INFLUENCE OF SOCIOECONOMIC STATUS ON BEHAVIOR OF PRESCHOOL CHILDREN IN THE DENTAL OFFICE. A CROSS SECTIONAL STUDY

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ABSTRACT

Background: The main goal of pediatric dentist is to perform high quality oral health care to the children while instilling favorable attitude. Socioeconomic status is an important determinant of health that can affect child behavior.

Aim of the study: This study evaluated the influence of socioeconomic status (SES) on behavior of preschool children in the dental office.

Subject and method: A group of 384 preschool children with deep carious lesion in primary teeth were selected from the outpatient clinic of pediatric and community dentistry department, Minia University Dental Hospital (MUDH), Minia, Egypt. Socioeconomic status was evaluated using questionnaire completed by the parents during the first dental visit. Child behavior was assessed using the Frankl behavior rating scale (FBRS) during the dental procedure by single examiner other than the operator. Descriptive statistics, frequency tables with mean and standard deviation were used. To measure the association between the children's behavior with the different SES domains, multivariate logistic regression analysis was performed. The strength of association between the overall SES and the FBRS was tested using Spearman's rho (r).

Results: A strong positive association, using Spearman's rho (r) = 0.75 (p <0.001), was found between the overall SES and the FBRS scores. The odd ratio of overall SES was 15.23 times associated with children's behavior with 95% CI of 8.76 - 26.49 (p <0.001). Children's age, number of siblings going to school, family possession domain, and health-care domain were significantly associated with children's behavior in the dental office.

Conclusion: Parental socioeconomic status directly affects the behavior of preschool children in the dental office.

KEY WORDS: Socioeconomic status, Child behavior, Preschool children, Dental office.

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INTRODUCTION

One of the most important determinants of the health of individuals is their socioeconomic level. A person with a high social and economic level becomes more productive in the society and interacts properly with others (Reynolds et al., 2020). SES is defined as "The position of individuals or groups on the socioeconomic scale, determined by a combination of social and economic parameters such as income, educational level, occupation, place of residence, and — in some societies — ethnic origin or religious background" (Abenawe et al., 2022). SES affects almost all health aspects as well as risk factors. These include overall morbidity rate, child mortality, maternal mortality, chronic illness, communicable diseases, health behavior and use of health services. SES is also related to language development, political factors, and crime rates in society (De Medeiros et al., 2009).

Hooley et al. (2012), Kato et al. (2017) and Eid et al. (2020) reported that children with low caries experience belonged to families with high socioeconomic levels compared to children with high caries levels. Abbass et al. (2019) reported that caries incidence in Egyptian children was found to be inversely correlated with SES, parental education, oral hygiene.

The main goal of pediatric dentistry is to gain the children's cooperation in the dental office to positively affect their attitude while performing the various treatment procedures (AAPD, 2020). The current study was conducted to assess parental SES and its influence on child behavior in dental office during dental treatment among a group of preschool children in Minia, Egypt.

SUBJECT AND METHOD

Ethical regulation

The current study was approved by the ethical committee, faculty of dentistry, Minia university (reference No. # 525/2021). After explaining the objective of the study and that data collected would be kept anonymous, an informed consent was obtained from the parents of the children recruited.

Design and setting

An observational cross-sectional study was conducted among a sample of children in Minia University Dental Hospital during the period from February 2022 to November 2022. The sample size was estimated to be 384 children according to Cochran's sample size formula: $n = Z^2 pq / e^2$

Where (n) is the sample size, (z) = 1.96 from the z table, (p) = 0.5 which is the maximum estimated proportion of population, (q) = 1-p and (e) = 0.05 which is the margin of error.

Eligibility criteria

Preschool children; below 6 years of age, who attended to MUDH seeking dental treatment were included in the study. Recruited children had primary teeth with deep carious lesion requiring pulp therapy or extraction. Children had to be accompanied by either parents. Pediatric patient with physical or mental disabilities or systemic disease, in addition to children with previous dental treatment or had visited a dentist before were excluded from the study.

Dental procedures

All children were treated by the same pediatric dentist in pediatric and community dentistry department, MUDH. The same topical anesthetic (benzocaine 20%) and local anesthetic (Articaine 4%) agents were used by the operator for the children enrolled. Treatment was performed according to the AAPD guidelines for behavior guidance and management of deep carious lesion.

Socioeconomic status evaluation (SES)

El-Gilany et al. (2012) SES scale was used. This

scale consisted of a questionnaire involving 7 domains which were education domain, occupation domain, family domain, family possession domain, home sanitation domain, economic domain and health care domain. The total score of the scale was 84. Socioeconomic status was classified into four levels; families with score less than 23 were classified as very low social level, families with score from 23 to 34.5 were considered low social level, families with score from 34.5 to 38 were considered moderate social level, and families with score more than 38 were categorized as high social level. Illiterate parents were interviewed to complete the questionnaire.

Assessment of child dental behavior:

During the dental procedure, behavior of children was assessed using FBRS by single examiner other than the operator. Children were classified according to their cooperation into definitely positive, positive, negative and definitely negative.

Statistical method and data analysis

IBM SPSS (statistical package for social science) software package version 20.0 (Armonk, NY: IBM Corp) was used for data analysis. For descriptive statistics, frequency tables with mean and standard deviation were used. To measure the association between the children's behavior with the different SES domains, multivariate logistic regression analysis was performed. The outcome categories of FBRS were dichotomized to positive behavior (definitely positive and positive scores) or negative behavior (definitely negative and negative scores). The strength of association between the overall SES and the FBRS was tested using Spearman's rho (r). The level of significance was set to 0.05 at 95% CI.

RESULTS

Regarding FBRS, children with positive behaviors represented 59.9% (definitely positive behavior was 14.1% and positive behavior was 45.8%). Negative behaviors were 40.1% (definitely negative behavior was 6% and negative behavior was 34.1%) (Table: 1). Regarding SES, families with very high SES represented 41.7%. While, families with very low SES represented 19% of the sample (Table: 2).

TABLE (1) Frankl behavior rating scale of the participants (n = 384).

FBRS	N (%)
Definitely negative	23(6)
Negative	131(34.1)
Positive	176(45.8)
Definitely positive	54(14.1)

TABLE (2) Total socioeconomic status scores of the participants (n = 384).

Total socioeconomic status (SES)	N (%)
<23 very low	37(19)
23 to 34.5	81(21.1)
35 to 38	70(18.2)
>38	160(41.7)

Unadjusted and adjusted odd ratio of the independent variables in relation to the FBRS are listed in table (3). The odd ratio of overall SES was 15.23 times associated with children's behavior with 95% CI of 8.76; 26.49 (p<0.001). An increase in children's age, number of siblings going to school, family possession domain, and Health-care domain was significantly associated with more favorable behavior in the dental office.

TABLE (3) Unadjusted and adjusted odd ratio of the independent variables in relation to the FBRS.

Independent variables	Unadjusted odd ratio			Adjusted odd ratio		
	B	95%CI	*p*	B	95%CI	*p*
Gender	0.80	0.37; 1.73	0.58	-	-	-
Age	1.04	1.01; 1.08	**0.02***	1.04	1.01; 1.07	**0.03***
Father education	1.23	0.54; 2.81	0.62	-	-	-
Mother education	0.61	0.25; 1.49	0.28	-	-	-
Father occupation	1.27	0.63; 2.53	0.50	-	-	-
Mother occupation	0.83	0.51; 1.33	0.44	-	-	-
Residence	0.50	0.21; 1.18	0.11	0.49	0.23; 1.06	0.07
Number of family members	0.91	0.32; 2.58	0.85	-	-	-
Earning members	0.48	0.18; 1.30	0.15	0.55	0.25; 1.22	0.14
Number of siblings going to school	0.37	0.21; 0.67	**0.001***	0.36	0.22; 0.61	**<0.001***
Family possession domain	0.85	0.73; 0.99	**0.03***	0.85	0.73; 0.98	**0.03***
Home sanitation domain	0.94	0.69; 1.28	0.69	-	-	-
Income from all sources	1.41	0.75; 2.65	0.29	-	-	-
Government support	0.51	0.21; 1.25	0.14	0.58	0.25; 1.31	0.19
Family pay tax	0.63	0.26; 1.55	0.31	-	-	-
Health-care domain	1.89	1.21; 2.97	**0.006***	1.77	1.66; 3.33	**0.005***
Treatment type	1.12	0.80; 1.57	0.51	-	-	-
Total SES	17.35	7.22; 41.70	**<0.001***	15.23	8.76; 26.49	**<0.001***

Odd ratio value was set to 0.05, (*) Indicates clinical significance

DISCUSSION

SES of families is directly related to oral health. High SES is always accompanied by better perception of oral health and less clinically-diagnosed dental diseases such as dental caries and periodontal diseases. (Braveman et al., 2014). Up to the authors' knowledge, there have been limited data investigating the association between the children's behavior in the dental office with the SES. The current study aimed to assess this association in a sample of preschool children seeking dental treatment in MUDH.

Preschool children were selected since children, at this age range, imitate almost all behaviors and actions of their parents and the home environment exerts major influence on their behavior. At this age, children communicate with few number of people so parental influence reaches the peak and can even last for the whole life (Sterdt et al., 2014).

In Egypt, there have been few attempts for developing scales for SES determination. Fahmy & El Sherbini, (1993) developed the first scale to assess SES in Egypt. Another trial was performed by El-Shakhs, (1995). Nonetheless, the social changes as well as the country's fast-growing economy have decreased the validity of these scales. El-Gilany et al. (2012) developed a more updated valid and reliable scale. This SES scale is the most commoly used SES scale in Egypt in the field of medical research, (Abd El Latif et al., 2016; El-Awady et al., 2017; Ibrahim et al., 2020; and Ebrahim et al., 2021).

Children with previous dental visits or systemic diseases were excluded in order to provide a homogeneous sample to be able to draw the conclusion. Dental procedures were standardized and performed by a trained single operator and the behavior was assessed using FBRS, which is considered one of the most reliable and valid tools, by another examiner (Shekhar et al., 2022; Chanin et al., 2023).

The current study revealed a strong positive association between child behavior in dental office and the overall SES. This goes in agreement with Brill et al. (2000) and Kroniņa et al. (2017), who concluded that high SES was associated with low dental anxiety. Our finding contradicted the results of Mishra et al. (2016), who reported that patients with high SES had the highest values of negative behavior. This difference can be attributed to the usage of modified Kuppuswamy scale which measures SES in urban communities only and hence the selected sample cannot be representative to the whole population (de Assis Dias et al., 2018). Also, Mishra et al. (2016) evaluated children behavior during a wide range of invasive and non-invasive dental procedures which elicit different responses (De Oliveira et al., 2006).

A clinically significant difference between the age of the child and his/her behavior was found since an increase in age results in enhanced cognition and intellectual abilities, (Van Meurs et al., 2005). A finding that is confirmed by Ray et al. (2010) and Xia et al. (2011) who proved the direct relationship between child age and coping patterns of children. Additionally, there was clinical significance between the family possession domain and child behavior in the current study. These findings are supported by Brooks et al. (1997) and le et al. (2019), who proved that high possessions and wealth of families is associated with physical, mental and psychological well-being of children.

Problems in the behavior of preschool children with low SES may necessitate the development of special behavior management techniques to reduce their anxiety in the dental office. This should be in pace with governmental efforts to promote the SES of Egyptian children. Moreover, further studies are required to assess the behavior of older children with different SES during dental treatment.

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