ORIGINAL RESEARCH

Employability of Mothers and its Impact on Body Mass Index and Dental Caries of their Preschool Children: A Cross-sectional Study

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Abstract

Aim and background: Employment can affect a mother's role, as working mothers may have less time to oversee oral hygiene and diet, potentially leading to higher rates of dental caries. In contrast, non-working mothers often have more time for health routines and nutritious meal preparation, resulting in better dental outcomes.

Materials and methods: This comparative cross-sectional study evaluates body mass index (BMI), dental caries, and sugar consumption among 3–5-year-old schoolchildren with working and non-working mothers in Mysuru city. The study included 75 children of working mothers and 75 children of non-working mothers. Data on oral hygiene and sugar consumption were collected using a validated questionnaire, and clinical examinations and BMI measurements were conducted by a trained dentist. Statistical tests like Student "*t*" test, ANOVA, and logistic regression analysis were used. A *p*-value <0.05 was considered statistically significant.

Results: Results showed that children of working mothers had a slightly lower mean BMI (15.45 ± 2.15) than those of non-working mothers (15.65 ± 2.007). Children of working mothers had higher decayed, missing, and filled teeth/decayed, extracted, and filled teeth (dmft/deft) scores, indicating more dental caries. More children of working mothers were classified as normal weight or underweight (64 and 22.7%, respectively), while more children of non-working mothers were overweight (25.3%).

Conclusion: Both groups had similar sugary snack and dairy intake rates, but children of working mothers had higher caries rates and lower BMIs, illustrating the complex impact of maternal employment on children's oral health.

Clinical significance: This study explores how maternal employment impacts children's BMI and dental caries, highlighting connections between employment, income, nutrition, and health. Understanding these links helps develop public health interventions to improve children's health and family well-being.

Keywords: Body mass index, Dental caries, Mother's employment, sugar consumption.

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Introduction

According to Kazeminia et al., globally, the prevalence of dental caries in children with primary teeth is 46.2%, escalating to 53.8% in those with permanent teeth.[1] In the Indian demographic, Pandey et al. highlighted a 52% prevalence of dental caries among individuals aged 3–18 years.[2] Despite dental professionals' dedicated efforts, dental caries prevalence persists due to limited public awareness. A child's foundational years heavily impact overall well-being, with oral health being crucial. In the 3–5 age range, impeccable oral hygiene extends beyond esthetics, influencing speech development, nutrition, and lifelong habits.

In the backdrop of these discussions, the National Family Health Survey (NFHS) accentuates another troubling health concern: obesity. With a prevalence of 5% in India, obesity's surge, especially among children, is alarming.[3] Factors like age, gender, body mass index (BMI), and dietary inclinations—such as the frequent intake of fast foods and sugary beverages—fuel this epidemic. Alarmingly, such dietary preferences increase the proliferation of *Streptococcus mutans*, a chief protagonist in dental caries.[4]

The developmental milieu profoundly influences a child's oral health trajectory. Maternal roles, especially during these developmental years, are important in sculpting this environment. With the family dynamics evolving, the employment status of mothers emerges as a pivotal variable. Work engagements can recalibrate family routines, healthcare access, and dietary patterns, all resonating with a child's oral health.

Numerous studies, including the research by Honne et al., elucidate the intricate interplay between obesity, dietary choices, and dental caries. Their insights suggest that children across varied

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BMI spectrums manifest distinct sugar consumption behaviors, with obesity emerging as a significant risk factor for dental caries.[5]

Historically, mothers, especially those predominantly at home, had considerable influence over their children's dietary and oral health regimes. Yet, contemporary shifts, marked by increased maternal workforce participation, have changed these dynamics. As per the NFHS-5, 25.2% of Indian women aged 15–49 are now working women.[3] Corroborating this trend, Baiju et al. observed a higher prevalence of dental caries among children of working mothers compared to their non-working counterparts.[6]

In summation, this narrative seeks to elucidate the intricate relationship between maternal employment dynamics and dental caries prevalence in children. In this comparative study, schoolchildren aged between 3 and 5 years were evaluated for their BMI, prevalence of dental caries, and consumption of food items with added sugar to find out the relationship between prevalence of dental caries, BMI, and consumption of sucrose-containing food items among the 3–5-year-old schoolchildren of employed and unemployed mothers.

Materials and Methods

This is a cross-sectional study conducted in preschools in different areas of Mysuru city over a period of 9 months among 3–5-year-old schoolchildren from April to December 2023. Ethical clearance for the study was obtained from the Institutional Ethics Committee (IEC), JSS Dental College and Hospital, Mysuru (JSS/DCH/IEC/63/2023). Permission was obtained from concerned school authorities, informed consent from parents, and assent from children were obtained. Data were collected from 3–5-year-old school children and their mothers from different schools in Mysuru city.

Sample Size Estimation and Sampling Procedure

The sample size was calculated based on a 95% confidence interval, 80% power, and 82% prevalence of dental caries based on previous study results. The sample size obtained was 72 in each group. To overcome errors, we rounded it off to 75 in each group, 150 overall, comprising 75 working mothers-children dyads and an additional 75 non-working mothers-children dyads. Stratified cluster random sampling technique was used for selection of 3–5-year-old school children (Fig. 1).

School children of the age-group 3–5 years and parents who are willing to consent or participate in the study were included.

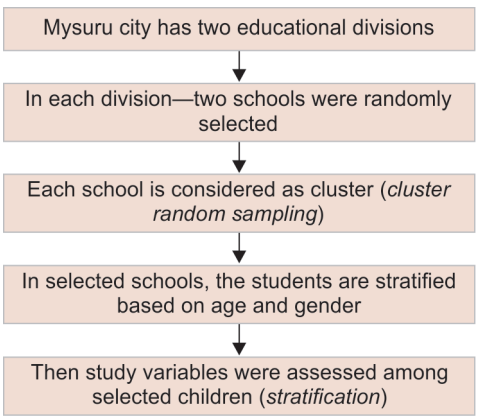

Fig. 1: Flow diagram showing the study design and selection of participants

Children with systemic disorders and communication problems, incompletely filled questionnaires, and school children and parents who were not available during the study session were excluded.

Body Mass Index

Body mass index was computed using the formula: weight in kilograms divided by the square of height in meters. For individuals aged 2–20, BMI was adjusted for age and gender and expressed as a percentile. The BMI percentile for age and gender was plotted on the growth chart established by the Centers for Disease Control (CDC) 2000 standards.[7] According to this, children are classified into four weight groups:

- Underweight: <5th percentile.
- Normal weight: 5th percentile to <85th percentile.
- Overweight: 85th percentile to <95th percentile.
- Obesity: 95th percentile or greater.

To record the consumption of sugar-containing beverages, a newly customized prestructured, validated questionnaire developed using inputs from subject experts was used. To determine the employment status of the mothers, a prestructured questionnaire was used. Cronbach's alpha, which indicates scale-level correlation, was 0.84.

Collection of Data

Informed consent from parents and assent from the children were obtained. On the scheduled day, the Principal Investigator (PI) collected data from the children. The weight and height of the children were measured using a weighing scale and stadiometer, respectively. The index of dmf/def(t) given by Grubbel in 1944 was recorded by the PI, who underwent training and calibration.[8] For intraexaminer reliability during dental caries measurement, the kappa value was 0.96. After the clinical examination, a prestructured questionnaire was distributed to the children to be completed by their mothers (employed/unemployed). The next day, the completed questionnaires were collected from the classroom teachers.

Statistical Analysis

The collected data were inputted into a Microsoft Excel file. Two categories were distinguished: descriptive data utilized mean, standard deviation, frequency, and proportion; inferential data employed Student's *t*-test for comparing independent groups and ANOVA test, Pearson and Spearman correlation tests for assessing variable relationships, and binary logistic regression analysis for controlling and eliciting one-to-one associations. Cronbach's alpha evaluated questionnaire consistency, analyzed using the latest SPSS version. A p-value < 0.05 was considered statistically significant.

Results

The research involved 150 children, split equally into two groups. Descriptive statistics in Table 1 show that working mothers, on average, were older (32.68 ± 4.31) than non-working mothers (30.76 ± 3.80). Children of working mothers had slightly lower mean BMI (15.45 ± 2.15) than those of non-working mothers (15.65 ± 2.00). Working mothers' children had higher decayed, missing, and filled teeth/decayed, extracted, and filled teeth (dmft/deft) scores than non-working mothers' children (Table 1).

Table 1: Descriptive analysis for demographic details of mothers and children

Variables	*Working mothers*	*Non-working mothers*	*Statistical inference*
Mother's age	32.68 ± 4.313	30.76 ± 3.809	*t*-value: –2.890 *p*-value: 0.004*
Children's age	4.23 ± 0.863	4.28 ± 0.727	*t*-value: 0.409 *p*-value: 0.683
Children's weight	16.64 ± 2.997	16.57 ± 3.435	*t*-value: –0.142 *p*-value: 0.887
Children's height	103.52 ± 8.072	102.53 ± 7.428	*t*-value: –0.946 *p*-value: 0.346
BMI	15.45 ± 2.152	15.65 ± 2.007	*t*-value: 0.600 *p*-value: 0.549
Dt	3.52 ± 3.558	1.91 ± 2.600	*t*-value: –3.171 *p*-value: 0.002*
Mt	0.07 ± 0.251	0.04 ± 0.257	*t*-value: –0.643 *p*-value: 0.521
Ft	0.12 ± 0.464	0	*t*-value: –2.241 *p*-value: 0.027*
Dmft	3.71 ± 3.661	1.95 ± 2.650	*t*-value: –3.373 *p*-value: 0.001*

Independent '*t*' test applied; $p < 0.05$-statistically significant; (D-; t-teeth m-missing; f-filled); *statistically significant ($p<0.05$)

Based on BMI, more children of working mothers were normal weight or underweight (64 and 22.7%, respectively) compared to non-working mothers, while more children of non-working mothers were overweight (25.3%). Both groups had similar rates of daily sugary snack and dairy intake. Oral hygiene habits were comparable between the groups, with most reporting good habits. Among non-working mothers, 38.7% had worked previously, and in the working group, the majority worked over 8 hours a day. Dental visits were infrequent in both groups (Table 2).

Analysis showed a significant correlation between child's age and dental caries ($p = 0.008$). No significant differences were found in gender, socioeconomic status, dental visits, mother's education, sugar intake, or brushing habits (Table 3).

In the correlation analysis, dental caries experience showed a positive correlation with the child's age and the consumption of sugary dairy items ($r = 0.252$, $p = 0.002$ and $r = 0.165$, $p = 0.043$, respectively) (Table 4).

Adjusted logistic regression revealed mother's employment status and child's age as significant predictors for dental caries. At age five, children of working mothers had the highest odds (OR = 3.935; $p = 0.005$). Sugary dairy intake showed significance (OR = 2.049; $p = 0.259$) (Table 5).

Discussion

The occurrence of dental caries among 3–5-year-old children is concerning, supported by statistical evidence. Studies indicate a significant portion of children in this age-group suffer from dental decay, estimated at around 20–25%. This highlights the need to address early childhood oral health. Contributing factors include poor oral hygiene, excessive sugar intake, limited access to dental care, and parental awareness gaps. Implementing preventive measures like regular dental visits, encouraging good oral hygiene, and promoting healthy diets can mitigate dental caries prevalence in young children.

Research suggests that approximately 40–50% of these children experience dental caries, emphasizing the significance of this issue. Additionally, limited access to preventive dental care services is a concern, with only around 40% of children of working mothers visiting the dentist annually, compared to approximately 60% of those with non-working mothers. Addressing these challenges, including enhancing parental supervision, promoting healthier dietary habits, and improving access to dental care, is crucial in reducing dental caries prevalence among children of working mothers.

The average BMI of children whose mothers worked was 15.45, slightly lower than that of children whose mothers did not work, at 15.65. This finding echoed a previous study by Sukumaran et al., which compared children attending Anganwadi (14.52) to those in private schools (15.28). Similarly, when considering BMI in relation to socioeconomic status, our results aligned with Sukumaran et al.'s findings.[9] In the working mothers' group, 57.3% of mothers had working hours of >8 hours. However, this contradicted the results of a systematic review by Lou et al., which suggested that mothers working long hours tended to cook less and rely more on ready-made food, potentially leading to excessive calorie intake for their children.[10] Additionally, when the BMI values were classified according to WHO percentile, overweight children were higher in the non-working mothers group, and obese children were higher in the working mothers group, which is contradictory.

In the current study, the mean value of dmft was higher in children of working mothers (3.71). This value was higher than the study done by D'Costa et al., in 3–5-year-old children (2.30)[11] because of the continuous and cumulative occurrence of ECC in children. The value was lower when compared with the findings of Zhu et al. (4.34).[12] Extensive research highlights mothers' role in children's oral health; employed mothers may contribute to increased dental caries risk. Mothers shape oral care habits.[6] Also, a study by Nakano et al. in Japan revealed that children experiencing mental stress had a significantly higher incidence of dental caries, with an average rate of 22.30 ± 19.75, compared to a control group with an average rate of 8.29 ± 13.61.[13] Similarly, Padmanabhan et al. found a statistically significant positive correlation between levels of salivary cortisol, a stress biomarker, and increased dental caries, measured by dmft/DMFT status, in children.[14] These findings suggest that maternal

Table 2: Descriptives for dietary assessment, oral hygiene habits, and mother's employment status

	Questions	*Working mothers*	*Non-working mothers*	*Total*	*Statistical inference*
1.	Children gender				
	Female	35 (46.7)	40 (53.3)	75 (50.0)	X^2 value: 0.667
	Male	40 (53.3)	35 (46.7)	75 (50.0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	*p*-value: 0.414
2.	Socioeconomic status				
	BPL	15 (20.0)	27 (36.0)	42 (28.0)	X^2 value: 4.762
	APL	60 (80.0)	48 (64.0)	108 (72.0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	*p*-value: 0.029*
3.	BMI				
	Normal weight	48 (64.0)	45 (60.0)	93 (62.0)	X^2 value: 4.176
	Underweight	17 (22.7)	11 (14.7)	28 (18.7)	
	Overweight/obesity	10 (13.3)	19 (25.3)	29 (19.3)	*p*-value: 0.124
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
Dietary assessment—How often does your child have the food items and beverage below?					
1.	Sugary snacks				
	Nil	9 (12.0)	9 (12.0)	18 (12.0)	X^2 value: 0.449
	Once a day	55 (73.3)	52 (69.3)	107 (71.3)	
	Twice a day	8 (10.7)	10 (13.3)	18 (12.0)	*p*-value: 0.930
	>twice a day	3 (4.0)	4 (5.3)	7 (4.7)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
2.	Sugary beverages				
	Nil	58 (77.3)	49 (65.3)	107 (71.3)	X^2 value: 3.678
	Once a day	13 (17.3)	23 (30.7)	36 (24.0)	
	Twice a day	4 (5.3)	3 (4.0)	7 (4.7)	*p*-value: 0.159
	>twice a day	0 (0)	0 (0)	0 (0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
3.	Sugary dairy items				
	Nil	9 (12.0)	11 (14.7)	20 (13.3)	X^2 value: 1.289
	Once a day	34 (45.3)	33 (44.0)	67 (44.7)	
	Twice a day	26 (34.7)	28 (37.3)	54 (36.0)	*p*-value: 0.732
	>twice a day	6 (8.0)	3 (4.0)	9 (6.0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
Oral hygiene habits					
1.	Lip biting/tongue thrusting/sucking fingers				
	Yes	16 (21.3)	8 (10.7)	24 (16.0)	X^2 value: 3.175
	No	59 (78.7)	67 (89.3)	126 (84.0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	*p*-value: 0.075
2.	Rinse mouth after each meal				
	Yes	56 (74.7)	57 (76.0)	113 (75.3)	X^2 value: 0.036
	No	19 (25.3)	18 (24.0)	37 (24.7)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	*p*-value: 0.850
3.	No. of times child brush his/her teeth				
	Twice a day	16 (21.3)	21 (28.0)	37 (24.7)	X^2 value: 0.897
	Once a day	59 (78.7)	54 (72.0)	113 (75.3)	
	Never	0 (0)	0 (0)	0 (0)	*p*-value: 0.344
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
4.	Child brush on her/his own				
	Yes	54 (72.0)	62 (82.7)	116 (77.3)	X^2 value: 2.434
	No	21 (28.0)	13 (17.3)	34 (22.7)	

Contd…

Table 2: *Contd…*

	Questions	*Working mothers*	*Non-working mothers*	*Total*	*Statistical inference*
	Total	75 (100.0)	75 (100.0)	150 (100.0)	*p*-value: 0.119
5.	Child use toothpaste				
	Yes	75 (100.0)	74 (98.7)	149 (99.3)	X^2 value: 1.007
	No	0 (0)	1 (1.3)	1 (0.7)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	*p*-value: 0.316
6.	Child have habit of tongue cleaning				
	Yes	62 (82.7)	65 (86.7)	127 (84.7)	X^2 value: 0.462
	No	13 (17.3)	10 (13.3)	23 (15.3)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	*p*-value: 0.497
Mother's employment status					
1.	Currently employed/working				
	Yes	75 (100.0)	0 (0)	75 (50.0)	
	No	0 (0)	75 (100.0)	75 (50.0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
2.	Have you worked before?				
	Yes	63 (84.0)	29 (38.7)	92 (61.3)	X^2 value: 32.496
	No	12 (16.0)	46 (61.3)	58 (38.7)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	*p*-value: 0.000**
3.	While you are in work, who takes care of the child?				
	Never worked before	0 (0)	46 (61.3)	46 (30.7)	X^2 value: 66.499
	Other parent	39 (52.0)	16 (21.3)	55 (36.7)	
	Relatives	26 (34.7)	10 (13.3)	36 (24.0)	*p*-value: 0.000**
	Caretaker	10 (13.3)	3 (4.0)	13 (8.7)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
4.	How many hours do you work per day?				
	Never worked before	0 (0)	46 (61.3)	46 (30.7)	X^2 value: 75.441
	<4 hours	5 (6.7)	4 (5.3)	9 (6.0)	
	4–8 hours	27 (36.0)	19 (25.3)	46 (30.7)	*p*-value: 0.000**
	>8 hours	43 (57.3)	6 (8.0)	49 (32.7)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
5.	How many years have you been working?				
	Never worked before	0 (0)	46 (61.3)	46 (30.7)	X^2 value: 77.209
	<2 years	20 (26.7)	9 (12.0)	29 (19.3)	
	2–5 years	13 (17.3)	14 (18.7)	27 (18.0)	*p*-value: 0.000**
	>5 years	42 (56.0)	6 (8.0)	48 (32.0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
6.	Mother's final education				
	Primary or below	2 (2.7)	0 (0)	2 (1.3)	X^2 value: 5.467
	High school	4 (5.3)	6 (8.0)	10 (6.7)	
	Middle school	0 (0)	3 (4.0)	3 (2.0)	*p*-value: 0.141
	College graduate	69 (92.0)	66 (88.0)	135 (90.0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
7.	How many members in family?				
	2	1 (1.3)	4 (5.3)	5 (3.3)	X^2 value: 2.448
	2–5	51 (68.0)	53 (70.7)	104 (69.3)	
	>5	23 (30.7)	18 (24.0)	41 (27.3)	*p*-value: 0.294
	Total	75 (100.0)	75 (100.0)	150 (100.0)	

Contd…

Table 2: *Contd…*

	Questions	*Working mothers*	*Non-working mothers*	*Total*	*Statistical inference*
8.	How many siblings does your child have?				
	One	36 (48.0)	37 (49.3)	73 (48.7)	X^2 value: 0.214
	>one	3 (4.0)	4 (5.3)	7 (4.7)	
	None	36 (48.0)	34 (45.3)	70 (46.7)	*p*-value: 0.899
	Total	75 (100.0)	75 (100.0)	150 (100.0)	
9.	When was your last dental visit?				
	Once in 6 months	23 (30.7)	13 (17.3)	36 (24.0)	X^2 value: 7.338
	Once a year	11 (14.7)	8 (10.7)	19 (12.7)	
	>once a year	41 (54.7)	51 (68.0)	92 (61.3)	*p*-value: 0.062
	Never	0 (0)	3 (4.0)	3 (2.0)	
	Total	75 (100.0)	75 (100.0)	150 (100.0)	

Chi-squared test applied; $p < 0.05$-statistically significant; *statistically significant ($p<0.05$) **Highly statistically significant ($p<0.001$)

Table 3: Comparison of dental caries experience and BMI with independent variables

		BMI	*p*	*dmft*	*p*
Child gender	Female	15.75 ± 2.17	*t*: 1.161	2.80 ± 3.10	*t*: –0.098
	Male	15.35 ± 35	*p*: 0.247	2.85 ± 3.51	*p*: 0.922
SES	BPL	15.38 ± 1.84	*t*: –0.609	2.62 ± 3.64	*t*: –0.479
	APL	15.61 ± 2.16	*p*: 0.544	2.91 ± 3.17	*p*: 0.633
Caries	Absent	15.63 ± 2.06	*t*: 0.342	–	–
	Present	15.51 ± 2.09	*p*: 0.733		
Child age	Three	15.42 ± 1.77	F: 0.176	1.45 ± 2.20	F: 4.994
	Four	15.69 ± 2.11		2.65 ± 3.08	
	Five	15.52 ± 2.07	*p*: 0.839	3.58 ± 3.663	*p*: 0.008
BMI	Normal	–	–	2.83 ± 3.23	F: 0.053
	Under			2.68 ± 3.45	
	Over/obese			2.97 ± 3.47	*p*: 0.948
Dental visit	Once in 6 months	–	–	3.61 ± 3.42	F: 1.508
	Once a year			3.42 ± 3.23	
	>once a year			2.45 ± 3.26	*p*: 0.215
	Never			1.33 ± 2.30	
Mother's education	Primary/below	15.50 ± 0.70	F: 0.460	3.00 ± 0.0	*t*: 1.003
	High school	16.07 ± 2.28		2.00 ± 2.40	
	Middle school	16.53 ± 3.26	*p*: 0.711	0	*p*: 0.394
	College graduate	15.49 ± 2.05		2.95 ± 3.39	
Sugary snacks	Nil	15.43 ± 2.03	F: 2.203	3.06 ± 3.19	F: 0.857
	Once a day	15.35 ± 1.97		2.80 ± 3.36	
	Twice a day	16.61 ± 2.39	*p*: 0.090	2.11 ± 1.99	*p*: 0.465
	>twice a day	16.20 ± 2.33		4.43 ± 5.15	
Sugary beverages	Nil	15.49 ± 2.02	F: 1.236	3.01 ± 3.36	F: 0.620
	Once a day	15.48 ± 2.11		2.44 ± 3.29	
	Twice a day	16.75 ± 2.56	*p*: 0.293	2.00 ± 2.30	*p*: 0.539
	>twice a day	0		0	
Sugary dairy items	Nil	14.95 ± 1.59	F: 1.167	2.25 ± 2.75	F: 1.594
	Once a day	15.48 ± 2.31		2.45 ± 2.81	
	Twice a day	15.72 ± 1.77	*p*: 0.325	3.22 ± 3.74	*p*: 0.193
	>twice a day	16.36 ± 2.69		4.56 ± 4.58	
Child's brushing	Twice a day	15.84 ± 2.28	F: 0.988	3.24 ± 3.65	F: 0.779
	Once a day	15.45 ± 2.00		2.69 ± 3.18	
	Never	0	*p*: 0.322	0	*p*: 0.379

ANOVA test applied; $p < 0.05$-statistically significant

Table 4: Correlation between dental caries experience and BMI with independent variables

	BMI		*dmft*	
Variables	*r*	*p*	*r*	*p*
Mother's age	0.061	0.460	0.85	0.303
SES	0.050	0.544	0.039	0.633
Child age	0.10	0.908	0.252	0.002**
Sugary snacks	0.151	0.066	0.017	0.837
Sugary beverages	0.083	0.315	-0.091	0.267
Sugary diary items	0.147	0.072	0.165	0.043*

Pearson and Spearman correlation analysis applied; *statistically significant ($p<0.05$) **highly significant ($p<0.001$)

Table 5: Predictors of dental caries experience among children—adjusted analysis

Dependent variable	*Group*	*OR*	*P*	*95% CI*
Mother's occupation	Non-working	1	0.007*	0.15–0.74
	Working	0.340		
SES	APL	1	0.723	0.51–2.62
	BPL	1.159		
Age	Three	1	0.080	0.89–7.13
	Four	2.528	0.005*	1.50–10.27
	Five	3.935		
Gender	Female	1	0.391	0.34–1.52
	Male	0.721		
Sugary snacks	Nil	1	0.789	0.23–3.03
	Once	0.839	0.566	0.12–3.07
	More than once	0.628		
Sugary beverages	Nil	1	0.949	0.39–2.41
	Once	0.971	0.633	0.08–4.59
	More than once	0.612		
Sugary dairy items	Nil	1	0.692	0.38–4.23
	Once	1.275	0.259	0.59–7.12
	More than once	2.049		
Rinse mouth after each meal	No	1	0.979	0.40–2.43
	Yes	0.988		
No. of times child brush his/her teeth	Twice a day	1	0.713	0.34–2.07
	Once a day	0.845		
Mother's final education	School	1	0.903	0.30–3.79
	College	1.081		
Visited dentist	No	1	0.423	0.21–39.37
	Yes	2.904		

Bivariate regression analysis test applied; *statistically significant ($p<0.05$)

employment may adversely affect children's mental health due to reduced quality time spent with their mothers. This increased stress may contribute to higher instances of dental caries among these children, highlighting the complex interplay between maternal employment, children's stress levels, and oral health.

Approximately 71.3% of children indulge in sugary snacks, 24% opt for sugary beverages, and 44.7% partake in sugary dairy products on a daily basis, potentially heightening the risk of dental caries. These figures are lower compared to a study conducted by Lima et al., where 85.4% of children consumed sugar up to twice a day. The research also highlighted that children from lower-income families, who consume sugar more frequently, exhibit a higher prevalence of dental caries. This association was not observed among children from higher-income households. Children from disadvantaged backgrounds often consume more adhesive foods containing high levels of free sugars, like candies, lollipops, and cookies, which contribute to dental caries development. Additionally, low-income families tend to have fewer dental visits, less awareness about dental health, and are less likely to adopt preventive and therapeutic measures.[15]

Even though in our study, 75.3% of children rinsed their mouths after meals and brushed once a day, and 84.7% had the habit of tongue cleaning, the rate of dental caries was higher in children. This was in contrast with the findings of the study done by Khail et al., in which the mean value of DMFT and deft was 1.02 and 2.29, respectively, and 32% of children had poor oral hygiene.[16] Also, in another study done by Nazar et al., 73.3% of infants and toddlers had good oral hygiene, and 19% had their parents brush their teeth. The prevalence of caries was 1.2% (noncavitated) and 1.8% (cavitated), which was less compared to our findings.[17]

In our study, 61.3% of the mothers had last visited the dentist more than a year ago. But contrastingly, the women who had visited

Study	*Country*	*Study population*	*Mother's occupational status*	*Children age*	*Findings*
Lee et al., 2019[19]	South Korea	Mothers aged 35–44 and their children aged 10–11	Varied (high, middle, low-income levels)	10–11 years	Positive correlation between maternal DT/DMFT scores and children's caries. Lower maternal occupational status linked with higher caries in children
Elamin et al., 2021[20]	Middle East and North Africa	Children aged 5–15 across various countries	Varied socioeconomic status	5–15 years	Lower maternal occupational status associated with higher caries prevalence in children. Socioeconomic factors significantly influence dental health

the dentist had 2.9 times more caries than the mothers who had never visited. In a study done by Karki et al., 42.9% of participants had visited more than a year ago, and the mean DMFT score was 5.77 ± 4.75. These findings were similar, but the caries prevalence is lower in our study than in the other study.[18] Also, when comparing dental visits and DMFT scores, participants who never visited, visited more than a year ago, and visited within a year had lower caries rates compared to those who visited the dentist in the last 6 months. These results were similar to the study done by Baiju et al.[6]

These studies consistently demonstrate that lower maternal occupational status is associated with higher rates of dental caries in children. Additionally, the age of the child plays a role, with certain age-groups being more vulnerable to the impact of socioeconomic factors on their dental health.

In bivariate logistic regression analysis, mother's occupational status and child's age were strong predictors of the variables that had a considerable influence on the caries incidence in children. Several factors contribute to the higher prevalence of dental caries despite regular dental visits. Primarily, visits often focus on treatment over prevention. Patients may also fail to follow recommendations, and socioeconomic factors and cultural beliefs further impact preventive care access and awareness. Also, in our study, most of the working women belonged to higher socioeconomic status (60%), which is contrary to the results of a study done by Singh et al., in which most of the participants were concession card holders.[21]

This study has several limitations. The cross-sectional design limits the ability to establish causality between maternal employability, children's BMI, and dental caries. Relying on self-reported data for employment status, dietary habits, and oral hygiene practices may introduce recall or social desirability bias, affecting accuracy. The limited geographic scope and potential uncontrolled factors, like genetic predispositions and environmental influences, might also impact the findings. Additionally, a small sample size can restrict the statistical power and the ability to detect significant associations.

Future research should include longitudinal studies to understand causal relationships and assess the impact of maternal employability on children's health. Broader demographic analysis and detailed dietary and oral hygiene assessments would improve accuracy. Additionally, exploring paternal factors, socioeconomic support, healthcare access, and maternal mental health can provide a comprehensive understanding of the family dynamics affecting children's BMI and dental caries.

Conclusion

Children of working mothers exhibited a higher caries rate and lower BMI compared to children of non-working mothers. The increased occurrence of dental caries in children of working mothers underscores the complexity of oral health differences influenced by maternal employment. Maternal work often limits consistent oral hygiene practices, leading to irregular brushing, flossing, and dental visits compared to children with non-working mothers. Lack of parental supervision during working hours may also contribute to increased snacking and sugary drink consumption, elevating the risk of dental caries. These initiatives aim to reduce oral health disparities and improve outcomes for all children, regardless of their mothers' employment status.

Clinical Significance

Children of working mothers exhibited a higher caries rate and lower BMI compared to children of non-working mothers. The increased occurrence of dental caries in children of working mothers underscores the complexity of oral health differences influenced by maternal employment. Maternal work often limits consistent oral hygiene practices, leading to irregular brushing, flossing, and dental visits compared to children with non-working mothers. Lack of parental supervision during working hours may also contribute to increased snacking and sugary drink consumption, elevating the risk of dental caries. These initiatives aim to reduce oral health disparities and improve outcomes for all children, regardless of their mothers' employment status.

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References

1. Kazeminia M, Abdi A, Shohaimi S, et al. Dental caries in primary and permanent teeth in children's worldwide, 1995 to 2019: a systematic review and meta-analysis. Head Face Med 2020;16(1):22. DOI: 10.1186/s13005-020-00237-z
2. Pandey P, Nandkeoliar T, Tikku AP, et al. Prevalence of dental caries in the Indian population: a systematic review and meta-analysis. J Int Soc Prev Community Dent 2021;11(3):256–265. DOI: 10.4103/jispcd.JISPCD_42_21
3. National family health survey (NFHS-5).
4. Raj A, Kashyap S, Kundra K, et al. Correlation between BMI, caries prevalence, and sugar-containing beverage intake in 6-10 year old children. J Pharm Bioallied Sci 2022;14(Suppl 1):S991–S994. DOI: 10.4103/jpbs.jpbs_814_21
5. Honne T, Pentapati K, Kumar N, et al. Relationship between obesity/overweight status, sugar consumption and dental caries among adolescents in South India. Int J Dent Hyg 2012;10(4):240–244. DOI: 10.1111/j.1601-5037.2011.00534.x

6. Baiju RM, Peter E, Narayan V, et al. Do children of working mothers experience more dental caries? Contemp Clin Dent 2018;9(4):541–547. DOI: 10.4103/ccd.ccd_682_18
7. CDC. BMI calculator for child and teen. Centers for Disease Control and Prevention. 2023. Available from: https://www.cdc.gov/healthyweight/bmi/calculator.html.
8. Kulkarni P, Singh DK, Jalaluddin M, et al. Indices in dentistry: recitation of oral diseases at numerical value. J Res Adv Dent 2016;5(2):261–268.
9. Sukumaran N, Sharma V, Bhat PK. Dental caries, body mass index, and socioeconomic status among preschoolers in private preschools and Anganwadi centers in Bengaluru city: a comparative study. Int J Clin Pediatr Dent 2020;13(6):630–634. DOI: 10.5005/jp-journals-10005-1848
10. Lou Y, Zhu Y, You Q, et al. Maternal long working hours and offspring's weight-related outcomes: a systematic review and meta-analysis. Obes Rev 2022;23(6):e13439. DOI: 10.1111/obr.13439
11. D'Costa VG, Karkada D, Singhal DK, et al. Social capital and dental caries among 3-5-year-old Indian children. A cross-sectional study. Eur J Paediatr Dent 2023;24(1):15–19. DOI: 10.23804/ejpd.2023.24.01.03
12. Zhu H, Lian L, Zhu K, et al. Guardian factors affecting high prevalence of dental caries in preschool children. Oral Health Prev Dent 2022;20(1):157–164. DOI: 10.3290/j.ohpd.b2960227
13. Nakano R, Ohshima T, Mukai Y, et al. Association between dental caries prevalence and stress levels in Japanese children. Cureus 2022;14(11):e31074. DOI: 10.7759/cureus.31074
14. Padmanabhan V, Islam MS, Habib M, et al. Association between salivary cortisol levels, dental anxiety, and dental caries in children: a cross-sectional study. Dent J 2023;11(9):205. DOI: 10.3390/dj11090205
15. Lima LJS, da Consolação Soares ME, Moreira LV, et al. Family income modifies the association between frequent sugar intake and dental caries. Int J Paediatr Dent 2023;33(6):535–542. DOI: 10.1111/ipd.13053
16. Khail AAK, Ronis K, Mureed S. Dental caries and oral hygiene status among primary school children in Quetta, Pakistan: a quantitative approach. J Pak Med Assoc 2022;73(1):143–146. DOI: 10.47391/JPMA.5143
17. Nazar H, Al-Mutawa S, Ariga J, et al. Caries prevalence, oral hygiene, and oral health habits of Kuwaiti infants and toddlers. Med Princ Pract 2014;23(2):125–128. DOI: 10.1159/000356866
18. Karki B, Kunwar S, Gaire G, et al. Dental caries among patients visiting the dental outpatient department in a tertiary care centre: a descriptive cross-sectional study. JNMA J Nepal Med Assoc 2023;61(263):588–591. DOI: 10.31729/jnma.8215
19. Lee SM, Kim HN, Lee JH, et al. Association between maternal and child oral health and dental caries in Korea. J Public Health 2019;27(2):219–227. DOI: 10.1007/s10389-018-0936-2
20. Elamin A, Garemo M, Mulder A. Determinants of dental caries in children in the Middle East and North Africa region: a systematic review based on literature published from 2000 to 2019. BMC Oral Health 2021;21(1):237. DOI: 10.1186/s12903-021-01482-7
21. Singh KA, Spencer AJ, Roberts-Thomson KF, et al. Work-family conflict and oral and general health-related quality of life. Int J Behav Med 2015;22(4):489–497. DOI: 10.1007/s12529-014-9454-y