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Evaluation of the Impact of Mothers' Attitudes Towards Healthy Eating on their Children's Dietary Habits and Oral Health

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ABSTRACT

Objective: This study aims to determine the effects of mothers' attitudes towards healthy eating on children's dietary behaviour and oral health.

Methods: A total of 328 children and mothers, including 180 girls and 148 boys aged between 3-10 years, were included in the study. After recording socio-demographic data of mothers and their children, Attitude Scale for Healthy Nutrition (ASHN) was administered to mothers, and Children's Heart Health Promotion Attitude Scale (CCHAS) was administered to children face-to-face. Intraoral examinations of children were performed, and Decay, Missing, Filling, Teeth (DMFT, dmft), Plaque Index (PI), Gingival Index (GI), and Bleeding on Probing Index (BPI) were calculated. The effects of all parameters on verbal indexes were evaluated using hierarchical linear regression analysis for statistical analysis.

Results: The mean DMFT score of children was found to be 0-2, and the mean dmft score was 7-6. The mean PI, GI, and BPI scores were 1-1.20, 0.60-0.70, and 10 respectively. The mean Attitude Scale for Healthy Nutrition score of mothers in the study was 71-70, and the average score for Nutrition Knowledge was 21-20 respectively. There was a positive significant relationship between mothers' ASHN and CCHAS.

Conclusion: Based on this study's results, we can conclude that mothers' positive attitudes towards nutrition contribute to the development of their children's positive dietary attitudes. ASHN of the mother is a risk determinant for the child's DMFT score. Therefore, it can be said that proving healthy eating behaviour by mothers is important for their children's oral health.

Keywords: Oral health, mother, dietary behaviour, child

1. INTRODUCTION

Balanced and healthy nutrition is extremely important for children to sustain their growth and development in a healthy manner, protect them from diseases, and enable them to lead a quality life (1, 2). Healthy eating involves enjoying the food consumed, maintaining a varied and balanced diet, consuming all nutrients in the amount needed for the individual, and maintaining the ideal body weight (3, 4).

Nutritional behaviour is directly connected to oral and dental health (5-7). Dental caries, one of the most significant issues in oral and dental health, involves the destruction and loss of material in the enamel and dentin of the tooth. Dental caries begins with the formation of organic acids by bacterial secretions on fermentable carbohydrates adhered to the enamel surface, known as dental plaque (8-10). There is a close relationship between nutrition and dental caries. While dental caries negatively affect nutrition, improper nutrition also leads to dental caries and deterioration of oral health (11). The intake of carbohydrates (especially sucrose) in the mouth rapidly lowers the pH of the environment surrounding the tooth from 7 to 5.5 (12, 13). A pH below 5.5 creates a conducive environment for bacterial growth, leading to demineralization of the enamel. Adequate intake of protein during nutrition helps to buffer the acid in the mouth by providing sources of amines and urea, thus contributing to the prevention of demineralization in the teeth (14, 15). Clinically, issues related to the formation of dental caries and the deterioration of oral health due to improper nutrition are frequently encountered (16).

Various environmental factors determine children's food intake and eating habits. Family, social environment, peer influence, and various media sources shape nutritional behaviour (17, 18). In the attitude development process, considered the first step towards healthy eating behaviour, children are reported to model their parents' eating behaviours, lifestyles, and body image satisfaction (19, 20). Parental feeding practices and nutritional knowledge also influence children's eating behaviours and food preferences. Since parents do not offer foods they dislike to their children, the children do not have the chance to try these foods (2). Thus, it can be said that a mother's dietary habits influence her child's dietary habits from a very early age (7).

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Considering the above information, this study aims to determine the impact of mothers' attitudes towards healthy eating on their children's nutritional behaviour and oral and dental health. The null hypothesis (H0) of this study is that the mother's attitude towards healthy eating does not affect the child's nutritional attitude and oral and dental health; the alternative hypothesis (H1) is that the mother's attitude towards healthy eating affects the child's nutritional attitude and oral and dental health.

2. METHODS

2.1. Ethical Approval

The ethical approval for this study was obtained from the Non-Interventional Clinical Research Ethics Committee of the Faculty of Medicine, Recep Tayyip Erdoğan University (Date: 16.03.2023, Protocol No. 2023/80). Informed consent forms were obtained from mothers and children who agreed to participate in the study.

2.2. Sample Size

The sample size was calculated using G Power 3.0.10 (University of Kiel, Germany) software to determine the effect size. Based on the data from the literature(21-23) and considering a linear regression model with oral and dental health indices as continuous dependent variables and scales as covariates, an effect size of f2 = 0.15 was used, indicating a medium effect size. To achieve 99% power, a minimum of 146 subjects was required. The study included a total of 328 children, 180 girls and 148 boys, aged 3-10 years, who visited the Department of Paediatric Dentistry at the Faculty of Dentistry, Recep Tayyip Erdoğan University, for examination or treatment.

Inclusion Criteria:

- Children aged 3-10 years.
- Children in this age group without any systemic diseases or any syndromes
- Children who did not visit the clinic for an emergency reason (e.g., trauma, acute dental abscess, etc.)
- Children and their mothers who agreed to participate in the study.

2.3. Study Design

This study is a descriptive survey that included each mother and child, gathering socio-demographic data and the mothers' educational status through a five-question questionnaire. Additionally, mothers were administered the 21-item Attitude Scale for Healthy Nutrition (ASHN) and children were administered the 4-item Children's Heart Health Promotion Attitude Scale (CCHAS) face-to-face (23). The validity and reliability of the CCHAS were established by Haney et al.(24). The validity and reliability of the ASHN, a twenty-one-item Likert scale, were established by Demir and Cicioğlu. The scale inquired about concepts such as the nutritional content of carbohydrates, proteins, vitamins, and habits of consuming junk food and sugary snacks. Each question on the scale had five response options: "strongly disagree," "disagree", "neutral", "agree", and "strongly agree." The questionnaire was divided into sections: Information on Nutrition (IN), Emotion for Nutrition (EN), Positive Nutrition (PN), Malnutrition (MP). IN and PN sections included positive items rated from 1 to 5. The negative attitude items were in the EN and PN sections and scored inversely. The total score ranged from 21 to 105, with higher scores indicating a better level of healthy eating habits (23).

CCHAS nutrition subscale, developed by Arvidson, consists of four items. Each item is rated from 1 to 4 (1-strongly disagree, 4-strongly agree), with total scores ranging from 4 to 16. Higher scores indicate a positive attitude (25).

Additionally, the oral examinations of the participating children were conducted by an examiner (F.Y.) according to the standards established by the WHO. To ensure the consistency and reliability of data collection, intra-observer calibration was conducted. The primary examiner evaluated 20 children in two separate sessions, two weeks apart, and the results were compared for consistency. Cohen's kappa statistic was used to assess reliability, with a kappa value of >0.80 indicating excellent agreement and demonstrating high consistency in the examiner's measurements.The DMFT (Decay, Missing, Filled Teeth) index was used for evaluating permanent teeth, and the dmft (decay, missing, filled teeth) index was used for evaluating primary teeth. These indices are calculated by summing the decayed, missing, and filled teeth (26). An increase in the dmft/DMFT index value indicates a higher risk of caries (27).

The plaque index (PI) of the participating children was assessed by scoring each of the four gingival areas of the tooth (mesial, mid, distal, lingual) from 0 to 3. The scores for the four areas of each tooth are summed and divided by four. The individual's plaque index is obtained by summing the scores for all teeth and dividing them by the number of teeth examined (28).

The gingival index (GI) is calculated by scoring each of the four gingival areas of the tooth (mesial, mid, distal, lingual) from 0 to 3. These values represent the gingival index for the respective areas. The scores for the four areas of each tooth are summed and divided by four to find the gingival index of the tooth. The individual's gingival index is obtained by summing the scores for all teeth and dividing by the number of teeth examined (28).

The Bleeding on Probing Index (BPI), developed by Ainamo and Bay, was used to evaluate the gingival health of the children. Areas that bleed on probing are marked as (+), and areas without bleeding are marked as (-) (29).

2.4.Statistical Analysis

Statistical analysis was performed using Jamovi software (version 2.3.21). Normal distribution was assessed using the Kolmogorov-Smirnov test, and normality was confirmed. Chi-square test was performed to evaluate the association between several factors and age range. The effects of all parameters on the oral health indices were assessed using hierarchical linear regression analysis. No multicollinearity was found among the parameters, and the variance inflation factor (VIF) was below 3. The level of statistical significance was set at $p < .05$.

3. RESULTS

The chi-square test results showed no statistically significant association between gender and age groups, with similar distributions of males and females across both age ranges. Similarly, there was no significant difference in the mother's age between the two age groups, although more mothers in the older age group fell into the 36-45 years range. The education levels of mothers also did not significantly differ between the two age groups, but a higher proportion of mothers with elementary school education were observed in the older age group. In terms of clinical indices, significant differences were found between the two age groups. The DMFT and dmft scores, PI, GI, and BPI were all higher in the older age group, indicating a greater burden of dental and gingival issues. Additionally, CCHAS scores were significantly higher in the younger age group. On the other hand, there were no significant differences in other scales such as IN, EN, PN, MP, and ASHN between the age groups (Table 1).

In the analysis where DMFT was the dependent variable, demographic attributes were added to model 1, explaining 4% of the variance. A positive and significant relationship was found between the increase in DMFT and demographic data. When the subscales of ASHN, IN, EN, PN, and MP were added to model 2, the explanation rate increased by 2%. A negative and significant relationship was found between DMFT and ASHN. When CCHAS was added to model 3, 6% of the DMFT variance was explained in the final model ($p < .01$) (Table 2).

In the analysis where dmft was the dependent variable, demographic attributes were added to model 1, explaining 8% of the variance. When the subscales of ASHN, IN, EN, PN, and MP were added to model 2, the explanation rate decreased by 1%. When CCHAS was added to model 3, 7% of the dmft variance was explained in the final model ($p < .001$) (Table 3).

In the analysis where the plaque index was the dependent variable, demographic attributes were added to model 1, explaining 2% of the variance. When the subscales of ASHN, IN, EN, PN, and MP were added to model 2, the explanation rate increased by 3%. When CCHAS was added to model 3, 5% of the PI variance was explained in the final model ($p < .001$) (Table 4).

Table 1. *Chi-square test that evaluated the association between several factors and age range.*

Characteristic	N	3-6 ages	7-10 ages	p-value
	328			
Gender				.330
Male		45 (49%)	103(43%)	
Female		46 (51%)	134(57%)	
Mother's age (%)				.130
18-25		1 (1.1%)	1 (0.4%)	
26-35		46 (51%)	91 (38%)	
36-45		40 (44%)	126 (53%)	
46-55		4 (4.4%)	19 (8.0%)	
Education (%)				.140
Literate		2 (2.2%)	3 (1.3%)	
Elementary School		27 (30%)	100 (42%)	
High school		36 (40%)	75 (32%)	
University		22 (24%)	55 (23%)	
Master's degree or PhD		4 (4.4%)	4 (1.7%)	
DMFT		0 (0, 0)	2 (0, 4)	**<.001**
dmft		7 (4, 9)	6 (3, 7)	**<.001**
Plaque index		1.00 (0.70, 1.30)	1.20 (0.90, 1.40)	**.003**
Gingival index		0.60 (0.20, 0.80)	0.70 (0.40, 0.90)	**.005**
Bleeding on Probing Index		10 (0, 11)	10 (8, 15)	**.028**
IN		21 (20, 24)	20 (19, 22)	.180
EN		19 (16, 22)	19 (16, 21)	.480
PN		20 (18, 23)	20 (18, 22)	.440
MP		11 (9, 12)	10 (9, 12)	.290
ASHN		71 (67, 76)	70 (67, 74)	.390
CCHAS		12 (10, 14)	12 (10, 14)	**.040**

**:Number of samples: n, percent: %, Median (IQR), IN: Information on Nutrition, EN: Emotion for Nutrition, PN: Positive Nutrition, MP: Malnutrition, ASHN: Attitude Scale for Healthy Nutrition, CCHAS: Children's Heart Health Promotion Attitude Scale.*

Table 2. *Presentation of Hierarchical linear regression analysis outcomes for the DMFT parameter.*

Model Coefficients – DMFT		95% Confidence Interval						
Predictor	**Stand. Estimate**	**Lower**	**Upper**	***p*-value**	**R**	**R^2**	**Adjusted R^2**	***p*-value**
Model 1 (Demographic attributes)					0.497	0.247	0.224	**<.001**
Gender								
Female – Male	0.269	0.074	0.464	**.007**				
Age range 7-10 – 3-6	0.935	0.717	1.152	**< .001**				
Mother's age								
26-35 – 18-25	0.324	-0.980	1.629	.625				
36-45 – 18-25	0.263	-1.045	1.571	.692				
46-55 – 18-25	0.520	-0.834	1.874	.451				
Education								
Elementary School – literate	0.780	-0.088	1.647	.078				
High school – literate	0.669	-0.198	1.536	.130				
University – literate	0.707	-0.186	1.600	.121				
Master's degree or PhD – literate	0.449	-0.625	1.523	.411				
Systemic Disorder: Present – None	0.110	-0.176	0.397	.451				
Model 2 (ASHN)					0.517	0.268	0.235	**<.001**
IN	-0.147	-0.255	-0.039	**.008**				
EN	0.018	-0.087	0.124	.733				
PN	0.027	-0.076	0.130	.602				
MP	-0.058	-0.165	0.049	.287				
Model 3 (CCHAS)					0.519	0.269	0.234	**<.001**
CCHAS	-0.037	-0.137	0.063	.469				

**: IN: Information on Nutrition, EN: Emotion for Nutrition, PN: Positive Nutrition, MP: Malnutrition, ASHN: Attitude Scale for Healthy Nutrition, CCHAS: Children's Heart Health Promotion Attitude Scale.*

***: p values in bold indicate a statistically significant difference*

Table 3. *Presentation of Hierarchical linear regression analysis outcomes for the dmft parameter.*

Model Coefficients – dmft		95% Confidence Interval						
Predictor	Stand. Estimate	Lower	Upper	*p*-value	R	R^2	Adjusted R^2	*p*-value
Model 1 (Demographic attributes)					0.385	0.148	0.122	<.001
Gender								
Female – Male	-0.306	-0.516	-0.096	.004				
Age range: 7-10 – 3-6	-0.473	-0.707	-0.239	< .001				
Mother's age								
26-35 – 18-25	-1.481	-2.886	-0.077	.039				
36-45 – 18-25	-1.492	-2.900	-0.084	.038				
46-55 – 18-25	-1.429	-2.887	0.029	.055				
Education								
Elementary School – literate	-0.200	-1.134	0.734	.674				
High school – literate	0.029	-0.904	0.962	.951				
University – literate	-0.415	-1.376	0.547	.397				
Master's degree or PhD – literate	-1.086	-2.242	0.069	.065				
Systemic Disorder: Present – None	-0.310	-0.619	-0.002	.049				
Model 2 (ASHN)					0.391	0.153	0.115	<.001
IN	0.033	-0.083	0.149	.581				
EN	-0.004	-0.118	0.110	.945				
PN	-0.060	-0.171	0.051	.285				
MP	-0.039	-0.154	0.076	.504				
Model 3 (CCHAS)					0.391	0.153	0.112	<.001
CCHAS	0.024	-0.084	0.131	.668				

**IN: Information on Nutrition, EN: Emotion for Nutrition, PN: Positive Nutrition, MP: Malnutrition, ASHN: Attitude Scale for Healthy Nutrition, CCHAS: Children's Heart Health Promotion Attitude Scale.*

***: p values in bold indicate a statistically significant difference*

Table 4. Presentation of Hierarchical linear regression analysis outcomes for the plaque index parameter.

Model Coefficients – Plaque index		95% Confidence Interval						
Predictor	**Stand. Estimate**	**Lower**	**Upper**	***p*-value**	**R**	**R^2**	**Adjusted R^2**	***p*-value**
Model 1 (Demographic attributes)					0.275	0.076	0.047	**.005**
Gender								
Female – Male	0.063	-0.152	0.278	.564				
Age range: 7-10 – 3-6	0.374	0.135	0.614	**.002**				
Mother's age								
26-35 – 18-25	-0.770	-2.206	0.666	.292				
36-45 – 18-25	-0.851	-2.290	0.589	.246				
46-55 – 18-25	-0.736	-2.226	0.755	.332				
Education								
Elementary School – literate	-0.879	-1.834	0.076	.071				
Highschool – literate	-0.653	-1.607	0.301	.179				
University – literate	-0.877	-1.860	0.106	.080				
Master's degree or PhD – literate	-1.188	-2.370	-0.006	.049				
Systemic Disorder: Present – None	0.220	-0.095	0.535	.171				
Model 2 (ASHN)					0.337	0.114	0.074	**<.001**
IN	-0.140	-0.259	-0.022	**.021**				
EN	-0.111	-0.227	0.005	.060				
PN	-0.035	-0.149	0.078	.540				
MP	-0.153	-0.270	-0.035	**.011**				
Model 3 (CCHAS)					0.338	0.114	0.072	**<.001**
CCHAS	-0.031	-0.141	0.079	.584				

**IN: Information on Nutrition, EN: Emotion for Nutrition, PN: Positive Nutrition, MP: Malnutrition, ASHN: Attitude Scale for Healthy Nutrition, CCHAS: Children's Heart Health Promotion Attitude Scale.*
***: p values in bold indicate a statistically significant difference*

Table 5. Presentation of Hierarchical linear regression analysis outcomes for the gingival index parameter.

Model Coefficients – Gingival index		95% Confidence Interval						
Predictor	**Stand. Estimate**	**Lower**	**Upper**	***p*-value**	**R**	**R^2**	**Adjusted R^2**	***p*-value**
Model 1 (Demographic attributes)					0.288	0.083	0.054	**.002**
Gender								
Female – Male	0.007	-0.209	0.223	.950				
Age range: 7-10 – 3-6	0.335	0.096	0.575	**.006**				
Mother's age								
26-35 – 18-25	-1.266	-2.706	0.173	.084				
36-45 – 18-25	-1.298	-2.740	0.145	.078				
46-55 – 18-25	-1.206	-2.702	0.291	.114				
Education								
Elementary School – literate	-1.000	-1.958	-0.043	**.041**				
Highschool – literate	-0.799	-1.755	0.157	.101				
University – literate	-0.974	-1.959	0.011	.053				
Master's degree or PhD – literate	-1.621	-2.806	-0.437	.007				
Systemic Disorder: Present – None	0.173	-0.143	0.489	.283				
Model 2 (ASHN)					0.333	0.111	0.071	**<.001**
IN	-0.117	-0.236	0.002	.054				
EN	-0.100	-0.217	0.016	.090				
PN	-0.019	-0.132	0.095	.749				
MP	-0.142	-0.260	-0.024	.019				
Model 3 (CCHAS)					0.333	0.111	0.068	**.001**
CCHAS	0.008	-0.102	0.119	.881				

**IN: Information on Nutrition, EN: Emotion for Nutrition, PN: Positive Nutrition, MP: Malnutrition, ASHN: Attitude Scale for Healthy Nutrition, CCHAS: Children's Heart Health Promotion Attitude Scale.*
***: p values in bold indicate a statistically significant difference*

Table 6. *Presentation of Hierarchical linear regression analysis outcomes for the Bleeding index parameter.*

Model Coefficients – Bleeding on Probing Index		95% Confidence Interval						
Predictor	**Stand. Estimate**	**Lower**	**Upper**	***p*-value**	**R**	**R^2**	**Adjusted R^2**	***p*-value**
Model 1 (Demographic attributes)					0.192	**0.037**	**0.007**	.280
Gender								
Female – Male	0.062	-0.158	0.282	.579				
Age range: 7-10 – 3-6	0.240	-0.006	0.485	.055				
Mother's age								
26-35 – 18-25	0.083	-1.391	1.557	.912				
36-45 – 18-25	0.022	-1.455	1.500	.977				
46-55 – 18-25	0.080	-1.450	1.610	.918				
Education								
Elementary School – literate	-0.294	-1.275	0.686	.555				
Highschool – literate	-0.132	-1.111	0.848	.792				
University – literate	-0.405	-1.414	0.604	.430				
Master's degree or PhD – literate	-0.795	-2.008	0.418	.198				
Systemic Disorder: Present – None	0.211	-0.112	0.535	.200				
Model 2 (ASHN)					0.256	0.066	**0.024**	.085
IN	-0.085	-0.207	0.037	.170				
EN	-0.080	-0.199	0.040	.191				
PN	-0.103	-0.219	0.014	.083				
MP	-0.152	-0.273	-0.031	**.014**				
Model 3 (CCHAS)					0.259	0.067	**0.022**	.105
CCHAS	0.038	-0.075	0.151	.507				

**IN: Information on Nutrition, EN: Emotion for Nutrition, PN: Positive Nutrition, MP: Malnutrition, ASHN: Attitude Scale for Healthy Nutrition, CCHAS: Children's Heart Health Promotion Attitude Scale.*

***: p values in bold indicate a statistically significant difference*

The relationship between the GI and demographic data, ASHN, and CCHAS is shown in Table 5. In the analysis where the gingival index was the dependent variable, demographic attributes were added to model 1, explaining 3% of the variance. When the subscales of ASHN, IN, EN, PN, and MP were added to model 2, the explanation rate increased by 2%. When CCHAS was added to model 3, 5% of the gingival index variance was explained in the final model ($p < .01$).

The relationship between the BPI and demographic data, ASHN, and CCHAS is shown in Table 6. In the analysis where the bleeding index was the dependent variable, demographic attributes were added to model 1, explaining 0% of the variance. When the subscales of ASHN, IN, EN, PN, and MP ($p < .05$) were added to model 2, the explanation rate increased by 2%. When CCHAS was added to model 3, 1% of the bleeding index variance was explained in the final model.

For some notable variables, estimated marginal means plots were generated and presented in Fig 1. IN, DMFT, PI, and GI showed significant negative correlations. MP showed significant negative correlations with the PI, BPI, and GI ($p < .05$). No significant relationship was found between other scale parameters and oral index.

The graph showing the relationship between CCHAS and ASHN is shown in Figure 2. A significant statistical relationship was observed between CCHAS and ASHN. Parents with higher ASHN scores had children with higher CCHAS scores.

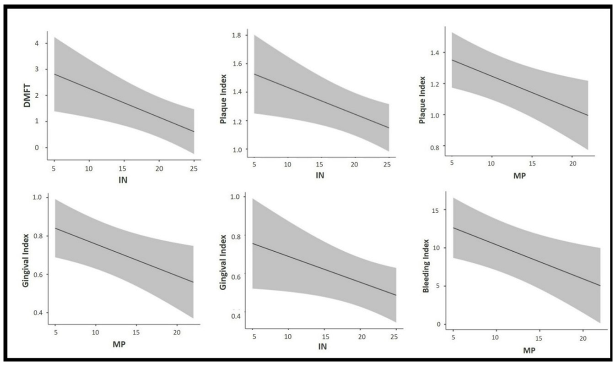

Figure 1. *Estimated marginal means plot were generated.*

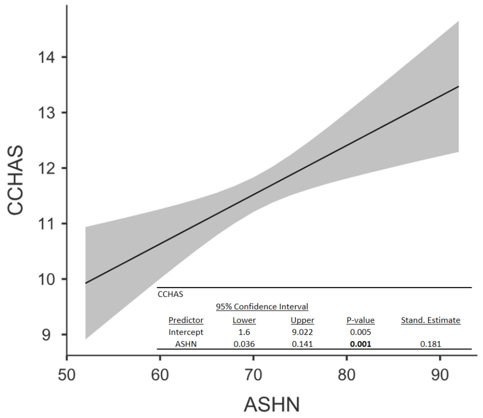

Figure 2. *Linear regression analysis regarding the prediction capability of ASHN on CCHAS.*

4.DISCUSSION

In this study, the attitudes of mothers with children aged 3-10 towards healthy eating were evaluated for their impact on the child's eating habits and oral health. Mothers' attitudes towards healthy eating were assessed using the ASHN scale, the impact on children's eating habits was evaluated using the CCHAS scale, and the effects on oral and dental health were assessed using DMFT/dmft, PI, GI, and BPI. As a result of these findings, while the null hypothesis (H0) of this study was rejected, the alternative hypothesis (H1) was accepted. According to this literature review, no study examining the effect of mothers' knowledge about nutrition on children's eating habits and oral health using the ASHN and CCHAS scales has been encountered. In this respect, this study is original.

Literature review reveals that in studies examining the relationship between parental education level and dmft, DMFT, no significant correlation was found between the number of cavities in children and the parent's education level (30-32). Similarly, in another study comparing the dmft level of 5-year-old children with the parent's education level, it was reported that dmft was not affected by the education level (33). Lin et al. conducted a study examining the one-year effect of cariogenic foods on permanent teeth and found that new cavity formation was particularly observed in children of parents with lower education levels (34). It is reported in the literature that parents' education level and racial differences affect their awareness of oral care habits and therefore the frequency of caries in their children (35). Likewise, an increase in maternal education level was shown to be associated with a decrease in DMFT scores in another study (36). In this study, a significant relationship between DMFT and dmft and demographic variables was observed, but there was no direct relationship with maternal education level.

When evaluating the effect of gender on cavities, a study by Abbas et al. found that the DMFT and dmft levels of boys were higher than those of girls, accompanied by lower parental education levels (37). A similar literature study reported that the incidence of cavities was similar in both genders (30), however, according to a study conducted on Italian children, the DMFT of boys (3.20) was found to be higher than that of girls (1.96) (38). In this current study, similar to literature studies, it was found that dmft was lower in girls, while contrary to the literature studies, the DMFT of girls was higher but there was no significant.

Saraiva et al.'s (39) study investigating the effect of maternal age on DMFT and dmft scores reported an increase in DMFT with increasing maternal age, while Fraiz et al. (40) reported that maternal age did not have a significant contribution to the child's DMFT and dmft scores. In this study, higher dmft scores were observed in cases where maternal age ranged from 18 to 25 compared to other maternal age groups. According to a study, young parents were found to be less competent than more experienced parents in setting rules for their children, such as brushing their teeth and limiting sugar consumption (41). In this context, we can say that the high dmft scores in the children of young mothers in this study may be due to inadequate oral care habits and nutrition. High cavity activity is associated with unhealthy eating and high carbohydrate consumption in the literature (42). In the current study, the average DMFT was found to be 2±0.4 between 7-10 ages, while dmft was found to be 7±4.9 between 3-6 ages and 6±3.7 between 7-10 ages. According to this study, as mothers' knowledge about nutrition decreased, DMFT increased significantly and was statistically significant. Specifically, a significant increase in DMFT problems was observed as mothers IN scores in ASHN decreased. It is understood that a decrease in knowledge about nutrition is associated with an increase in cavity frequency.

Periodontal diseases are not very common in children; however, due to poor oral hygiene, dental plaque forms, and gingival bleeding may occur following gingival inflammation (43). Studies have linked higher parental education levels to lower PI and GI scores in children (44, 45), However, there are also studies in the literature indicating that education level does not have a direct effect on PI and GI (46). While a study suggests that there may be differences in oral hygiene habits between genders and consequently differences in dental plaque formation, according to the study by Akçakoca et al. (46) parameters regarding PI and GI were reported to be similar between girls and boys. Similarly, in this current study, no significant difference was observed between genders in terms of oral hygiene habits, but it was found that only mothers with a master's or doctoral level of education had lower PI and GI scores compared to literate mothers, and the difference was significant. This may be attributed to higher-educated mothers having a higher awareness of oral hygiene practices and routine check-ups.

In this study, a significant relationship was observed between the child's PI scores and ASHN. Particularly, as IN decreased, PI scores increased. It is possible that an increase in the mother's knowledge about nutrition did not parallel an increase in the level of knowledge about oral hygiene habits. Additionally, as the PI score increased, the MP score decreased. Children's eating habits are influenced not only by their mothers but also by school and siblings (18). While CCHAS scores of children decreased, PI scores increased. There was a significant relationship between GI and CCHAS scores. In the study conducted by Akçakoca et al. in 2021 (46), it was observed that children who consumed sugary drinks daily had higher PI and GI averages. In our study, children with a positive nutritional attitude were found to have lower plaque index. The scales used in the study were found to be significantly useful in predicting PI and GI. An increase in mothers' knowledge about nutrition may have led to a decrease in the frequency of cariogenic food consumption, which increases plaque and gingival inflammation in children, and consequently, a decrease in periodontal parameters.

Fışkın and Ölçer (21) conducted a study using ASHN to investigate the impact of mothers' nutrition attitudes on their children's eating behaviour. In this study, the mean total ASHN score was found to be 83.862±9.158, and the IN mean was calculated as 22.137±2.805, indicating a high level of healthy eating (23) The study did not find a significant relationship between mothers' nutrition attitudes and their children's eating behaviour. However, the research indicated that as mothers' knowledge about nutrition increased, it positively influenced their children's eating behaviour, and poor eating habits could negatively affect their children's eating behaviour (21).

In this study, the mean ASHN score was calculated as 71±67.76 between 3-6 ages, 70±67.74 between 7-10 ages, and the IN mean was 21±20.24 and 20±19.22, respectively, indicating that mothers had a high level of healthy eating attitude (23). The impact of mothers' nutrition attitudes on their children's eating behaviour was evaluated using the CCHAS scale in the current study, and a significant relationship was found between CCHAS and ASHN. According to a study, parents' own food consumption preferences, beliefs, or knowledge about the subject have been reported to influence the shaping of their children's eating behaviour (47). Similarly, in this study, it was observed that as mothers' positive attitudes towards nutrition increased, their children's eating behaviour was also positively affected.

According to studies conducted in different cultures, the mother's nutrition attitude has been reported to be the main factor in shaping the child's eating behaviour (48, 49). When the importance of healthy eating is explained to children, it has been observed that their awareness about the subject develops, they understand the importance of foods for their development, and they develop appropriate behaviours (50). Additionally, imposing a rule on foods that should not be consumed by their families is effective for children.

Considering all this information, considering the effectiveness of the family in raising an individual, the importance of the mother's role in acquiring eating behaviour should be taken into account. The data from this study indicate that the mother's nutrition attitude contributes to the development of positive eating behaviour in children. A decrease in the mother's knowledge about nutrition may also lead to deterioration in the child's oral and dental health.

This study was conducted on a limited population with similar nutrition attitudes and behaviours belonging to a specific region. Conducting studies in larger populations involving different ethnic backgrounds could provide broader insights into nutrition attitudes and oral health. Furthermore, the limited number of scales used in the study is among its limitations. Therefore, studies using different scales in larger populations would contribute to the literature.

5. CONCLUSION

Positive nutrition attitude of the mother positively influences the child's eating behaviour. An increase in the mother's knowledge about nutrition has positively affected the oral and dental health of their children. The ASHN scale was found to be useful in predicting dental caries in the data of this study. An IN value in ASHN is a risk factor for DMFT. However, it was observed that as the mother's poor nutrition attitude increased, the PI, GI, and BPI parameters of their children decreased. The scales used in the study cannot be used strongly to predict PI, GI, and BPI. ASHN was found to be useful in predicting CCHAS, and there is a positive relationship between them.

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