

Pocket Money: Influence on Body Mass Index and Dental Caries among Urban Adolescents

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ABSTRACT

Objective: To explore the influence of pocket money on Dental Caries and Body Mass Index.

Materials and Methods: A cross-sectional study was conducted wherein urban adolescent schoolchildren of age 13-18 (n=916) were selected by two stage random sampling technique. Dental caries was measured using the DMFT Index. The children's nutritional status was assessed by means of anthropometric measurements. Body Mass Index using weight and height of children was evaluated using the reference standard of the WHO 2007.

Results: Results showed that 50% of children receive pocket money from parents. The average amount received was Rs. 360/month. There was a significant correlation between age and amount of money received ($r=0.160$, $p=.001$). The average amount received by male children was significantly higher (Rs. 400) when

compared to female children (Rs. 303). It was observed that income of the family (>30,000 Rs./month) and socioeconomic status (Upper class) was significantly dependent on the amount of money received by children ($p<0.05$). There was no significant difference in the occurrence of caries among children receiving pocket money or not. When BMI categories and pocket money were considered, statistically significant difference was seen among overweight and obese and normal weight children ($p<0.05$). Higher proportion (40.1%) of overweight and obese adolescent children frequented the fast food restaurants every week when compared to the underweight (31.7%) and normal weight children (29.9%).

Conclusion: Adolescent children receiving pocket money from parents could influence their eating habits in turn affect general health. Parents and teachers should motivate children on healthy spending of their pocket money.

Keywords: Dental caries, Body mass index, Pocket money

INTRODUCTION

Access to or receiving pocket money by adolescent children and young adults from parents is a common happening. Pocket money given to adolescent children though inculcates the habit of saving money [1], studies have shown that tobacco [2,3] and drug usage [4] was higher among those who received so. Popular news papers of India have reported about a recent study by the Industry body Assocham on Indian urban adolescent children citing that the current pocket money trends is increasing steeply and spending on food was one among the top list [5]. Our diet that comprises of different forms of food is a known contributing factor in the caries process [6,7] and also, in the obesity epidemic [8,9]. So, this study was planned to explore the influence of pocket money received from parents by adolescent children on dental caries occurrence and nutritional status giving importance to overweight and obese children.

MATERIALS AND METHODS

A cross-sectional study was done on adolescent school children of age 13-19y. A pilot study was carried out on a sample of adolescent school children of similar age group (n=114). The pilot study helped in identifying difficulties in the data collection procedure and also helped in testing the questionnaire. The pilot study pointed a prevalence of dental caries as 42.1%. So, the sample size required under simple random sampling method was 863 (8% of prevalence was the variance allowed with α at 5% level of significance). Adding 5% dropouts the total number of children required for the study was 906.

A two stage random sampling technique was followed wherein the first stage included random selection of schools from list of schools in Chennai. A list of higher secondary schools in Chennai that included 448 schools was prepared from the internet database. By means

of random sampling 8 schools were selected from the 448 schools. Second stage included random selection of children in the specified age group of 13-19y, from the selected schools by PPS (Proportion to Population Sample) selection technique. With inclusion criteria of age 13-19y for this present study, children of class 9th std to 12th std were the target population in each of the 8 schools. List of students in each school for the above stated classes were provided by the school head. After exclusion criteria a total of 3806 children from all 8 schools formed the sampling frame. By using the PPS technique (Proportion to Population) the number of children to be included as study samples from each school was calculated. These study children were randomly selected from the list of total students studying in that particular school. Thus a total of 916 (extra 10 children were sampled) adolescent schoolchildren of age 13-19y formed our study sample. Informed consent was obtained from the respective school Principals and also verbal consent was got from each participating child.

A pretested and validated questionnaire was used to collect relevant data required for the study (i.e. parent's education, occupation and income per month, amount of pocket money received per month, frequency of visit to fast food restaurants). Using Kuppaswamy's scale [10] children were categorised to their socioeconomic status. Dental caries was measured using the DMFT Index (Decayed, Missing, Filled Teeth) by a trained dentist [11]. Anthropometric measurements were recorded and children were categorized to their nutritional status using the growth reference standard (BMI for Age) of the WHO 2007 [12]. Data was analysed using SPSS version 18.

RESULTS

The results of the study showed that of the total population studied (n=916), number of children who received pocket money from their parents were 461 (50.3%). The average amount received by the

Variables		Pocket Money/month			Total N	Sig p-value
		No pocket money N(%)	Rs. 250 or less N(%)	> 250 N(%)		
Age	<= 15 Years	155(50.3)	103 (33.4)	50 (16.3)	308	.001
	> 15 Years	300(49.5)	153 (25.0)	155 (25.5)	608	
Gender	Male	216(44.2)	137 (28.0)	136 (27.8)	489	.000
	Female	239(55.9)	119 (27.9)	69 (16.2)	427	
Total Income of family	>30000	219(51.4)	101 (23.7)	106 (24.8)	426	.012
	15-29,999	71(46.4)	42 (27.4)	40 (26.2)	153	
	<15,000	165(49.0)	113 (33.5)	59 (17.5)	337	
SES	Upper class	142(49.1)	68 (23.5)	79 (27.4)	289	.054
	Middle class	224(48.9)	136 (29.6)	98 (21.4)	458	
	Lower class	89(52.7)	52 (30.7)	28 (16.6)	169	
Visit to fast food stalls	Every week	78(26.2)	42 (14.1)	178 (59.7)	298	.000
	Once a month	106(44.9)	108 (45.7)	22 (9.4)	236	
	Rarely	271(70.9)	106 (27.7)	5 (1.4)	382	

[Table/Fig-1]: Variables in relation to amount of pocket money received
Significant p-value = <.05 considered significant

children was Rs. 360.72. The average amount received by male children was significantly higher (Rs. 400.07) when compared to female children (Rs. 303.56) ($p < 0.05$). There was a significant positive correlation between age and amount of pocket money received: as age increased the amount received by children also increased ($r = 0.160$, $p = .001$). [Table/Fig-1] gives us a picture of the variables that are associated with amount of pocket money received. [Table/Fig-1] indicates that age, gender, total income of the family, frequency of visits to fast food restaurants were all significantly associated with the amount of pocket money received from parents. It is observed that higher proportion of children of age more than 15 (25.5%) received Rs. 250 or more every month compared to children of age less than or equal to 15 y (16.3%). Gender difference is also significant with male children dominating in receiving pocket money compared to females. 27.8% male children receive Rs. 250 or more every month compared to 16.1% female children. Higher proportion of parents of upper income group were in the habit of giving rupees 250 or more to children per month (24.8%), compared to lower income group (17.5%). Similar findings were noted in relation to socioeconomic status (SES) where 27.3% of children receiving 250 rupees or more belonged to the upper class compared to 16.5% in the lower class. The findings also tell us that children frequented the fast food stalls depending on the amount received thus spending their pocket money on unhealthy food that could lead to many lifestyle diseases. The figures conclude that the amount received by children as pocket money per month was highly dependent on the family income and SES.

Pocket Money and Dental Caries: [Table/Fig-2] indicates that there is no statistically significant difference in caries occurrence among children who receive different amounts of pocket money or if they do not receive at all ($p = 0.41$). When the mean DMFT value is considered, it was observed that children who received pocket money presented with higher mean values of 1.05 (SD 1.76) compared to children who do not receive pocket money whose mean DMFT value was 0.98 (SD 1.72). Independent samples t- test showed that there is no statistical significant difference between the two groups ($t = 0.549$, $P = 0.583$).

Pocket Money and BMI Status: Significantly higher percentage of overweight and obese children (27.5%) received Rs. 250 or more when compared to normal weight children (21.7%) and underweight children (20.4%) ($p = 0.02$) [Table/Fig-3].

BMI status and visits to fast food restaurants: [Table/Fig-4] indicates that higher percentage (40.1%) of overweight and obese adolescent children frequented the fast food restaurants every week when compared to the underweight (31.7%) and normal weight children (29.9%).

Dental Caries	Pocket money		
	Not received N (%)	<= 250 Rs N (%)	> Rs. 250 N (%)
Present	161 (35.38)	97 (37.89)	78 (38.05)
Absent	294 (64.62)	159 (62.11)	127 (61.95)
Total	455	256	205

[Table/Fig-2]: Caries occurrence among children receiving pocket money of different amounts
Chi square value=0.66 Significant p-value=0.41

BMI	Pocket money			Total
	Not received N (%)	<= 250 Rs N (%)	> Rs. 250 N (%)	
Underweight	155 (48.6)	99 (31.0)	65 (20.4)	319
Normal Weight	215 (51.8)	110 (26.5)	90 (21.7)	415
Overweight and obese	84 (46.1)	48 (26.4)	50 (27.5)	182

[Table/Fig-3]: Pocket money received by children of different BMI categories
Chi square value=5.23 Significant p-value=0.022

BMI status	Frequency of visits to fast food restaurants			Total
	Every Week N (%)	Once a month N (%)	Rarely N (%)	
Underweight	101 (31.7)	76 (23.8)	142 (44.5)	319
Normal Weight	124 (29.9)	115 (27.7)	176 (42.4)	415
Overweight and Obese	73 (40.1)	45 (24.7)	64 (35.2)	182

[Table/Fig-4]: Frequency of visits to fast food restaurants by children belonging to different BMI categories
Chi-Square Value=7.86; Significant p-value =0.005

DISCUSSION

The results showed that the amount of pocket money received by children was significantly associated with few variables like age, gender and total income of the family. Children above 15 y of age, male children and children who belonged to high income group (>Rs. 30,000/month), were receiving relatively higher amount of pocket money (>Rs. 250) when compared to their counterparts. Bonke [13] study on young Danish children showed similar results where income of parents was related to amount of pocket money received. Our study also observed that children who received pocket money of Rs. 250 and above visited the fast food restaurants significantly at higher proportions compared to those who do not receive pocket money. In relation to caries occurrence and severity there seemed

to be no statistically significant difference among children who received pocket money or not. Dental caries is a diet dependent disease. In our study though pocket money influenced the children's visits to fast food restaurants and their BMI status, we found no association with dental caries. It was hypothesised that pocket money could influence children frequenting and eating in fast food restaurants (the diet component) and this would in turn serve as a risk indicator in the caries process. The limitation of our study is that- intricate details of what food items the children consumed in the fast food restaurants were not studied. Fast food items children and adolescents generally prefer are items like pizza, burger etc and these are foods high in fat and calories [14]. These items generally contain cheese and cheese is considered as a protective food item in the caries process [15]. Thus, dietary factors play an important role in the caries process and the BMI status.

The health effects due to pocket money given by parents to children dates decades back where Wilkins (1927) was inclined to believe that greater frequency of eating and higher sugar consumption accounted for the higher rates of caries in New Zealand children than those of Birmingham, England. He said "The greater prosperity, further leads to New Zealand children having pocket money to spend on sweets and confectionery" [16]. Roberts et al., reported in their study that, "access to money by children had a direct influence on sweet snacking" and sweets that are rich in carbohydrates is a well known proven dietary factor that contributes to the caries development [17].

Pocket money received by children was found to be an influencing factor when BMI category is considered. Higher proportion of overweight and obese children received Rs. 250 and above when compared to normal weight and underweight children. Similarly, there seemed to be a statistically significant difference in overweight and obese children frequenting the fast food restaurants every week. The finding brings to our attention that children receiving pocket money visit fast food stalls frequently and unhealthy diet and lifestyles can be risk factors for future lifestyle diseases. Carl Lachat et al., in their study on Vietnamese adolescents concluded that the amount of pocket money received was positively associated with consumption of eating out of home foods [18]. Mishra and Singh also showed in their study on teenagers that those who have pocket money (Rs. 50-100) are influenced by advertisement and opt unhealthy food and suffer from the problem of obesity [19].

LIMITATION OF THE STUDY

The study did not ascertain whether the parents accompanied their children every time they visited a fast food restaurant, where their parents could have paid the bill rather than the children spending out of their pockets.

CONCLUSION

Though this study has its own limitations, but addressing this issue on pocket money is in dire need. This study adds to the sparse literature on the influence of pocket money on adolescent children

and its influence on children's visits to fast food restaurants and its effect on their BMI. Parents especially belonging to the higher income group should be advised on the health consequences the child would face in future due to their pampering irresponsible habits. Adolescent children receiving pocket money could influence their eating habits with in turn affects oral and general health. Parents and teachers should motivate children on healthy spending of their pocket money.

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