

The Role of Mothers' Socioeconomic Class on their Children's Dental Health

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ABSTRACT

Objective: To assess the relationship between the mother's educational level and family income on the dental caries experience of their children. **Material and Methods:** A cross-sectional study was conducted at the Department of Pediatric Dentistry, University of Babylon, Iraq. The sample comprised 100 children aged 5-15 years. Data was collected in two parts: first, a self-administered questionnaire was obtained from mothers: Mother's age, level of education, family income, child age, and gender. Another part included the clinical examination of dental caries that was measured for mothers and their children using the DMFT/dmft index for permanent and primary dentition sequentially. The collected data were statistically analyzed using mean \pm standard deviation (SD mean and standard deviation, t-test, and F-test. **Results:** The sample showed 60% were boys and 40% were girls, 86% with dental caries. Mothers with a high level of education and high monthly income have significantly lower dental caries experiences than their children ($p < 0.05$). In contrast, there was a significant difference between the two age groups ($p = 0.000$), a considerable difference between the level of family monthly income and dmft ($p = 0.01$), and there was a correlation value between the caries index DMFT value of the children and their mother with mother's education level. **Conclusion:** Many dental caries were reported among Babylon City/Iraq children. Mothers with high educational levels and family monthly income were correlated to lower dental care for their children than those with low educational levels and economic status, so they need to focus on oral health knowledge and encourage prophylactic intervention and preventive measures for the population.

Keywords: Social Class; Education; Attitude; Mothers; Oral Health.

Introduction

Tooth decay remains a prevalent chronic childhood disease in many developing countries regardless of its preventable nature, and human beings are susceptible to dental caries throughout their life [1]. Three dynamically interrelated key factors collectively contribute to the development of dental caries: carbohydrate, host, and dental plaque [2]. Numerous biological and nonbiological stimuli of the carious process may impact the relationship between these dynamic factors [3].

Childhood behavioral habits were first established at home; mothers, in particular, have the primary role and significant influence on the child's oral health behavior patterns, such as the practice of twice-daily tooth brushing and a healthy diet that decreases the probability of dental plaque formation, the primary cause of tooth decay [4,5], as stated by Adeniyi et al. [6] as well as the research by Shearer et al. [7] indicated that "It was more likely that mothers with bad oral care were likely to have children with bad dental hygiene. Pediatric dentists "should focus on the mother's education to avoid caries in their children," according to Paglia [8].

The foundation of an individual's oral health is further modified throughout the formative preschool years, which is the time of establishing a child's dental caries pattern and risk. Even though teenagers are increasingly independent in their choices of dental hygiene routines and habits, families still play a significant role in developing oral health-related behaviors during childhood and adolescence [9].

Children who grow up in low-income households report less schooling, lower grades, poorer health, and less work and income in adulthood than those who grow up in higher-income households [10]. Socioeconomic status is directly impacted by eating habits and lifestyle patterns, affecting the prevalence of dental caries [11]. According to the study's null hypothesis, increased child dental health is correlated with higher mother income and education levels.

Little information about the association between a mother's education, family income, and children's oral health status is unknown in Iraq, especially in Babylon City. This research aimed to determine how family income and mothers' education level affected their children's dental health.

Material and Methods

Study Design and Ethical Clearance

A cross-sectional study was performed on randomly chosen children aged between 5 and 15 years at the dental clinic at the Pediatric Dentistry Department of Babylon University in Iraq from the beginning of December 2021 to April 2022.

This study was evaluated and approved by the Central Committee for Scientific Ethics (Number 160 on 10/12/2021). The study protocol, subject information, and consent forms were reviewed and approved by the local ethics committee.

Data Collection

A pediatric dentist collected the data; the study was started by obtaining consent forms from the mothers to participate in the study. Mothers were asked to answer questions filled out in the waiting room, which included the following: child age and gender; monthly income was divided into three categories: $\geq \$ 500$, $\geq \$ 1000$, $\geq \$ 2000$ low, moderate, and high sequentially [12]; level of education and Mother's age.

The Clinical Examinations

A specialist pediatric dentist examined dental caries that were detected and recorded by WHO criteria by using a plane mouth mirror, good dental light, and round-end dental explorer to record the dentition status by using (D/d=decay, M/m= missing, F/f=filing). DMFT and dmft index for permanent dentition and primary dentition, respectively. A clinical visual examination of dental caries was carried out by systematic approach; it began at the upper right second molar and progressed linearly to the upper left second molar, the lower left second molar, and finally, the lower right molar. The inclusion criteria were children with good general health, aged 5-15, and accepted the clinical examination. Children with exfoliated teeth, un-erupted teeth, and teeth missing for other reasons, not due to caries, lack of participant cooperation, and the child/mother having systemic diseases were excluded from the study.

Statistical Analysis

This study used the Statistical Package for Social Science (SPSS) program IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp. All values were expressed as mean ± standard deviation (SD). The data was generally distributed by the Shapiro-Wilk test, t-test, and F-test, which were used to compare groups when p-values were =or<to 0.05, considered statistical significance.

Results

The sample comprised 100 children aged 5-15 years; 60% were boys, 40% were girls, and 86% of the total sample was affected with dental caries. Table 1 illustrates mothers' monthly income, educational level, and ages.

Table 1. Monthly income, educational level, and ages of mothers.

Variables	N	%
Monthly Income		
High	5	5.0
Moderate	88	88.0
Low	7	7.0
Mothers Educational Level		
Primary	31	31
Secondary	25	25
Collage	44	44.0
Mothers Age		
24-34	47	47.0
35-45	34	34.0
46-57	19	19.0

The result showed no significant difference for both genders ($p>0.05$), whereas substantial differences between the two age groups ($p=0.000$, Table 2). there was a significant difference between the level of family monthly income and dmft, with a high difference in low-income level.

Table 2. Distribution of DMFT and dmft index values according to gender, age and family monthly income.

Variables	dmft (Mean ± SD)	DMFT (Mean ± SD)
Gender		
Boys	2.78±1.71	1.66±1.46
Girls	2.24±1.14	1.16±1.30
p-value	0.092	0.090
Age		
5-8	4.19±1.97	0.41±0.25

9-15	1.62±0.76	2.09±1.15
p-value	0.0000*	0.0000*
Family Monthly Income		
High	1 ± 0.4	1.8 ± 0.32
Moderate	2.14 ± 0.84	1.4 ± 0.86
Low	2.70 ± 1.36	1.8 ± 0.58
p-value	0.01*	0.27

t-test Statistically Significant.

The result showed a positive correlation between the mother's education level and dental caries for both mother and their children, as seen in Table 3. The mother with a primary educational level showed a significantly higher DMFT value in contrast to the college academic level, which revealed the lowest DMFT value for both mothers and their children, with a significant difference (p=0.000).

Table 3. Demonstrate the correlation between the caries index DMFT value of the children and their mother and the mother's education level.

Levels of the Mother's Education	Children DMFT (Mean)	Mothers DMFT (Mean)	Relationship	p-value
Primary	1.88	5.23	The value of R is 0.3123 - positive correlation	0.00001*
Secondary	1.41	5.87	The value of R is 0.1322 - positive correlation	0.00001*
College	0.933	4.977	The value of R is -0.0198 - negative correlation	0.00001*

Discussion

Dental caries negatively affect the health of the child and his lifestyle, in addition to its impact on his psychological and cultural behavior [13]. This study statistically demonstrated the effect of a mother's educational level and family income on dental caries experience in their children.

The result showed a high caries experience in children aged 5-8 years for primary dentition and 9-15 years for permanent dentition with a significant difference. This might explain the high incidence of dental caries disease in the community despite improving citizens' educational and financial status and elaborating the need for applying oral health awareness programs among parents and children [11]. This result agrees with similar studies in neighboring countries such as Saudi Arabia and Turkey [14,15].

The main explanation for this finding is that the children who are from families with low income frequently had a diet that was poor nutrition and high in sugars and fats, predisposing them to the development of caries and obesity [16]. Also, families with a low economic level neglect the periodic visit to the dentist to obtain preventive care and prophylactic intervention, where their children are brought only to the dentist when they experience tooth pain [17].

The second finding is that a mother's educational level significantly affected the incidence of dental caries in their children. High DMFT scores were observed for the mother and their children in the mother's low educational level. This result explained that mothers with high academic levels have higher knowledge about oral health care, like daily tooth brushing with their children and other oral health habits; this result agrees with a similar study [13]. Previous studies showed an enhanced anti-cariogenic effect of fluoridated toothpaste compared to a placebo in supervising tooth brushing procedures. Thus, parents need to be aware of the significant role of brushing habits and soft drink intake in the progression and prevention of dental caries [11].

Children's oral health requires more attention to developing public preventive healthcare programs that would serve children and reduce the incidence of caries. Parental dental education is essential to provide children with healthy dietary products and perform frequent dental follow-ups according to the scheduled dental visits.




Therefore, the prevention of dental problems could have a positive impact on children's education and quality of life [11].

This study possesses definite limitations. It was carried out in a limited region in Iraq and depended only on patients attending the University of Babylon City pediatric department, so it's a manageable study. We need comprehensive, large-scale research from different regions of the country to provide a clear picture of that relationship. Also, fathers were excluded from this study since mothers mainly accompany their children to the dental clinic, so we need to conduct further studies that include fathers to get a complete picture of parental influence on children's oral health. Finally, we must highlight the quality/ quantity of saliva and the microbiological picture of the mother and their children.

Conclusion

Mothers have a central role in the oral health of their children. Mothers with high socioeconomic status have children with lower dental caries experience than mothers with low and moderate socioeconomic status. Therefore, we must intensify efforts to educate mothers about oral health care and deliver preventive services to low-income families.

Authors' Contributions

SYA		https://orcid.org/0000-0002-5010-5500	Conceptualization, Methodology, Validation, Formal Analysis, Investigation, Data Curation, Writing - Original Draft, Writing - Review and Editing and Supervision.
OLS		https://orcid.org/0000-0002-9369-8481	Data Curation and Supervision
ZMH		https://orcid.org/0000-0002-3405-941X	Methodology, Validation, Supervision and Project Administration.

All authors declare that they contributed to a critical review of intellectual content and approval of the final version to be published.

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None.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data used to support the findings of this study can be made available upon request to the corresponding author.

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