

## Maternal Factors and Child's Dental Health

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### ABSTRACT

**Aim:** This study was carried out to investigate the effect of mother's age, education, occupation and income on the dental health behaviours and caries experience of her pre-school children in the District of Lahore, Pakistan.

**Methods:** This questionnaire based cross-sectional study evaluated the dental health status and oral health behaviors of 600 children in relation to the mother's age, education, family income and her domicile of residence. Chi square test was used to see the association between the different variables. The level of significance was taken as  $p < 0.05$ .

**Result:** Tooth cleaning behaviors were found to be associated with all the maternal factors under study. Sugary food consumption was associated with mother's level of education and her family income while dental decay positively correlated with her residence and family income.

**Conclusion:** Younger age of the mother, high level of educational attainment, higher income and urban residence, all have a positive influence on the dental health practices of her pre-school children.

**Key Words:** General Paediatrics, Pre-school Children, Dental Decay, Dental health Practices, Maternal Attributes

### Key Points:

1. Dental health practices of the pre-school children are greatly influenced by the maternal characteristics.
2. Dental decay status of pre-school children is independent of the mother's education, income and residence.
3. Dental decay status of the pre-school children is low in Lahore, Pakistan.

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Evidence suggests that the decline in the dental caries of children has halted in the industrialized countries, but the children suffering from caries experience it with greater severity than before.(1) Studies indicating an increase in severity of dental caries also suggest mothers neither stress upon nor teach their children healthy lifestyles from birth.(2) They are also said to undervalue the importance of continuing consistency in action in child rearing. Maternal attitudes are likely to modify behaviors and thus, play an important part in

the uptake of favorable dental health practices. Mothers low education level, her age, rural domicile of the mother and infrequent tooth cleaning, the presence of plaque on the child's teeth, and frequent sugar consumption by the children have been associated with poor oral health of the children.(3,4,5) The present cross sectional study was carried out to evaluate the dental health practices that the mothers adopt for their preschool aged children; the study also observed dental health status of these children in the District of Lahore, Pakistan.

## Material and Methods

This questionnaire survey was conducted in the district of Lahore, in collaboration with National Program for Primary Healthcare and Family Planning (NPPH & FP). Complete record of households in en-catchment area of the NPPH & FP was obtained. Permission from the Director, National Program for Primary Healthcare and Family Planning (NPPH & FP) and Director Health Services (DHS), Government of the Punjab was sought to involve the Lady Health Workers (LHWs) in carrying out this survey.

A multi stage random sampling was done to collect the sample of mothers from urban and rural areas. In the first stage a list of areas where NPPH & FP was functional was prepared both for urban and rural sites. Four sites, two rural and two urban were randomly selected. In the next step those households were listed that housed pre-school children up to five years of age. Out of the total seven hundred and five households were randomly selected; 475 urban and 230 rural. The survey used a predesigned questionnaire from an international study, 5 which was translated in local language (Urdu) for convenience. A back translation was done to authenticate the translated version. The LHW's were trained during a workshop for implementation of the questionnaires while the author underwent calibration exercise for dental health examination.

Verbal consent was obtained from the mothers for participation in the study prior to conducting the interview. The mothers were interviewed in their houses by the LHW at times that were convenient for the family. Demographic information was obtained regarding age of the mother, mother's education level, and family income. Education level of mothers was recorded as low, medium and high where low was defined as having primary education or less, medium as education up to high school and high when the mothers were graduates or postgraduates. Families with a monthly income of Rs. 5000 (<\$2) or less was labeled as at poverty line (PL) and those with an income of 5001 or more were considered as above poverty line (APL). Oral health practices of the children were also recorded. The questions were asked related to use of tooth brush, tooth paste, frequency of brushing, and consumption of sugary foods. The number of dental visits made by the child was also recorded on the questionnaire.

Dental caries status of children was recorded by using DMFT index. Criteria recommended by WHO for diagnosis of dental caries was adopted. A dental health examination for the child was carried out by the principal author using a plain mouth mirror, only to retract the soft tissues. Visual examination was done in an open space in broad daylight while the child sat either in the mothers lap in a knee to knee position or sitting independently in an ordinary upright chair. Each questionnaire was completed in about twenty minutes while the dental health examination took another two minutes.

For analysis regrouping and recoding of responses was done. Chi square test and where applicable Fishers exact test was applied to test the association between the variables and the mothers age, education, residence and family income. For all analysis p value of  $\leq 0.05$  was considered significant.

## Results

Seven hundred and five questionnaires were distributed to the mother's, out of whom a total of 600 mothers completed the interview, thus giving a response rate of 85.1%. The demographic information of the mothers is given in Table 1.

Younger mothers, mothers with higher level of education, urban residence and higher family income were seen to play a significant role in the use of brush and tooth paste by the child. Similar trend was observed for the timings of tooth cleaning adopted for the children. No association was observed between the frequency of sugary food consumption by the child and the mother's age and mother's domicile of residence however a significant association was found between sugary foods, mother's education and family income. Highest consumption of sugary diet was seen amongst children of rural areas and those belonging to low income groups.

Decay experience in the child was also not associated with the mother's age or with her educational level. On the other hand, mothers area of residence and family income are significantly associated with the child's decay experience ( $p < 0.05$ ).

Dental visitation by the child correlated well with mother's age, education, residence and family income. Younger mothers, those with a higher level of education, those residing in the urban areas of Lahore and those belonging to middle income family groups had significantly better dental visiting practices for their children than rest of the groups.

Table 1: Demographic information of mothers

Mothers characteristics	Frequency	Percentage
<b>MOTHERS AGE</b>		
Under 30 years	365	60.8
30 years and above	235	39.2
Maternal Education level		
No formal education	186	31
Up to high school	334	55.7
Graduate/ Postgraduate	80	13.3
<b>FAMILY INCOME</b>		
Low income	497	82.8
Middle income	103	17.2
Area of Residence		
Urban	400	66.7
Rural	200	33.3

## Discussion

Aim of the present study was to evaluate the effect of maternal attributes on the dental health status of children. The present study also investigated prevalence of dental caries in pre-school children of Lahore, Pakistan. Despite the variation in the prevailing dental health practices of mothers for their pre-school children, almost 60% (59.2%) children in this study had no decay in their mouths.

A number of maternal factors have been suggested to influence child's dental health.(6) These include mother's age,(7) her level of education,(4) her domicile of residence and the family's income.(8) In the present sample of mothers, we observed better dental health practices in the younger aged mothers (<30 years). Significantly higher percentage of younger aged mothers reported using tooth brushes and tooth paste for cleaning their child's teeth, cleaned their children's teeth after meals, and had taken their children to a dentist at least once as compared to the mothers who belonged to the older age group (> 30 years). However, we observed no association between the mother's age and the dental caries experience of the child. These findings are in contrast to the previous studies in which young mothers are reported to pay least attention to the dental health and cleaning of the child's teeth.(7) Children of younger mothers are said to experience caries to a greater extent than those of mothers who are older.(8) This has been related to the inexperience of these mothers and inability to understand and relate to the importance of dental health. Our results suggest younger mothers to be more conscious as regards oral health practices in their children which might be due to increased awareness of the effect of good oral health on general health of the child.

Mother's level of education is said to improve awareness and understanding of health related issues. This was found to be true in the present case as well. Higher the educational

attainment of mothers, better the dental health practices of the child as regards use of tooth brush and tooth paste, timing of tooth brushing and consumption of sugary foods by her pre-school child. Studies suggest maternal educational attainment to influence dental health of children; those having higher educational qualification, are reported to have children with better dental health.(4,9-11) Szatko and co workers(12) found a strong interdependence on the mother's level of knowledge with that of her educational level which influenced the child's oral health. Similarly, a strong relationship has been observed between the DMF score of children and the mother's education.(13) Contrary to this, reports of dental caries being higher in children of mothers with low educational level are also present in the literature.(14) However, no association was found between mother's educational level and child's dental caries experience in the present investigation. This is in contrast to the previous findings reported in the literature.

Domicile of residence has also shown to effect dental health status of the children.(8) Studies have reported children of rural areas to have higher level of caries [8] and less favorable dental health practices.(7) This was not found to be the case in the present investigation. Rural children in Lahore were observed with less caries experience than their urban counterparts, in spite of less reported use of brushes or pastes by their mothers than that reported for urban children, and also less favorable timings for tooth cleaning for the children. Rural children were also reported with less frequent dental visits, while no difference in the frequency of sugary foods consumption by the child was apparent between the urban and rural children. Speculations for the low caries experience for rural children are that even though, these children have more frequent consumption of sugary foods during a week, the number of exposures per day are less for these children compared to the urban children or it may be the diet which is neutralizing the effect of the cariogenicity of these sugary

**Table 2: Dental Health Practices and Caries Experience of children in relation to Mother's Age, Education, Domicile of Residence and Family Income**

MATERNAL CHARACTERISTICS									
Mother's Age	Mothers		Education		Residence			Family Income	
CHILD CHARACTERISTICS	≤30 (%)	>30 (%)	Low (%)	Middle (%)	High (%)	Urban (%)	Rural (%)	PL (%)	APL (%)
Use of tooth brush	90.7*	83.4	75.8	92.2	97.5**	93.5	76**	85.9	96.1**
Use of tooth Paste	87.4*	81.3	72	89.5	96.3**	90.5	74**	83.1	94.2*
Cleaning teeth after meals	18.1	13.2	9.7	15.6**	33.8	19.5**	9.5	14.5*	24.3
Frequent Sugar Consumption	68.9	74.4	74.7	74.7	51.5*	70.8	78.5	75.5*	63.1
Decay status	43.1	49.6	38.9	49.4	39.7	45	32.5**	39	49.5*
Dental visits past One year	9.3*	3.4	3.2	7.8	12.5*	8.5*	4	5.5	14.5*

\*p d" 0.05; \*\*p d" 0.001.

foods. This needs to be looked into and requires further investigation.

Income is dependent on the employment status of the family members. This in turn dictates the health related practices as well as the priorities on dental health matters. Some studies report no relation of employment status with the child's dental caries experience.<sup>(15)</sup> The present study did not consider the employment status of the family, but took the income level of the family into consideration to determine the socio-economic standing of the family. Parental income is stated not to affect the caries prevalence in children.<sup>(16,17)</sup> Unlike Al Ghanim and co workers who could not establish an association between socio-economics and dental caries in the children,<sup>(17)</sup> more children of families living below the poverty line in the present study were observed with less caries experience in their mouths. This is a surprising finding because children from these families were no different from the children of families above the poverty line as far as frequency of consumption of sugary foods was concerned. At the same time these children had less favorable dental health practices like using brushes or tooth pastes, cleaning teeth after meals or the dental visiting practices.

## Conclusion

Younger age of the mother, high level of educational attainment, higher income and urban residence, all have a positive influence on the dental health practices of her pre-school children. Dental Caries Experience in the pre-school children was not found to be associated with any of the maternal factors studied.

The results from the present study open areas for further investigation. The results highlight need for a comprehensive dental awareness program with special focus on women. It is important that preventive measures be taken to lower burden of dental diseases in future.

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