

Oral Health status of 3-6 year old children and their mother's oral health related knowledge, attitude and practices in Mysore City, India

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ABSTRACT

Aims and Objectives: The study was carried out to assess oral health status of 3-6 year old children and their mother's oral health related knowledge, attitude and practices in Mysore city. Moreover, this study also carried out to determine whether mother's oral health related knowledge, attitude and practices influences oral health of their children. **Materials and Methods:** A total of 500 children belonging to the age group of 3-6 years old attending both governments sponsored and private preschools from five sectors accompanied by their mothers formed the study group. Oral health status was assessed by using decayed missing filled teeth index (dmft) and plaque index. Mother's knowledge, attitude and practices were assessed by direct contact with mothers using closed ended questionnaire. **Results:** The results of the study showed that the prevalence of dental caries among children was 64% with mean dmft of 3.20 ± 3.08 and mean plaque scores was 0.87 ± 0.33 . There was significant correlation between plaque scores and dmft. dmft and plaque score was higher in older individuals and the difference was highly significant. Mean plaque score was more among the government preschool children (1.02 ± 0.31). 46% of mothers had medium level knowledge, 63.2% mothers had average attitude and 51% mothers had high level practices related to oral health. An inverse relationship was found between mean dmft, caries prevalence, mean plaque score in children and mother's knowledge, attitude and practices about oral health and the findings were highly significant. **Conclusion:** Results showed that mother's oral health related knowledge; attitude and practices had influence on oral health status of their children

Key words: Attitude, Caries, Knowledge, Plaque, Practice, Preschool, Mothers, dmft

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INTRODUCTION

"Make every mother and child count" was the World Health Day theme for the year 2005.¹ They count because we value every human life. The healthy mothers and children are the bedrock of healthy and prosperous communities and nations. Effective knowledge and tools exist to reduce suffering and death. However; we must reach all mothers and children who need them to make a real difference. Health has been declared a fundamental human right. Oral health is an integral part of general health, rather oral cavity can rightly be called gateway of the body.

The health of the mouth and dentition plays a major role in the life of the child, through facilitating nutritional intake, providing a non verbal means of expressing happiness and sadness and allowing for vocal communication. Therefore, a healthy mouth with a full complement of teeth should be the goal for all children.²

One of the goals set by WHO for oral health was that by the year 2000; 50% of 5-6 years old children should be caries free. Oral epidemiological surveys conducted in selected areas in Guangdong Province in 1987-1992 showed that the caries prevalence among preschool children was

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from 80-90%.³ For young children, parents or the family represents the primary source of information about oral health. One way to increase children's oral health awareness would be to give accurate information to parents.⁴

A young child's dental environment is complex because their mother's dental knowledge, attitude and practices affect the child's oral condition. Few studies have shown that there is influence of mothers' oral health-related knowledge and attitudes on the tooth-brushing behaviour and dental health of their children.⁵ Conditions established in preschool years provide a foundation for oral health and patterns for the use of dental services later and in adulthood. Parents need to be helped to realize that they are role models for their children and to be encouraged to improve the children's dental health habits.

There is very little literature regarding the influence of mother's oral health related knowledge, attitude and practices on their child's oral health in India. Hence, an attempt was made to undertake this study.

MATERIALS AND METHODS

This descriptive cross sectional study was conducted for a period of six months among the preschool children and their mothers in Mysore city. The ethical clearance was obtained from the ethical committee of J.S.S. Dental College and Hospital, Mysore, India. The permission to carry out this study was taken from the school authorities and parents of the participating children before examination. The pilot study helped in assessing the sample size and validity of questionnaire. The children attending both government and private preschools belonging to the age group of 3-6 years who were accompanied by their mothers formed the study group and selected on the basis of stratified random sampling technique. As per the Child Development Project Officer (CDPO), Mysore city is divided into five sectors; N.R. Mohalla, Mandi Mohalla, Chamaraj Mohalla, Devaraj Mohalla and Kyathamarahalli. 50 government and 50 private preschool children were selected randomly, thus making a total sample size of 500.

Questionnaire part

Mother's knowledge, attitude and practices were assessed by direct contact with mothers using questionnaire that was designed in both English and Kannada and which included,

- I. General information: About their Education, socioeconomic status, etc.
- II. Knowledge: Oral health related knowledge like causes and prevention of dental caries and gum disease, dietary habits mainly about sugar consumption and

fluoride, sources of dental health information and their perception of prosthetic appliances, malocclusion etc.

- III. Attitude: Attitude towards the prevention of oral diseases, dental visits, and importance of milk teeth, etc. and to rate the extent of their agreement and disagreement on the statements using three point Likert type scale.

- IV. Practices: Oral hygiene practices mainly brushing and rinsing habits, dental visiting habits, services received at the last visit, mothers support in oral health, etc.

Oral examination of children

The child was made to sit comfortably on the chair and clinical examination was carried out with mouth mirror, explorer under natural light (ADA Type 3 examination method). The instruments were sterilized chemically. Caries status was assessed by using dmft index⁶ (WHO criteria 1999 for dental caries)⁷ and oral hygiene was assessed by plaque index (Sillness and Loe, 1964).⁸ Investigator underwent training and calibration and agreement for the assessment was 90 percent.

A total of 500; 3-6 years old children who were accompanied by their mothers and whose general health was within normal limits were included.

Socioeconomic status

It was done on the basis of the modified B.G Prasad's classification 1961⁹ for the year 2007. Consumer price index for urban workers as per 2007 is 541 and the modifying factor/percent change is 6.90. (Source: Reserve Bank of India, Government of India) (Table 1).

Statistical analysis

The collected data was subjected for statistical analysis using SPSS version 16. The various parameters were arithmetic mean, standard deviation, standard error, t-test and chi-square test, F test, contingency coefficient and Pearson correlation test. The p value of < 0.05 was taken as statistically significant. For the purpose of analysis, the individual scores were summed up to yield a total score. The mean of the scores were obtained and an ordinal scale was developed such as for the knowledge: Low, Medium and High; for the attitude: Unfavourable, Average and Favourable; and for the practices: Less, Moderate and High.

Table 1: Modified classification for the present socioeconomic status (SES)

Per capita family income (Rs.)	SES category
3697 and above	Upper class
1830-3696	Upper middle
1084-1829	Lower middle
560-1083	Upper lower
Less than 560	Lower class

RESULTS

Among total of 500 (100%) children in the study group, 18% (n = 90) were 3 years old, 28.4% (n = 142) were 4 years old, 31.4% (n = 157) were 5 years old and 22.2% (n = 111) were 6 years old. 53.2% (n = 266) were male and 46.8% (n = 234) were female.

The mean dt (decayed teeth) was 2.68 ± 2.8 , mean mt (missing teeth) was 0.23 ± 0.8 , mean ft (filled teeth) was 0.28 ± 0.89 and mean dmft was 3.20 ± 3.0 . Interarch analysis of the caries attack was 60.8% (n=304/500) for the maxillary arch and 59.4% (n=297/500) were for the mandibular arch.

Among five sectors, the mean dmft and mean plaque score values of Kyathamaranhalli preschool children differed significantly from Chamaraj Mohalla, Mandi Mohalla and Devaraj Mohalla sectors (Table 2).

The mean dmft and mean plaque score was high among government preschool children compared to private school children which was statistically highly significant (Table 3).

The mean dmft was 3.46 ± 3.1 in male, 2.91 ± 2.9 in female children and it was statistically significant. As the age of child increased, the mean dmft and mean plaque scores increased which was highly significant.

An inverse relationship was found between caries status, oral hygiene status of children and education as well as socioeconomic status of mothers. The Karl Pearson coefficient between plaque scores and dmft values was 0.650 which was highly significant ($p < 0.001$). Significant

positive correlation was observed between children with fillings and knowledge scores where correlation coefficient equals to 0.239 is found to be highly significant at $p < 0.001$ level. As the scores in filling increased, scores in knowledge also increased linearly and vice versa.

Most of the mothers got information about dental health through television, dentist and relatives and friends (Graph 1).

Regarding the overall knowledge, 45% of mothers had low level of knowledge, 46% of them had medium level of knowledge and 9% of them had high level of knowledge. Maximum number of mothers having low level of knowledge was found in Kyathamaranhalli (61%) and government school.

Regarding overall attitude, 2% of the mothers had unfavourable attitude, 63.2% had average attitude and 34.8% had favourable attitude. Unfavourable attitude was found more among mothers in Mandi Mohalla (5%) and mothers of government.

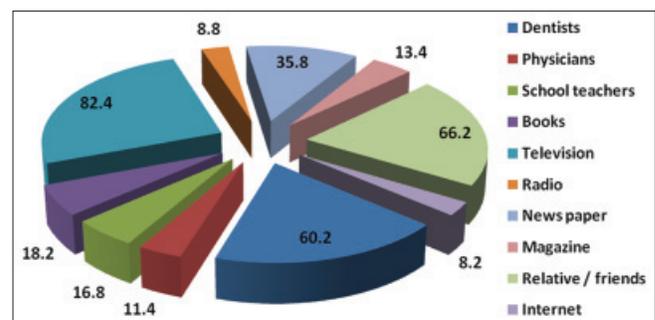
Regarding the overall practices, 7.2% of mothers had less level of practices, 41.8% had moderate level of practices and 51% had high level of practices. Maximum number of mothers having less level of practices was found in Kyathamaranhalli (14%) and of government preschool (62.8%).

An inverse relationship was found between mean dmft; mean plaque scores in children and mothers knowledge, attitude and practices about oral health which was highly significant.

Table 2: Distribution of children based on mean dmft and mean plaque score in relation to sectors

Sectors	No. of children	dmft	Plaque score
		Mean±SD	Mean±SD
Chamaraj Mohalla	100	3.17±3.19	0.94±0.28
N.R. Mohalla	100	3.34±2.91	0.71±0.30
Mandi Mohalla	100	2.35±2.37	0.93±0.21
Kyathamaranhalli	100	4.53±3.30	1.11±0.32
Devaraj Urs Mahalla	100	2.62±3.10	0.67±0.34
Total	500	3.20±3.08	0.87±0.33
p-value		0.001 (HS)	0.001 (HS)

ANOVA F=7.99 (DMFT), F=36.69 (Plaque score), HS=Highly significant



Graph 1: Distribution of mothers based on source of information

Table 3: Distribution of children based on mean dmft and mean plaque score in relation to type of preschool

Type of preschool	No.	Decayed	Missing	Filled	Dmft	Plaque score
		Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Private	250	1.66±2.30	0.02±0.45	0.56±1.19	2.32±2.58	0.73±0.31
Government	250	3.70±2.93	0.37±1.05	0.00±0.00	4.08±3.28	1.02±0.31
p-value			0.001 (HS)			0.001 (HS)

HS=Highly significant

DISCUSSION

Despite the widespread preventive measures, dental caries continues to be a scourge for mankind even today. This disease exerts a social, physical, mental and financial burden on a global scale, with developing countries being affected the most. Parents of preschool children are the primary decision makers regarding their children's health related behaviours and health care who can shape children's behavior by means of selectively encouraging and discouraging particular habits.

Children of age group 3-6 years were selected because it will be difficult to get the cluster of sample at a common place below 3 years of children, uncooperative behaviour of such young children, difficulty in detailed examination of the oral cavity and varied number of teeth erupted in very young children.

Prevalence of dental caries in the present study of 3-6 years old preschool children was 64%. A similar trend of caries was reported in Brazil (46%),¹⁰ Kerala (57%),¹¹ Guangxi Province in China (55%),¹² Dharwad (54.1%)¹³ and Latino Americans (46%).¹⁴ Trends of higher caries were reported in other studies in preschool children of China (83%),¹⁵ Moodbidri (76.9%),¹⁶ Ajman (76.1%),¹⁷ Riyadh (74.8%).¹⁸

Maximum decayed component and very negligible filled component was observed. Similar values were found in earlier studies conducted in North and West Belfast (2.36 dt, 0.41 ft).¹⁹ Mean dt was found higher in Riyadh preschool children (4.66)¹⁸ compared to our study. Decayed component making the major component of dmft score suggests the large unmet treatment needs. This may be due to lack of oral awareness in parents, unhealthy feeding habits and oral hygiene practices, high cost of dental treatment and limited accessibility and availability of dental services.

In our study, the mean dmft was 3.20 ± 3.0 with highest decayed component (dt) 2.68 ± 2.8 . Similar dmft values were observed in earlier studies conducted in Pelotas, Brazil (3.20),²⁰ Moodbidri (3.48),¹⁶ Chandigarh (4.0),²¹ North and West Belfast (3.81),¹⁹ Hubli-Dharwad (2.70 ± 3.57),¹³ Ajman (4.4),¹⁷ and Kerala (2.5 ± 0.96).¹¹

Higher dmft values were found in studies conducted among preschool children of Glasgow (7.9),²² Riyadh (6.1),¹⁸ China (6.1 ± 4.7)¹⁵ and Wuhan China Urban (5.7).²³ The dmft value in our study was higher than the values reported by earlier studies of Herfordshire (0.37).^{18,24,25} This difference in the caries prevalence and mean dmft may be due to different levels of preventive measures practiced in these places and due to different environmental, social and cultural differences prevalent at different places.

Interarch analysis, comparing teeth of maxillary and mandibular arch revealed that both were equally affected. The results are not in agreement with the study carried out in Kerala in 2003,¹¹ Riyadh in 2008¹⁸ and China.¹² Mandibular anterior were the least commonly affected teeth (10.4%). This is in agreement with studies conducted in Riyadh¹⁸ and China.¹² This might be due to the reason that lower incisors are prevented from direct exposure during intake of acidic drinks by the tongue and salivary flow from sublingual ducts which dilutes the acidic environment around the tooth.

Government preschool children showed higher caries prevalence and mean plaque scores compared to private preschool children. Filled component was more among private preschool children compared to government preschool children. Similar results were seen in study conducted in Riyadh in 2008,¹⁸ Goiânia-GO, Brazil 1996.²⁶ Children from higher socioeconomic strata go to private preschools and their parents are better educated and in better position to be more conscious of or concerned about the diet and oral hygiene of their children.

There was no statistically significant difference in the prevalence of dental caries among males and females. Similar findings were found in China,¹⁵ Riyadh,¹⁸ Manchester,²⁷ Hubli-Dharwad,¹³ Ajman¹⁷ and Mangalore.²⁸ The results of the present study are not in agreement with the earlier studies in Pelotas, Brazil.²⁰ Males had higher dmft than females. Similar results were found in preschool children of Moodbidri.¹⁶ Findings of our study are not in agreement with earlier studies conducted in Herfordshire,²⁴ Abudhabi and Al Ain.²⁹ Dietary and oral hygiene practices related to dental caries are mostly controlled by parents or caretakers at this early age. As a result it may be too early to develop any gender difference. They attributed this difference to diet, geographical location and cultural differences seen in some societies where males are given more priority.

In our study, we found highly significant association between age of the children and caries prevalence and it was in agreement with studies of Wyne A H et al.¹⁸ Douglass JM,^{30,31} America Segovia-Villanueva,³² Khan MN³³ and Watson M R.¹⁴ Whereas, study conducted by Rao A¹⁶ was not in agreement with our study. It might be due to the fact that parents won't be assisting as the children grow older; lack of proper muscle coordination to brush, eruption of permanent teeth might lead to accumulation of plaque and change in diet which might lead to dental caries.

As education of mothers increased, their children showed good oral health status. It was similar to studies conducted by Hashim R et al,¹⁷ P Sudha,²⁸ Eissa Al-Hosani et al,²⁹

Khan MN,³³ Rao A,¹⁶ S.C.L. Chan,⁵ R.S. Naidu,³⁴ Franciszek Szatko,³⁵ Babu Jose.¹¹ Statistically significant difference was found between mother's education status and her knowledge about oral health. The finding was in agreement with studies conducted in Poland^{35,36} and Burnley, Pendle and Rossendale.³⁷ Improved level of education may be able to access appropriate sources of information and understand that information more fully.

Children of lower socioeconomic class showed higher caries prevalence and mean plaque score. Similar finding were found in Trinidadian,³⁴ Riyadh,¹⁸ China,¹⁵ Africa,²⁷ Davangere³⁸ and Kerala.^{11,39} Individual from lower socioeconomic class experience financial, social and material disadvantages that compromise their ability to care for themselves, obtain professional health services and live in a healthy environment; all of which lead to reduce resistance to oral and other diseases. Low family income may affect food selection and nutrient intake. The findings of our study are not in agreement with studies conducted in Abu Dhabi.²⁹ Caries prevalence was lower in children coming from low income category and the reason they noted is that there is limited intake of sugar containing snacks and caries prevalence was high in high socioeconomic child due to frequent intake of sugar containing milk and calorogenic snacks.

A statistically significant association was found between caries prevalence and plaque score which was in agreement with studies conducted in Kerala³⁹ and Mangalore.²⁸

Statistically significant association was found between mother's knowledge about oral health along with her education level and socioeconomic status. Similar finding were seen in studies of Wierzbicka M,³⁶ N. J. Williams³⁷ and Szatko F.³⁵ Improved level of education may be able to access appropriate sources of information and understand that information completely. Statistical significant association was seen between mother's knowledge, attitude, practices about oral health and caries prevalence, mean dmft and plaque score. Similar results were found in studies conducted among mothers of Poland^{35,36} and Burnley, Pendle and Rossendale.³⁷

Parents are the caretakers of the child. The children's preventive practices tend to be controlled by their parent's knowledge, attitude and practices. A low level of awareness of oral health among the parents will ultimately reflect on child's oral health.

Limitation of this study was non cavitated lesions; malocclusion status was not recorded and children younger than 3 years were not included. So, further studies should be conducted in this regard.

CONCLUSION

Present study results showed that mother's oral health related knowledge; attitude and practices have influence on the oral health status of their children. So, health education should focus on parental responsibility for oral health and the mothers and teachers of child care centers should be encouraged to give practical and emotional support to their children with regard to oral hygiene habits. Providing tooth paste and toothbrushes through sponsors, government operated ration shops and should be made available at subsidized prices. Television means can be used to impart more oral health related knowledge. Yashashwini plan should also include preventive dental treatment facility. Oral counselling should begin within 6 months of eruption of the 1st primary tooth.

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Authors Contribution:

DB – Conceived and designed the study, analysis and interpretation of data, made the first draft of the manuscript; **CVKR** and **SS** – Concept and design of the study, Guidance in each step; **NK** – Manuscript preparation; All authors reviewed and approved of the final manuscript.

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