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Evaluation of socioeconomic status, nutritional habits and periodontal disease status of patients applying to the department of periodontology

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ABSTRACT

Aims: To analyze the socioeconomic status, nutritional habits and periodontal disease status of patients who applied to the periodontology clinic for treatment.

Methods: 191 patients (149 female, 42 male) participated in the study. The diagnosis of periodontal disease was made according to the 2017 Periodontal Disease Classification. Using a survey, data on eating habits (using the Wilhom Index (WI) survey), Body-mass index (BMI), socioeconomic levels and education level were obtained. All data were analyzed.

Results: It was observed that 61.3% of the patients were not university graduates, 27.7% had low income, 53% had unhealthy BMI, nutritional habits were at a moderate level. The prevalence of periodontal disease was 42.4% for gingivitis and 48.7% for periodontitis. According to periodontal disease diagnoses, a significant difference was observed in socioeconomic status, education level, WI score and BMI.

Conclusion: In order to reduce the prevalence of periodontal disease and improve public health, comprehensive health policies and educational programs should be developed regarding socioeconomic status, education level, awareness of healthy nutrition and oral health.

Keywords: Education, nutrition surveys, nutritional status, periodontal diseases, socioeconomic factors

INTRODUCTION

Periodontal diseases are among the most important public health problems in many countries around the world.[1] The most significant of these diseases are gingivitis and periodontitis. Gingivitis occurs when microbial dental plaque accumulates at the gingival margin and is known to be reversible.[2,3] Periodontitis is an inflammatory disease of periodontal tissues characterized by periodontal pocket formation and gingival recession caused by specific microorganisms and loss of periodontal ligament and alveolar bone.[2,3] If oral hygiene is maintained during the gingivitis phase and/or with appropriate periodontal treatment by a dentist, it is possible to achieve periodontal health.[2-6]

Although microbial dental plaque is accepted as the primary factor in the etiology of periodontal disease, it has been observed that oral health status can vary depending on individuals' habits, systemic diseases, and socioeconomic and demographic factors, particularly in epidemiological studies conducted on this subject.[2,5-7]

In developed Western countries such as Finland, Norway, and Germany, it has been shown that the prevalence of caries in children and young individuals decreased rapidly in the 1970s and 1980s.[1] This decrease has been attributed to various factors, including fluoride-containing toothpastes, reduced sugar consumption, higher socioeconomic status, widespread use of dental services, and increased awareness of personal hygiene practices.[1] However, in developing countries such as Turkiye, where preventive dentistry practices have not yet become widespread, oral and dental health problems present serious economic and social challenges.[1] For this reason, in dentistry, the perspective that protective and preventive measures should be implemented before oral and dental health deteriorates, and that treatment services should focus on conservative methods aimed at preserving teeth, has gained importance.[1,6] Nutritional problems can lead to deficiencies in vitamins, minerals, and proteins, glucose resistance, diabetes, obesity, growth and development issues, mental retardation, dental and periodontal diseases, and even cancer.[8-10] Proteins, glucose, and fats must be consumed in a balanced manner. In addition to serving as an energy source, they are essential for the formation of tissues as building blocks of cells, as well as for growth and development.[1,8,10] When consumed in excess,

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they can lead to obesity, diabetes, cardiovascular problems, inflammatory diseases (such as periodontal disease), and more.[1,8,10] When deficient, growth and development can be impaired. Nutritional deficiencies have been shown to increase a risk for periodontal diseases.[7,8,11]

There are studies showing that socioeconomic status and nutritional habits are associated with periodontal disease, as well as epidemiological studies conducted in this context in developed countries. However, these studies have been conducted in only a few provinces in Turkiye.[1,12,13] Furthermore, epidemiological studies need to be updated at regular intervals; unfortunately, these limited studies have not been updated. There are no epidemiological studies in the literature evaluating the nutritional habits, periodontal status, and socioeconomic status of the Niğde population. In order to fill this gap in the literature, the socioeconomic status, nutritional habits and periodontal disease status of patients who applied to Niğde Ömer Halisdemir University, Faculty of Dentistry, Periodontology Clinic for treatment were analyzed in our study.

METHODS

Ethics

The study was conducted in the Department of Periodontics, Faculty of Dentistry, Niğde Ömer Halisdemir University, in 2024, in accordance with the Helsinki Declaration of 1975, as revised in 2000. Ethical approval for the study protocol was obtained from the Non-interventional Researches Ethics Committee of Niğde Ömer Halisdemir University (Date: 25.07.2024, Decision No: 2024/78).

Study Design and Patient Selection

In our prospectively planned study, patients who applied to the Niğde Ömer Halisdemir University, Faculty of Dentistry Departments of Periodontology for treatment and were examined by a single physician (SOB) between 5 August 2024 and 5 November 2024 were included.

The patients were diagnosed with periodontal disease according to the 2017 Periodontal Disease Classification. In addition, the patients were asked to complete a questionnaire regarding their nutritional habits and socioeconomic status. Written consent was obtained from the patients who volunteered to participate in the study.

The periodontal disease diagnosis, nutritional habits, body-mass index (BMI), education levels and socioeconomic status of the patients were analyzed.

Inclusion criteria

-Patients who volunteered to participate in the study between the ages of 18 and 65 were included in the study.

Exclusion criteria

-Patients under 18 years old or over 65 years old

-Patients with a systemic disease (diabetes, hypertension, etc.),

-Pregnant and breastfeeding patients,

-Patients who have received periodontal treatment in the last 6 months

-Patients with incomplete data and/or who did not want to volunteer for the study were not included in the study.

Data Collection

Demographic data including age, gender, socioeconomic status, and nutritional habits, were obtained from the questionnaire administered to the patients who volunteered for the study. The questionnaire included the following information:

a.Demographic data

This section includes questions about age, gender, weight, height, sociocultural (the education level of the individual and their family) and socioeconomic status (total family income).

a.1. Socioeconomic status

Family income was grouped as follows:

1- Less than the minimum wage (17.000TL for 2024)

2- Between 17.000TL and 34.000TL

3- More than 34.000 TL

a.2. Education level of the individual and their family

Education level was scored as follows;

1-Primary school

2-Middle school

3-High school

4-University

b. Eating habits data

The Wilhom Index (WI) survey was used. It includes questions about which foods they consume and how often. The answers given to the questions in the WI survey are scored and the total score is evaluated. Those with a WI score between 65-75 are classified as (category 1) "aware of what they eat and how to eat" (category 2), 40-64 points as "careful in this regard" and less than 40 points as "poor nutrition"(category 3).[14]

c. Body-mass index

BMI is calculated by dividing body weight by the square of height (BMI = kg/m^2). The value obtained as a result of the calculation can give a clue as to whether you are at a healthy weight. Below 18.5 is classified as underweight, between 18.5-24.9 is normal, between 25-29.9 is overweight, 30-34.9 is 1st degree obese, 35-39.9 is 2nd degree obese, and 40 and above is 3rd degree obese.[15]

d. Clinical-radiology examination and periodontal disease diagnosis data

All 191 patients received a detailed periodontal evaluation, and the following parameters were recorded: Gingival index, plaque index, periodontal pocket depths (PD), the level of interdental clinical attachment loss (CAL), and bleeding on probing (BOP). Clinical evaluations were performed using the Williams periodontal probe, and the reference values of Silness and Löe[16] were used for the plaque index and gingival index.

Periodontitis stages were determined based on the percentage of interdental bone loss on panoramic radiographs, clinical periodontal parameters, and the number of tooth losses.[2,4,16,18] Periodontal disease diagnosis was made according to the 2017 classification of periodontal and peri-implant diseases.[2,4] The diagnoses were scored as follows:

Score 0: BOP <10% and PD <4 mm (periodontally healthy)

Score 1: BOP >10% and PD <4 mm (gingivitis)

Score 2: 0-15% interdental bone loss and CAL=1-2 mm (stage 1 periodontitis)

Score 3: 15-33% interdental bone loss and CAL=3-4 mm (stage 2 periodontitis)

Score 4: More than 33% interdental bone loss, tooth loss (<5) and CAL >5 mm (stage 3 periodontitis)

Score 5: More than 33% interdental bone loss, dentition loss (more than 5 teeth lost) and CAL >5 mm (stage 4 periodontitis)

Statistical Analysis

According to the power analysis conducted prior to the study, the required sample size was at least 53 individuals per group, totaling 159 individuals. This was calculated with 80% power, a 5% type I error rate, and a small effect size (d=0.25) among socioeconomic status groups using G*power 3.1.9.7.

Data analysis was performed with IBM SPSS Statistics Version 26 package program. The conformity of the data to normal distribution was tested with the Kolmogorov-Smirnov normality test. Descriptive statistics are given in terms of frequency, percentage, median, mean and standard deviation. Chi-square test was used to examine the distribution of socio-demographic characteristics according to the WI and periodontal diagnosis classification. Mann-Whitney U and Kruskal-Wallis tests were used to compare the WI score medians according to socio-demographic and periodontal diagnosis. Spearman correlation test was used to determine the relationship between age, BMI and WI score. All results obtained were considered statistically significant at p<0.05.

RESULTS

A total of 191 patients, including 42 males (mean age 35.6) and 149 females (mean age 30.43), were included in the study. Males had higher WI scores than females, but there was no statistically significant difference in WI score averages according to gender (p=0.852). Those with a family income in category 3 had higher WI scores, but there was no statistically significant difference in WI score averages based on income (p=0.202). Patients with an education level of 4 had higher WI scores, but there was no statistically significant difference in WI score averages according to education level (p=0.479). Patients with a father's education level of 3 had higher WI scores, but there was no statistically significant difference in WI score averages according to father's education level (p=0.890). Patients with a mother's education level of 3 had higher WI scores, but there was no statistically significant difference in WI score averages according to mother's education level (p=0.562) (**Table 1**).

Table 1. Comparison of Wilhom index scores according to demographic and socioeconomic characteristics

	n (%)	*Median* (Q_1-Q_3)	$\bar{X}$±SD	p
Gender				
Female	149 (78)	53 (47-58)	51.97±8.44	0.852
Male	42 (22)	53 (46-58)	52.21±8.37	
Family income status				
1- Low	53 (27.7)	51 (46-56)	51.06±7.47	
2- Medium	74 (38.7)	53 (47-58)	51.50±9.05	0.202
3- High	64 (33.5)	53 (49-59)	53.42±8.30	
Education level				
1- Primary school	12 (6.3)	53 (48-61)	52.58±10.86	
2- Middle school	16 (8.4)	54 (46-57)	52.44±7.74	0.479
3- High school	89 (46.6)	52 (46-58)	50.93±8.65	
4- University	74 (38.7)	53 (50-58)	53.15±7.79	
Father's education level				
1-Primary school	90 (47.1)	53 (45-58)	51.66±8.75	
2-Middle school	46 (24.1)	53 (47-58)	51.85±7.70	0.890
3-High school	33 (17.3)	52 (50-57)	53±8.16	
4-University	22 (11.5)	54 (50-58)	52.41±9.14	
Mother's education level				
1-Primary school	87 (45.5)	53 (46-58)	52.39±8.57	
2-Middle school	43 (22.5)	52 (46-59)	51.79±7.50	0.562
3-High school	37 (19.4)	53 (50-58)	53.05±8.04	
4-University	24 (12.6)	52 (47-56)	49.50±9.78	

Mann Whitney U, Kruskal Wallis test, SD: Standard deviation

The WI score of patients with a periodontal diagnosis classification score of 0 was higher, and a statistically significant difference was found in WI scores according to periodontal diagnosis (p<0.001). This difference was due to the significantly higher nutritional scores of patients with a diagnosis of score 0 and score 3 (p<0.05) (**Table 2**).

Table 2. Comparison of Wilhom index scores according to periodontal diagnosis

Periodontal diagnosis	n (%)	Median (Q_1-Q_3)	$\bar{X}$±SD	p
Score 0 (healthy)	17 (8.9)	59 (54-62)	58.47±4.61[1,2,4,5]	<0.001
Score 1(gingivitis)	81 (42.4)	52 (47-57)	51.81±7.85	
Score 2 (stage 1 periodontitis)	52 (27.2)	50 (44-55)	49.10±8.91	
Score 3 (stage 2 periodontitis)	23 (12)	57 (53-63)	56.96±7.03[1,2,4,5]	
Score 4 (stage 3 periodontitis)	11 (5.8)	53 (46-56)	50.09±6.80	
Score 5 (stage 4 periodontitis)	7 (3.7)	52 (41-55)	47.29±10.26	

Kruskal Wallis test, SD: Standard deviation

While there was no statistically significant correlation between the WI score and BMI, a positive and significant correlation was found between the WI score and age (r=0.218, p=0.002) (**Table 3**).

Table 3. Correlation between age, BMI and Wilhom index score

	Age		BMI	
	r	p	r	p
Wilhom index score	0.218	0.002	0.104	0.154

BMI: Body-mass index, r: Spearman correlation coefficient

There was a statistically significant relationship between periodontal diagnosis and gender (p<0.001). The proportion of women with a periodontal diagnosis of 0 was significantly higher than women with a periodontal diagnosis of 2, 3 and 4+, and women with a periodontal diagnosis of 1, 2, 3 were significantly higher than women with a diagnosis of 4 (p<0.05). The proportion of men with a periodontal diagnosis of 0 was significantly lower than men with a periodontal diagnosis of 2, 3 and 4+, and men with a periodontal diagnosis of 1, 2, 3 were significantly lower than men with a diagnosis of 4 (p<0.05). There was a statistically significant relationship between periodontal diagnosis and BMI (p<0.001). BMI 2 rates were significantly higher in patient with a periodontal diagnosis of 0 and 1, while BMI 4 rates were significantly lower in those with a periodontal diagnosis of 0, 1 and 2 (p<0.05) (**Table 4**).

There was a statistically significant relationship in terms of family average income distribution according to periodontal diagnosis (p=0.026). It was observed that the proportion of patients with income level 2 was significantly higher in patients with periodontal diagnosis 0, while the distribution of patients with income level 3 was significantly lower in patients with periodontal diagnosis 0 and 1 (p<0.05) (**Table 4**).

There was a statistically significant relationship in terms of education levels according to periodontal diagnosis (p<0.001). The distribution of patients with education level 1 was significantly lower in patient with periodontal diagnoses 0, 1 and 2, and the distribution of patient with education level 3 was significantly higher in those with periodontal diagnoses 0 and 1 (p<0.05) (**Table 4**).

According to periodontal diagnosis, there was no statistically significant difference in terms of distribution of mother education, father education and WI category (p>0.05) (**Table 4**).

There was no statistically significant relationship in terms of gender, BMI, income level, education level, mother education distribution according to WI category (p>0.05). According to WI category, there was a significant difference in terms of father education level (p=0.036). It was observed that the rate of those with father education level 2 was significantly lower in patient with WI category 1, and the rate of patient with father education level 3 was significantly higher in patient with WI category 1 (p<0.05) (**Table 5**).

DISCUSSION

Although dental plaque is the main factor in the etiology of periodontal disease, epidemiological studies on the subject show that oral health levels can vary according to individuals' habits, systemic diseases, and socioeconomic and demographic factors.[1,3,5,7,8,17]Many factors influence the development of periodontal disease.[1-5,7,8,17] Socioeconomic status, education level, nutritional habits and general health awareness are among these factors.[6,8,11,17,18] Studies on socioeconomics and oral health in Turkiye have been limited to only a few provinces and, unfortunately, have not been updated.[1,13,18] In our study, in addition to socioeconomic data, the current 2017 periodontal disease classification was used in the Niğde population, which has not had a study sample on this subject in Turkiye before, and the nutritional status of the patients was investigated using the WI survey. It was observed that 61.3% of the study population was not university graduates, 27.7% earned less than the minimum wage, 53% had an unhealthy BMI, nutritional habits were at a moderate level, and 42.4% had gingivitis while 48.7% had periodontitis in terms of periodontal status. Our study yielded results that support the literature, and while no difference was found in the WI category in periodontal disease cases, it was observed that the WI score was higher in periodontally healthy individuals. A statistically significant difference was found in education level, socioeconomic status, and BMI in periodontal disease cases. In a study conducted in Konya in 2021, it was reported that 87.84% of the study population had a low income level, 80.49% were not university graduates, and 50.40% had periodontitis.[18] Küçükeşmen et al.[13], in their 2014 study conducted on children and adolescents, observed that the number of individuals with periodontal disease was higher than the number of healthy individuals at all socioeconomic levels, and they suggested that this could be explained by their consumption of carbohydrate-rich foods and poor oral hygiene habits.

Studies have found that socioeconomic factors, as well as low education levels and low social class, are significantly associated with a higher prevalence of periodontal disease in the adult population. Socioeconomic status is an important determinant that directly affects individuals' access to health services and health-related behaviors, and low-income individuals may have limited access to health services, which can lead to the progression of periodontal diseases without treatment.[17,19-21] In addition, individuals with low socioeconomic status generally have less health knowledge and may have incomplete information about dental health. Low education levels lead to a lack of awareness about oral hygiene and the treatment of periodontal diseases.[20,21] Additionally, individuals with higher income and education are generally more conscious about protecting their dental health and visit the dentist more regularly.[20-22] These individuals are able to adopt healthier eating habits, whereas low-income individuals tend to consume more processed foods and foods high in sugar, which leads to an increase in periodontal diseases.[23-25] Because sugary foods and processed foods encourage the proliferation of bacteria in the mouth, which can lead to plaque formation, and pathogenic plaque is the primary etiological factor of periodontal diseases.[26,27] Nutrition is a factor that directly affects the development of periodontal diseases.[8,11,25] Inadequate nutrition and unbalanced diets can lead to weakening of gingival defenses, increased inflammation and more serious periodontal problems.[8,11,25] For example, vitamin C is an antioxidant that protects periodontal health and reduces inflammation. Vitamin C deficiency can cause inflammation, bleeding and swelling of the gingiva.[28,29] In our study, no significant relationship was found between family

Table 4. Distribution of demographic. socioeconomic characteristics, BMI and Wilhom index category according to periodontal diagnosis

	Periodontal diagnoses						
Gender, n (%)	**Score 0 (periodontal health)**	**Score 1 (gingivitis)**	**Score 2 (stage 1 periodontitis**	**Score 3 (stage 2 periodontitis)**	**Score 4-5 (stage 3-4 periodontitis)**	**Total**	**p**
Female	17 (100)[2.3.4]	69 (85.2)	40 (76.9)	16 (69.6)	7 (38.9)[1.2.3]	149 (78)	<0.001
Male	0 (0)[2.3.4]	12 (14.8)	12 (23.1)	7 (30.4)	11 (61.1)[1.2.3]	42 (22)	
BMI category, n (%)							
1-Underweight	5 (29.4)	12 (14.8)	8 (15.4)	0 (0)	0 (0)	25 (13.1)	<0.001
2-Normal	10 (58.8)[4]	49 (60.5)[3.4]	24 (46.2)	6 (26.1)	2 (11.1)	91 (47.6)	
3-Overweight	2 (11.8)	18 (22.2)	19 (36.5)	12 (52.2)	8 (44.4)	59 (30.9)	
4-Obese	0 (0)[4]	2 (2.5)[3.4]	1 (1.9)[3.4]	5 (21.7)	8 (44.4)	16 (8.4)	
Family income status, n (%)							
1-Low	5 (29.4)	28 (34.6)	11 (21.2)	6 (26.1)	3 (16.7)	53 (27.7)	0.026
2-Medium	10 (58.8)[3]	34 (42)	19 (36.5)	5 (21.7)	6 (33.3)	74 (38.7)	
3-High	2 (11.8)[2.3.4]	19 (23.5)[2.3.4]	22 (42.3)	12 (52.2)	9 (50)	64 (33.5)	
Education level, n (%)							
1- Primary school	0 (0)[3.4]	0 (0)[3.4]	0 (0)[3.4]	5 (21.7)	7 (38.9)	12 (6.3)	<0.001
2- Middle school	0 (0)	4 (4.9)[3]	5 (9.6)	4 (17.4)	3 (16.7)	16 (8.4)	
3- High school	10 (58.8)[3.4]	45 (55.6)[3.4]	24 (46.2)	6 (26.1)	4 (22.2)	89 (46.6)	
4- University	7 (41.2)	32 (39.5)	23 (44.2)	8 (34.8)	4 (22.2)	74 (38.7)	
Father's education level, n (%)							
1-Primary school	6 (35.3)	32 (39.5)	26 (50)	13 (56.5)	13 (72.2)	90 (47.1)	0.061
2-Middle school	4 (23.5)	24 (29.6)	11 (21.2)	4 (17.4)	3 (16.7)	46 (24.1)	
3-High school	3 (17.6)	20 (24.7)	8 (15.4)	1 (4.3)	1 (5.6)	33 (17.3)	
4-University	4 (23.5)	5 (6.2)	7 (13.5)	5 (21.7)	1 (5.6)	22 (11.5)	
Mother's education level, n (%)							
1-Primary school	6 (35.3)	29 (35.8)	23 (44.2)	15 (65.2)	14 (77.8)	87 (45.5)	0.124
2-Middle school	4 (23.5)	21 (25.9)	14 (26.9)	3 (13)	1 (5.6)	43 (22.5)	
3-High school	3 (17.6)	19 (23.5)	10 (19.2)	3 (13)	2 (11.1)	37 (19.4)	
4-University	4 (23.5)	12 (14.8)	5 (9.6)	2 (8.7)	1 (5.6)	24 (12.6)	
Wilhom index category, n (%)							
1	1 (5.9)	3 (3.7)	3 (5.8)	5 (21.7)	1 (5.6)	13 (6.8)	0.124
2	16 (94.1)	72 (88.9)	42 (80.8)	16 (69.6)	14 (77.8)	160 (83.8)	
3	0 (0)	6 (7.4)	7 (13.5)	2 (8.7)	3 (16.7)	18 (9.4)	

Ki kare test, BMI: Body-mass index

income status and WI score and category, but supporting the literature, it was observed that WI survey score was higher in healthy periodontal status. Although this result can be considered as an increase in the accessibility of healthy food and increased awareness of nutrition regardless of the education level and socioeconomic level of individuals today, it should be kept in mind that WI survey has limitations in measuring nutrition and its objectivity and use alone. Another measure of healthy nutrition is BMI.[15] In the study conducted by Başçıl et al.[12] with the participation of 357 patients, nutrition, BMI, and periodontal status were evaluated, and the rate of periodontitis cases in obese patients was reported as 71.4%. Similarly, in our current study, it was determined that periodontal disease increased (increased in the stage of periodontitis) as the BMI category shifted from health to obesity. In our study, it was observed that there was no correlation between WI and BMI.

It has been seen in the literature that the level of education has a great effect on the health knowledge and health-related behaviors of individuals. In our study, patients who applied to the department of periodontology and who had not had any periodontal procedures in the last 6 months were included. This population generally had low to medium education levels and socioeconomic status. In our study, a significant difference in family income and education level was observed between the periodontal disease groups. As income and education levels decreased, the prevalence of periodontal disease increased. A strong relationship was determined between periodontal disease, socioeconomic status, education level, and nutritional habits. Low income and low education levels can lead to unhealthy eating habits. An unhealthy diet and high BMI can contribute to the development of periodontal diseases. Additionally, when the literature is examined, parents' education level, socioeconomic status, and their own

Table 5. Distribution of socioeconomic and demographic characteristics according to Wihom index category

	Wilhom index category				
Gender, n (%)	**1**	**2**	**3**	**Total**	**p**
Female	8 (61.5)	127 (79.4)	14 (77.8)	149 (78)	0.373
Male	5 (38.5)	33 (20.6)	4 (22.2)	42 (22)	
BMI category, n (%)					
1-Underweight	2 (15.4)	20 (12.5)	3 (16.7)	25 (13.1)	0.191
2-Normal	3 (23.1)	78 (48.8)	10 (55.6)	91 (47.6)	
3-Overweight	6 (46.2)	51 (31.9)	2 (11.1)	59 (30.9)	
4-Obese 1-3	2 (15.4)	11 (6.9)	3 (16.7)	16 (8.4)	
Family income status, n (%)					
1-Low	3 (23.1)	48 (30)	2 (11.1)	53 (27.7)	0.213
2-Medium	4 (30.8)	59 (36.9)	11 (61.1)	74 (38.7)	
3-High	6 (46.2)	53 (33.1)	5 (27.8)	64 (33.5)	
Education level, n (%)					
1- Primary school	3 (23.1)	7 (4.4)	2 (11.1)	12 (6.3)	0.067
2- Middle school	0 (0)	14 (8.8)	2 (11.1)	16 (8.4)	
3- High school	3 (23.1)	76 (47.5)	10 (55.6)	89 (46.6)	
4- University	7 (53.8)	63 (39.4)	4 (22.2)	74 (38.7)	
Father's education level, n (%)					
1-Primary school	7 (53.8)	71 (44.4)	12 (66.7)	90 (47.1)	0.036
2-Middle school	0 (0)[2]	44 (27.5)	2 (11.1)	46 (24.1)	
3-High school	5 (38.5)[2]	26 (16.3)	2 (11.1)	33 (17.3)	
4-University	1 (7.7)	19 (11.9)	2 (11.1)	22 (11.5)	
Mother's education level, n (%)					
1-Primary school	9 (69.2)	68 (42.5)	10 (55.6)	87 (45.5)	0.123
2-Middle school	0 (0)	40 (25)	3 (16.7)	43 (22.5)	
3-High school	3 (23.1)	32 (20)	2 (11.1)	37 (19.4)	
4-University	1 (7.7)	20 (12.5)	3 (16.7)	24 (12.6)	

Ki kare test, BMI: Body-mass index

nutritional habits influence their children's nutritional and oral health habits.[30] By raising awareness about healthy eating habits and improving both the education and income levels of individuals, the prevalence of periodontal diseases can be reduced.

Limitations

Our study has some limitations. The patients' socioeconomic data, education level, systemic disease status, and WI questionnaire are based on patient statements. In our study, the number of male and female participants is unequal, and the total family income was used as the basis for evaluating socioeconomic status. The number of individuals in a family can affect per capita income and outcomes. In future studies, other indices can be used in addition to the WI questionnaire to assess patients' nutrition. Blood parameters could provide more objective data.

CONCLUSION

Sociodemographic factors, such as socioeconomic status, education level, and eating habits, have an important effect on the development of periodontal diseases. Low socioeconomic status and education levels generally pave the way for unhealthy eating habits, inadequate oral hygiene, and periodontal disease. As a result, it is clear that comprehensive health policies and educational programs should be developed regarding these factors to improve public health.

ETHICAL DECLARATIONS

Ethics Committee Approval

Ethical approval for the study protocol was obtained from the Non-interventional Researches Ethics Committee of Niğde Ömer Halisdemir University (Date: 25.07.2024, Decision No: 2024/78).

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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