

THE IMPACT OF SOCIOECONOMIC STATUS ON CHILDREN'S BEHAVIOR/DENTAL ANXIETY AND THEIR EXPOSURE TO MEDIA IN ALEXANDRIA, EGYPT (A CROSS-SECTIONAL STUDY)

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ABSTRACT

INTRODUCTION: The socioeconomic status (SES) of the family has a direct effect on children's media habits and exposure hours to media which could be a factor for development of behavior and anxiety problems among children.

OBJECTIVES: The aim of this study was to assess the impact of SES on children's behavior management problems (BMP)/dental anxiety (DA) during dental treatment and their exposure to media in Alexandria, Egypt.

MATERIALS AND METHODS: A group of 95 patients with age range from 5 to 8 years with simple carious primary molars enrolled in the study. Socioeconomic status was assessed using Fahmy and Elsherbini Scale and media habits were assessed by a questionnaire answered by the mother or the father during the first visit of each patient. After one week, dental procedure was done and behavior management problems/ dental anxiety were scored using Frankl Rating Scale and Clinical Anxiety Rating Scale respectively.

RESULTS: There was no statistically significant relation between socioeconomic status, BMP/DA and exposure to media. However, BMP/DA was the highest at very low level, violent media exposure was the highest at middle level, exposure hours to media was the highest at both high and middle levels and finally, introduction to media exposure began at very young age range in high social level while it was at older age range in the very low social level in Alexandria, Egypt.

CONCLUSION: Behavior management problems and DA were more associated with very low social level while total exposure hours to media was more associated with high and middle social levels in Egypt. However, there was no statistically significant relation between socioeconomic status, children's BMP/DA and their exposure to media.

KEYWORDS: Socioeconomic status, Media, Dental anxiety, Behavior problems, Electronic screens.

RUNNING TITLE: Socioeconomic status and children's behavior/dental anxiety.

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INTRODUCTION

Nowadays, most children spend most of their free time watching television, playing video games and surfing the internet, which is considered a sedentary behavior (1, 2). This is considered an independent risk factor for multiple diseases especially diabetes and obesity during childhood (3). Screen time (ST) is one of the most important aspects of sedentary behavior (4).

Carson et al. in 2016 (5) systematically reviewed the health indicators of school aged children and their sedentary behavior. They found a strong relationship between high sedentary behavior, low academic achievement, low self-esteem and low cardiorespiratory fitness.

Parents have an important regulating role for their children's media exposure to avoid media's harmful effect on children's mental and physical health. Parents also should have an active participation in their children's media habits (6). Therefore, the American Academy of Pediatrics (AAP) in 2016 (6) set guidelines for regulating children's exposure to media. It recommended avoiding children's exposure to electronic screens until age of 2 years. They allowed children aged 2-5 years to be

exposed to media at maximum one hour per day, while 6 years and older children could have more than one hour per day and parental supervision is a must at all ages.

The socioeconomic status (SES) of the family has a direct effect on children's media habits and exposure to electronic screens (7). Socioeconomic status mainly depends on parent's educational level and income. These have a direct effect on the etiology of multiple health outcomes.

The educational level of parents directly affects the health-related issues, general knowledge and decision making (8). Sometimes, Parents use media as a reward for their children, for educational purposes or to enhance children's ability to speak at young age (9). The low income-low educated levels are more likely to have lack of awareness about exposure to media and they are more likely to have TV in bedrooms, thus letting children to be heavily exposed to electronics at very young age. On the other hand, low income-more educated levels put more strategies to restrict exposure to electronics (10).

In 2017, Krist et al. (11) studied the association of SES with physical activity and ST. They concluded that, low SES was

associated with high ST. On the other hand, Jamali et al. in 2017(12) found that, children who belonged to low SES had significantly low ST.

Socioeconomic status affects the availability of electronic screens at home, attitude toward electronic screens, media habits like the age when children begin to be exposed to media, the amount of exposure to electronic screens and type of watched materials (9). Exposure to media violence at young age is considered a risk factor for development of aggression, behavioral problems, and anxiety-related disorders leading to the development of Behavior Management Problems (BMP) and Dental Anxiety (DA) during childhood (13, 14).

Behavior management problems (BMP) are related to realistic dental situations, while Dental Anxiety (DA) appears with anticipated not realistic threat situations. These affect the co-operation of patients and increase difficulty of dental procedures (14, 15).

In 2017, Jamali et al. (12) studied the relationship between children's media habits and their anxiety/behavior during dental treatment. They found a significant relation between SES of the family and children's DA, as they found that children with DA belonged to high and middle SES.

Socioeconomic status could have an effect on children's Behavior Management Problems (BMP)/ Dental Anxiety (DA) and their exposure to media. Few studies have assessed the impact of SES on children's Behavior Management Problems (BMP)/ Dental Anxiety (DA) and their exposure to media. Therefore, this study aimed to test the hypothesis that, SES may or may not have an impact on children's Behavior Management Problems (BMP)/ Dental Anxiety (DA) and their exposure to media in Alexandria, Egypt.

MATERIALS AND METHODS

This cross-sectional study was done in the Department of Pediatric Dentistry and Dental Public Health, Alexandria University, Alexandria, Egypt. It was done after the approval of Research Ethics Committee in the Faculty of Dentistry, Alexandria University.

Based on data obtained from a study by Jamali et al. in 2017 (12), at an alpha error=3%, power=80%, confidence level=95% and expected drop out of follow up=5%, the estimated sample size was 95 patients. Sample size was determined by using two-sided chi-squared test to check a statistical significant difference of 3% among the anxiety children and to avoid drop out (16).

Children included in the study were at an age range of 5-8 years with simple carious lesions in primary molars with no pain, pulpal involvement or radiographic radiolucency. Carious lesions were detected by visual-tactile and radiographic examination (17). All participants had no previous dental or medical experiences. One of the parents was able to read/write to answer the questionnaire.

Medically compromised or special needs children were excluded from the study. Children with definitely negative behavior, according to Frankl Rating Scale, (FRS) (18) were also excluded to avoid drop out (16).

Socioeconomic status (SES)

Socioeconomic status was categorized into four levels according to Fahmy and Elsherbini's Scale (19). It is the most commonly used and the simplest scale in the field of health researches in

Egypt. The scale included parent's educational level, income, family size, crowding index and sanitation.

Families with score less than 23 were categorized as very low social level, score 23<34.5 were categorized as low social level, score 34.5< 38 were categorized as middle social level while scores up to 38 were categorized as high social level.

Exposure to media

It was assessed by a valid questionnaire. Validity was done by a pilot study of 20 participants and signed informed consent was obtained. It was done before starting the present study with 80% power and 95% confidence level. The results proved the validity and reliability of the questionnaire with Cronbach's $\alpha > 0.7$ (20).

The questionnaire was done to investigate exposure of participants to media violence, total exposure hours to media and age of beginning of exposure to media.

Intra-examiner reliability

It was done by a pilot study of 10 videotaped patients and signed informed consent was obtained. It was performed before starting the study using weighted Kappa test (21). Intra-examiner reliability was 85% for both Frankl Rating Scale (FRS) (18) and Clinical Anxiety Rating Scale (CARS) (22).

Dental procedures and assessment of BMP/DA

All the objectives, risks and benefits of the study were explained to the parent, and a signed informed consent was obtained during the first visit. Patient's history, dental examination and preventive measures were done. The second visit was carried out after one week and the tell-show and do technique was standardized for all patients. Application of topical anesthesia was done for all patients followed by local anesthesia (inferior alveolar nerve block or infiltration according to the tooth). Each carious lesion was removed followed by the proper restorative material whether amalgam or GIC or composite as a final restoration according to cavity type. All the procedures were done in the presence of one of the parents as a passive observer.

All dental procedures were done by the same operator; to gain the patient's confidence and co-operation (23). The examiner passively observed treatment procedures to assess the BMP using FRS (18) and DA using Clinical Anxiety Rating Scale (CARS) (22). Participants with grade 1 and 2 according to FRS (18) were categorized as having BMP and participants with score 4 or 5 according to CARS (22) were categorized as having DA.

STATISTICAL ANALYSIS

Data were analyzed by the use of SPSS software (SPSS version 25.0) (24). Normality was checked using Kolmogorov-Smirnov test. Data were not normally distributed variables; hence, non-parametric tests (Mann Whitney and Kruskal Wallis Test) were submitted. All tests were two-tailed hypothesized with significant P value <0.05.

RESULTS

A total of 95 patients were enrolled in this study at a mean age of 6.45 ± 1.10 .

According to Fahmy and Elsherbini's Socioeconomic Scale (19), 43.2% were of high SES, 26.3% were of middle SES, 23.2% were of low SES and 7.4% belonged to very low SES.

The percentage of violence media exposure has been found to be 34.7% among the participants, mean age of beginning to expose to media was 2.64 ± 1.05 .

Using FRS the percentage of BMP was 24.2% and by using CARS the percentage of DA among participants was 23.2%

Socioeconomic status in relation to DA/BMP

Behavior management problem was the highest at very low SES (28.6%). There was no statistically significant relation between SES and BMP (P=0.739). Similar to BMP, DA was the highest at very low level (28.6%). There was no statistically significant relation between SES and DA (P=0.497). (Table 1)

Socioeconomic scale in relation to exposure to media:

Socioeconomic status in relation to violent media exposure

Violent media exposure was the highest at the middle level (56%) followed by very low level (28.6%) then low level (27.3%) and the least percentage was at the high level (26.8%). There was no statistically significant relation between SES and violent media exposure (P=0.07). (Table 2)

Socioeconomic status in relation to exposure hours to media

The total hours of exposure to electronic screens per day were the highest at the high level and middle level (mean=4.4, 3.8) respectively. There was no statistically significant relation between SES and total hours of exposure to electronic screens per day (P=0.38). (Table 2)

Socioeconomic status in relation to age of beginning of media

Introduction to media exposure began at very young ages in high social level (mean age=2.5), while it was at older age in the very low social level (mean age=3.2).

There was no statistically significant relation between SES and age of beginning to be exposed to media (P=0.48). (Table 2)

Table (1): Showing the relation between SES and BMP/DA

		Socioeconomic level				P value
		High social level (n=41)	Middle social level (n=25)	Low social level (n=22)	Very low social level (n=7)	
DA: n (%)	Yes	11 (26.8%)	3 (12%)	6 (27.3%)	2 (28.6%)	0.49 ^a
	No	30 (73.2%)	22 (88%)	16 (72.7%)	5 (71.4%)	
BMP: n (%)	Yes	11 (26.8%)	4 (16%)	6 (27.3%)	2 (28.6%)	0.39 ^a
	No	30 (73.2%)	21 (84%)	16 (72.7%)	5 (71.4%)	

a- Monte Carlo corrected p value for Pearson Chi-Square test

* Significant difference P<0.05

SES: Socioeconomic status

BMP: Behavior Management Problems

DA: Dental Anxiety

Table (2): Showing the relation between SES and exposure to media

		Socioeconomic level				P value
		High social level (n=41)	Middle social level (n=25)	Low social level (n=22)	Very low social level (n=7)	
Age at beginning: Mean (SD)		2.5 (0.9)	2.6 (1.1)	2.7 (1.2)	3.2 (0.7)	0.48 ^a
Total hours of exposure to electronic screen per day: Mean (SD)		4.4 (2.2)	3.8 (2.2)	3.6 (2.9)	3.3 (2.3)	0.38 ^a
Violence content: n (%)	Yes	11 (26.8%)	14 (56%)	6 (27.3%)	2 (28.6%)	0.07 ^b
	No	30 (73.2%)	11 (44%)	16 (72.7%)	5 (71.4%)	

a-Kruskal Wallis H test

b-Monte Carlo corrected p value for Pearson Chi-Square test

* Significant difference P<0.05

ES: Socioeconomic status

DISCUSSION

The finding of our study highlighted the impact of different socioeconomic levels on BMP/DA and exposure of children to media, although it didn't show any significant difference. High social level had more positive impact on BMP/DA and violent media exposure than other lower levels. On the other hand, it had more negative impact on total hours of exposure to media than other lower levels.

Behavior management problems and DA were the highest at very low level SES. This can be explained by the lack of awareness of dental procedures at this level in Egypt, as educational level of parents directly affects their general knowledge about children's health issues (8). It affects the cooperation of the patients, making them more afraid and having problems in coping with stress (14, 15). Socioeconomic status did not show a significant difference among participants with and without BMP/DA. This is in agreement with Kroniņa et al. in 2017 (25). They found that SES was not correlated with DA. On the other hand, Mishra et al. in 2016 (26) found that patients with high SES had the highest incidence of negative behavior. In addition, Jamali Z et al. in 2017 (12) found that children with DA belonged to high and middle SES.

The present study results showed that, there was no significant relation between SES and total exposure hours to electronics per day. However, the total exposure hours to electronics per day were the highest at the high social level and middle SES. This could be explained by the availability of electronic screens at these levels in comparison with the lower levels. It was proved that heavy ST especially TV had an adverse effect on children's academic progress, mental and physical health (27).

These findings are in agreement with Jamali Z et al. in 2017 (12) who found that, high ST was associated with high and middle SES. On the other hand, Krist et al. in 2017 (11) found that, the highest ST was associated with low SES.

Regarding the violent media exposure, it had no significant correlation with SES. The highest violent media exposure was associated with middle SES, while the lowest violent media exposure was associated with the high SES. This can be explained by the availability of different media types with the low awareness level of limitation of exposure to violence. The culture of participation of children in more violent sports for self-defense could be frequent in this level (9, 10). Heavy exposure to violent media content proved to have a direct negative impact on brain over short and long term. It leads to desensitization and reduction in behavioral, cognitive control (13).

Even though the AAP set guidelines in 2016 (6) to limit media exposure for children under age of 6 years, it turned out that a lot of the participants were exposed to media at very young ages. Participants from very low SES began exposure to media at a much older age when compared to those coming from high SES. This may be explained by the unavailability of various types of media at very low SES due to low income, while in high SES there is more accessibility to media and spoiling of parents to their children.

A possible limitation of the present study was the lack of data about different SES in Egypt and the impact of SES on multiple factors which were not included entirely in this study. Within the limitation of this study and based on the previous data, the hypothesis that SES could have an impact on BMP/DA and exposure to media was rejected.

CONCLUSION

Although no statistically significant difference was found between SES, BMP/DA and exposure to media among the children in this study, the following conclusions can be made:

1. Behavior management problems and DA were more associated with very low social level.
2. Violent media exposure was more associated with middle social level.
3. Total hours of exposure to electronics was more associated with high and middle social levels.
4. Introduction to media exposure began at very young ages in high social level, while it occurred at older ages in the very low social level.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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