		
			woman		1519	21	42	36		
					-	31		92		
			the		2847	38	56	67		
			ent ire			25		28		
				x2=29.906	(df=3,p=.0	00)				

Table 2: Cross-analysis of Gender and Brushing.

In the cross-analysis of gender and toothbrushing in Table 2, there were 58 "no" men, 2,664 "yes" and 14 "don't know" who brushed their teeth yesterday. There were 30 women "no," 3621 women "yes," and 41 people "don't know," 88 people "no," 6585 people "e" and 55 people "don't know" (p<.o5). The statistical value of x2 is 23.980, significant probability .ooo, and there is a significant difference in gender * whether to brush yesterday or not at the significance level of .o5.

However, gender * brushing time: After the snack, there were 2,844 men "no," 178 men "yes," and 14 women "no," 3,421 women "no," 229 women "yes," and 42 "no." In other words, the practice of brushing after snacks was low (p<.05). The statistical value of x2 is 31.956,

significance probability .000, and at the significance level of .05, gender * brushing timing: There is a significant difference after snacks.

Gender * brushing time: 1561 out of 3,036 men and 1739 out of 3,692 women before bed (p<.05) x2 statistics were 38.489, significant probability .000, and there was a significant difference in gender * brushing time: before bed.

Gender * When to brush: 'No' 1328 out of 3036 men after dinner. Of the total 3,692 women, 'no' 1519, and the x2 statistical value is 29.906 significant probability .000, and there is a significant difference after dinner at the significance level of .05.

		When to brush: After a snack							
					I don't	the			
	Frequency	no	yes	teenager	know	entire			
age	1	38	1	2	0	41			
	2	30	2	0	0	32			
	3	47	1	1	0	49			
	4	34	3	0	0	37			
	5	71	2	1	0	74			
	6	57	3	0	0	60			
	7	59	1	0	0	60			
	8	89	3	1	0	93			
	9	59	4	1	0	64			
	10	71	2	0	0	73			
	11	61	0	2	0	63			
	12	72	4	2	0	78			
	13	65	3	0	0	68			
	14	49	1	1	0	51			
	15	50	2	2	0	54			
	16	48	0	0	0	48			
	17	54	1	2	0	57			
	18	41	1	1	0	43			
	19	45	4	1	0	50			
	20	55	0	1	0	56			
	21	35	2	1	0	38			
	22	57	1	0	0	58			
	23	71	3	1	0	75			
	24	78	4	1	0	83			
	25	57	4	0	0	61			
	26	60	4	0	0	64			
	27	63	1	0	0	64			

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28	59	3	0	0	62
29	58	4	0	0	62
30	59	3	0	0	62
31	45	4	0	0	49
32	51	6	0	0	57
33	57	2	0	1	60
34	49	2	0	0	51
35	62	1	0	1	64
36	62	2	0	0	64
37	62	1	0	0	63
38	81	1	0	0	82
39	92	4	0	0	96
40	97	3	0	0	100
41	86	5	0	0	91
42	86	2	1	1	90
43	86	5	0	0	91
44	79	4	1	1	85
45	87	5	0	1	93
46	105	2	0	0	107
47	82	1	0	0	83
48	100	3	0	0	103
49	107	8	0	0	115
50	85	4	1	0	90
51	90	1	2	0	93
 52	94	2	3	0	99
 53	95	5	0	1	101
 54	99	6	0	0	105
55	101	8	1	0	110
56	91	3	0	1	95
57	104	7	0	0	111
58	103	5	1	0	109
59	105	10	0	2	117
61	94	10	1	0	105
62	130	10	0	0	140
62	123	4	0	0	07
⁰ 5 64	101	/	1	1	97 106
65	80	<u> </u>	1	1	00
رچ 66	112	5		0	118
67	90	ر 4	3	2	00
68	102	7	0	1	110
69	99	, 11	3	0	113
70	90	5	1	0	96
<i>.</i> 71	84	9	2	3	 98
72	92	6	2	0	100
73	76	11	3	1	91
15	7 -)		

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	75	66	6	2	2	76
	76	73	5	0	1	79
	77	60	3	0	3	66
	78	57	4	2	3	66
	79	74	6	5	6	91
	8 0	339	14	29	22	404
total		6265	319	88	56	6728
X2=502.389 (df=237, p=.0	000)					

Table 3: Meeting age * Brushing time: Of the total 6,728 people after snacks, 6,265 "no" and 319 "yes" were found to be mostly not brushing their teeth after snacks. The x2 statistical value is 502.389 significance probability .000, and it can be said that meeting at the significance level of .05 * brushing timing: There is a significant difference in tooth brushing after snacks from meeting age (p<.05).

		C	Cross-analysis							
		When to brush:	Before g	oing to bed						
					I don't	the				
	Frequency	no	yes	teenager	know	entire				
age	1	12	27	2	0	41				
	2	12	20	0	0	32				
	3	20	28	1	о	49				
	4	12	25	0	0	37				
	5	27	46	1	0	74				
	6	22	38	0	0	60				
	7	27	33	0	0	60				
	8	26	66	1	0	93				
	9	18	45	1	0	64				
	10	23	50	0	о	73				
	11	19	42	2	о	63				
	12	20	56	2	о	78				
	13	23	45	0	0	68				
	14	17	33	1	0	51				
	15	16	36	2	0	54				
	16	17	31	0	о	48				
	17	24	31	2	0	57				
	18	16	26	1	0	43				
	19	19	30	1	о	50				
	20	19	36	1	0	56				
	21	13	24	1	0	38				
	22	13	45	0	0	58				
	23	34	40	1	0	75				
	24	36	46	1	0	83				
	25	26	35	о	0	61				
	26	25	39	0	о	64				

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27	22	42	0	о	64
28	30	32	0	о	62
29	20	42	0	О	62
30	30	32	0	О	62
31	14	35	0	0	49
32	29	28	0	0	57
33	24	35	0	1	60
34	19	32	0	о	51
35	22	41	0	1	64
36	22	42	0	0	64
37	19	44	0	0	63
38	24	58	0	0	82
39	37	59	0	0	96
40	42	58	0	0	100
41	36	55	0	о	91
42	33	55	1	1	90
43	22	69	0	0	91
44	29	54	1	1	85
45	34	58	0	1	93
46	49	58	0	о	107
47	36	47	0	о	83
48	47	56	0	о	103
49	57	58	0	о	115
50	40	49	1	0	90
51	38	53	2	о	93
52	41	55	3	о	99
53	53	47	0	1	101
54	54	51	0	о	105
55	54	55	1	0	110
56	60	34	0	1	95
57	62	49	0	0	111
 58	70	38	1	0	109
 59	75	40	0	2	117
 60	57	47	1	о	105
 61	73	67	0	о	140
 62	74	53	0	0	127
 63	62	35	0	0	97
 64	61	43	1	1	106
 65	53	44	1	1	99
 66	74	43	1	о	118
67	66	28	3	2	99

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	68	65	44	0	1	110
	69	75	35	3	0	113
	70	59	36	1	0	96
	71	61	32	2	3	98
	72	78	20	2	0	100
	73	53	34	3	1	91
	74	65	26	1	1	93
	75	56	16	2	2	76
	76	55	23	0	1	79
	77	49	14	0	3	66
	78	45	16	2	3	66
	79	58	22	5	6	91
	80	281	72	29	22	404
total		3300	3284	88	56	6728
x2=1039.092 (df=237, p=.000)						

Table 4: Age * When to brush: Before going to bed. Age * brushing time: Of the total 6,728 peoplebefore bed, 3,300 were "no" and 3,284 were found to be brushing their teeth were higher. The x2statistical value is 502.389 significance probability .000, and at the significance level of .05, age *brushing time: There is a significant difference from the age before bed (p<.05).</td>

		the coefficient ^a				
		Non-standardiz	standardized coefficient			
			Normalization			
	model	В	error	ß	t	р
1	(Constant)	-3.450	0.708		-4.876	.000
	Did you brush your teeth yesterday	5.682	0.679	0.555	8.365	.000
	When to brush: After a snack	0.194	0.065	0.155	2.989	.003
	When to brush: Before going to bed	0.418	0.034	0.36	12.214	.000
	(adult) chewing problem	0.148	0.02	0.167	7.526	.000
	Complaint of inconvenience in writing	-0.341	0.06	-0.125	-5.643	.000
	Treatment: Treatment of gum disease	-0.015	0.004	-0.053	-4.119	.000
a. Dep	endent variable: Training level reclassificat	tion code	·			
R2(adj	, R2)=136(134), F=118.903					

Table 5. Regression Analysis of Re-classification of Education Level and the Period of Toothbrushing. Table 5. In the regression analysis of education level reclassification and tooth brushing, the F statistic value is 118.903, significance probability .000, and whether or not to brush one day yesterday at the significance level of .05 (t=8.365, p=).000), when to brush: after a snack (t=2.989, p=.000), when to brush: before going to bed (t=12.214, p=.000), (adult) chewing problem (t=7.526, p=.000), whether there are complaints of copyright inconvenience (t=-5.643, p=.000), Treatment item: Treatment of gum disease (t=-4.119, p=.000), and the total change in the education level reclassification code is 136% (134% according to the correction coefficient).

Discussion

In the case of adults, it can be inferred that it is the result of a busy daily life, lack of brushing conditions and environment. In Korea, it is recommended to brush more than three times a day after eating. Scaling and correct tooth brushing are crucial for preventive management in the management of periodontal tissue, and periodontal tissue is not regenerated once lost [13]. The study of Lee [14] also proved the relationship between the number of tooth brushing and oral health conditions. Therefore, it is necessary to educate and make it a habit to brush properly. In Table 3 of this study, the x2 statistics after the snack are 502.389 significant probability .000, and at the significance level of .05, the brushing time after the snack can be said to have a significant difference from the age (p<.05). In addition, brushing after meals is intended to relieve discomfort, but in this study, the statistics of x2 before bedtime are 502.389 significant probability.000, which is significantly different from bedtime (p<.05). The practice rate of brushing before bedtime is still insufficient, so specific measures for this should also be linked. The relationship between the number of tooth brushing and periodontal disease has been proven in previous studies [13.14], and once again in this study. However, it was insufficient to clearly claim the relationship with periodontal disease according to the number and timing of tooth brushing. Since variables such as tooth brushing method and tooth brushing time are not considered, further research is urgently required. In the case of using dental floss and interdental toothbrushes, promotional programs are needed through various channels to easily learn how to purchase and use oral products such as dental floss and interdental toothbrushes. In addition. in the

relationship between subjective oral health status and the prevalence of periodontal disease, the higher the subjective oral health status, the lower the prevalence of periodontal disease. In Table 1 of this study, 7,090 people participated in the study, and the average and standard deviation of gender, age, oral examination, nutrition weight, health questionnaire, examination, nutrition survey weight, monthly average household income, marital status, occupational and unemployment/noneconomic activity population status code, and education level reclassification code were calculated. In a previous study that confirmed the presence of oral health education and oral health status, Kim, et al., [15] said that individual dental treatment experiences, gender, frequency of brushing, and oral health education should be considered to improve college students' oral health knowledge. Acquisition of dental knowledge was the most common in dental hospitals [16], and it was related to oral health behavior among college students. Shokry, et al., [17] said that oral health programs are effective in improving the quality of life [18]. Oral health behavior was statistically significant according to gender and drinking among general characteristics. Among the subjects of the continuous oral care program, women tended to have a higher average of oral health behavior than men, which was similar to the results of studies [19,20.]. In Table 2 of this study, in cross-analysis of gender the and toothbrushing, 58 "no" men, 2,664 "yes" and 14 "no" were brushing their teeth yesterday. There were 30 women "no," 3621 women "yes," and 41 women "don't know," most of whom tended to brush teeth and have a higher average than men, and there was a significant difference (p<.05). However, gender * brushing time: After the snack, there were 2,844 men "no," 178 men "yes,"

and 14 women "no," 3,421 women "no," 229 women "yes," and 42 "no." In other words, brushing after snacks showed a low practice rate for both men and women and is significant (p<.05). Gender * brushing time: 1561 out of 3,036 men and 1739 out of 3,692 women before bed (p<.05) x2 statistics were 38.489, significant probability .000, and there was a significant difference in gender * brushing time: before bed. Gender * When to brush: 'No' 1328 out of 3036 men after dinner. Of the total 3,692 women, 'no' 1519, and the x2 statistical value is 29.906 significant probability .000, and there is a significant difference after dinner at the significance level of .05. Studies such as Hong [21] said that oral health awareness has the greatest impact on oral health behavior, and Saturnino etc. [22] found that the higher the oral health awareness [23], the better the oral health practice. According to the survey on periodontal health care awareness of periodontal disease patients, the average of dental visits and scaling increased, and the average of regular dental visits increased, and the study by Kang [24] showed that periodontal health care decreased, and oral health awareness increased. According to a study by Shin [25], there were many subjects who brushed correctly in the oral health education experience group, and the experience of oral health education had a positive effect on brushing behavior, oral health knowledge, and attitude practice. In a study by Yang [26], health college students showed a higher oral health knowledge rate than non-health college students, and more subjects were found to have proper brushing. In a study by Jang and Hwang [27], childcare teachers will need a systematic and regular oral health education program to effectively manage children's oral health. In Table 5 of this study, the F statistics in the regression

analysis of education level reclassification and tooth brushing period were 118.903, significance probability .000, and whether or not to brush one day yesterday at the significance level of .05 (t=8.365, p=).000), when to brush: after a snack (t=2.989, p=.000), when to brush: before going to bed (t=12.214, p=.000), (adult) chewing problem (t=7.526, p=.000), whether there are complaints of copyright inconvenience (t=-5.643, p=.000), Treatment item: Treatment of gum disease (t=-4.119, p=.000), and the total change in the education level reclassification code is 136% (134%) according to the correction coefficient). n this study, most of the Korean people showed a low practice rate in the period of brushing their teeth: after snacks, after dinner, and before bed. This was highly associated with gum disease. As a result of analyzing the period of tooth brushing and gum disease in the National Health and Nutrition Survey of Korea, a significant relationship was found. After snacks and before bedtime, tooth brushing tends to appear to be almost below average (p<.05). The limitation of this study was that it was designed using raw data and limited to using variables suitable for the purpose. However, it is meaningful in that it emphasized the importance of oral health behavior to prevent oral diseases, which is increasingly interesting in the aging era, using data from 2019 to 2021 of the 8th National Health and Nutrition Survey, which has high reliability and evenly distributed the number of subjects. In addition, in order to improve oral health, individuals' interest in oral health. knowledge attitude, and awareness of oral health should be improved, and regular preventive measures and self-management are required. Oral health education is not just a one-off, but regular and systematic education is needed. This study analyzed

the connection between oral and systemic diseases using the original data of the National Health and Nutrition Survey by the Korea Centers for Disease Control and Prevention, which is an indicator of national health, to contribute to the promotion of national oral and systemic health in the future. In addition, there was a limitation in that some related contents could not be included because only the contents shown in the questionnaire set as using the original data of the National Health and Nutrition Survey by the Korea Centers for Disease Control and Prevention were analyzed.

Conclusion

This study period was from March 1 to 30, 2023, and was conducted using raw data from the National Health and Nutrition Survey (KNHANES) of the Korea Centers for Disease Control and Prevention, and all household members aged 1 and 80 who met appropriate household the rescue requirements were selected as subjects. Among a total of 7,020 participants in the 8th 2021 National Health and Nutrition Survey, 6,728 people were selected for chewing problems related to the oral health survey and gum disease treatment. The data collected in this study were analyzed using the SPSS 21.0 program.

The categorical data of the general characteristics of statistical processing in the National Health and Nutrition Survey used descriptive statistics to obtain mean and standard deviation.05), age toothbrushing time: x2 (p<.05) after a snack, cross-analysis age.

Toothbrushing time: Before going to bed (p<.05), and the significance of all statistical processing (including children and adolescents) in the regression analysis of

education level reclassification and tooth brushing was verified based on P<0.05.

- 1. According to the National Health and Nutrition Survey by the Korea Centers for Disease Control and Prevention, 7,090 people from 17 cities and provinces participated in general matters.
- In the cross-analysis of gender 2. and toothbrushing, women tended to have a higher average of tooth brushing than men in terms of gender * brushing per day yesterday, and it was significant (p<.05). However, gender * brushing timing: Even after snacks, men's brushing after snacks had a lower practice average than women's and was significant (p<.05). In addition, gender * brushing timing: Women tend to have a higher average of brushing teeth than men before bed (p<.05) Subsequently, gender * brushing timing: The x₂ statistical value after dinner is 29.906 significant probability .000, and at the significance level of .05, gender * brushing timing: There is a significant difference after dinner (p<.05).
- 3. age *When to brush: Of the total 6,728 people after a snack, 6265 "No" and 319 "Yes" showed that most of them do not brush their teeth after a snack. The x2 statistical value is 502.389 significance probability .000, and it can be said that meeting at the significance level of .05 * brushing timing: There is a significant difference in tooth

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brushing after snacks from meeting age (p<.05).

4. age*When to brush: Of the total 6,728 people before bed, 3,300 "no" and 3284 "yes" were found to be higher for brushing. The x2 statistical value is 502.389 significance probability .000, and it can be said that there is a significant difference in tooth brushing before bed at the significance level of .05.

5.

In the regression analysis of education level reclassification and tooth brushing, the F statistic value is 118.903, significance probability .000, and whether or not to brush one day yesterday at the significance level of .05 (t=8.365, p=).000), when to brush: after a snack (t=2.989, p=.000), when to brush: before going to bed p=.000), (t=12.214,(adult) chewing problem (t=7.526, p=.000), whether there are complaints of copyright inconvenience (t=-5.643, Treatment p=.000), item: Treatment of gum disease (t=-4.119, p=.000), and the total change in the education level reclassification code is 136% (134%) according to the correction coefficient).

Clinical relevance

Scientific basis of the study

Most Koreans showed low practice rates after snacks, dinner, and before bed during brushing. This was highly associated with gum disease.

Main results

A significant correlation was found as a result of analyzing the period of tooth brushing and gum disease in the National Health and Nutrition Survey of Korea. The tooth brushing after snacks or before going to bed tends to be almost below average, and the tooth brushing tends to look low.

Author contributions

NAHJ contributed to data analysis and interpretation, drafted and critically revised manuscripts. It has also contributed to conceptual and data collection and has critically modified the manuscript. It contributed to data analysis and interpretation, and critically modified the manuscript. Contributed to the concept and and critically modified design, the manuscript. The NHJ has agreed to give final approval and to be responsible for all aspects of the work.

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Conflict of interest statement

The author declares that there is no conflict of interest.

Data availability statement

Not applicable.

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