



## Knowledge and Awareness of Indian Mothers towards Infant Oral Health: A Survey

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### Abstract

**Introduction:** Early Childhood Caries (ECC) is a serious public health problem and is one of the most common causes of early loss of deciduous teeth. If mothers are aware of risk factors associated with development of this disease and have basic knowledge about infant oral hygiene, then it can be prevented. Therefore, this survey was conducted to assess knowledge and awareness of mothers regarding infant oral health and its maintenance and its correlation with mother's education, order of child birth, age of mother at child birth and socioeconomic status.

**Materials and Methods:** This survey was conducted amongst 100 mothers visiting the Out Patient Department of a tertiary care teaching institute in Pune, Maharashtra. A questionnaire form consisting of multiple choice questions pertaining to knowledge and awareness about infant oral health was distributed to the volunteer mothers, the data was compiled and analysed statistically.

**Results:** In the present study, 53% of mothers scored <5 (poor knowledge) and only 11% scored >7 (excellent knowledge) showing inadequate knowledge about infant oral health. Mother's knowledge about infant oral health showed significant positive correlation with her education, order of child birth, age at child birth and socioeconomic status (P-value<0.001).

**Conclusion:** The present study concludes that mothers have inadequate knowledge and awareness about infant oral health. Activities like parental counselling, lectures, mass education at family welfare centres, educational plays and videos etc. should be organised by the health care providers/dental surgeons to improve mother's knowledge and awareness to promote good oral health amongst the future generation.

**Keywords:** Awareness of Indian Mothers; Infant Oral Health; Early Childhood Caries

### Introduction

Dental caries is one of the most commonly occurring infectious disease of tooth caused by streptococci mutans which is the principal bacteria responsible for initiation of this disease [1]. Presence of one or more decayed, missing (due to caries) or filled tooth surfaces in any primary tooth in a child at 71 months of age or young-

er is known as Early Childhood Caries (ECC) [2]. ECC is a serious public health problem globally and is one of the most neglected disease. In developing countries like India, its prevalence is high. In urban regions of India, prevalence of 44% and in rural regions, prevalence of 40.6% has been reported [3]. Etiology of ECC is complex and multifactorial. It occurs by combination of four main fac-

tors which are host, diet, cariogenic bacteria and time. Diet which includes frequent consumption of fermentable carbohydrates especially on demand, breast or bottle feeding and poor oral hygiene which leads to colonization of cariogenic bacteria plays important role in initiation of disease [4].

According to literature, deciduous teeth are as important as permanent teeth. They help in mastication, development of speech, maintaining arch integrity, growth of alveolar bone and esthetics. Loss of deciduous teeth leads to development of various consequences like improper food intake, unclear speech, space loss and poor appearance of child which has psychological effects. To prevent these consequences, adequate knowledge about risk factors associated with development of ECC is very important. Along with biological factors, social factors also play an important role in initiation of this disease. Social risk factors comprise low parental education, low socioeconomic status and lack of awareness about the dental disease [5,6].

Parents, especially mother’s education and awareness regarding risk factors for development of ECC have a vital role in prevention of disease. If mother is aware about oral health of their young children and maintaining good oral hygiene, then high prevalence of ECC can be reduced and good oral health can be promoted. For awareness, education of mother has an important role [7]. As it is necessary to assess mother’s knowledge and awareness regarding infant oral health care, this study was conducted with aims:

1. To ascertain knowledge and awareness of mothers regarding infant oral health and its maintenance.
2. Correlation of knowledge and awareness of mothers with mother’s education, order of child birth, age of mother at child birth and socioeconomic status.

**Materials and Methods**

This cross-sectional survey was conducted amongst mothers visiting the Out Patient Department (OPD) of a tertiary care teaching institute in Pune, Maharashtra. A questionnaire form consisting of multiple choice questions pertaining to knowledge and awareness about infant oral health was distributed to the volunteer mothers. Written consent was obtained from all volunteers before participating in the study. Questionnaire forms consisting of Part-A (10 multiple choice questions on knowledge and aware-

ness of mother about infant oral health and its maintenance) and Part-B (information regarding mother’s education, order of child birth, age of mother at child birth and socioeconomic status) were distributed among the volunteers to tick the appropriate answer. Questionnaires were framed in Hindi, English and Marathi and necessary help was provided by a trained Pedodontist in filling the form. Fully completed questionnaire forms were only taken into consideration. At the end, 100 completed questionnaires were included in the study. Data was compiled in MS excel sheet and analyzed statistically.

**Statistical analysis**

The data on categorical variables is shown as n (% of respondents). The statistical significance of inter-group distribution of categorical variables was tested using Chi-Square test. In the entire study, the p-values less than 0.05 were considered to be statistically significant. All the hypotheses were formulated using two tailed alternatives against each null hypothesis (hypothesis of no difference). The entire data was statistically analyzed using Statistical Package for Social Sciences (SPSS ver 21.0, IBM Corporation, USA) for MS Windows.

**Results**

Amongst the mothers who participated in the study, 53.0% had poor knowledge (score <5), 36.0% had good knowledge (score 5-7) and 11.0% had excellent knowledge (score >7) about infant oral health and its maintenance (Table 1).

Knowledge score	Level of knowledge	No. of mothers	% of mothers
<5	Poor	53	53.0
5 – 7	Good	36	36.0
>7	Excellent	11	11.0
Total		100	100.0

**Table 1:** Distribution of knowledge score among the mothers in the study group.

The mothers with graduation and above educational qualification had better knowledge score as compared to mothers with educational qualification below graduation (P-value<0.001) (Table 2).

	Mother's Education						P-value
	Up to 10 <sup>th</sup> Std		11 <sup>th</sup> - 12 <sup>th</sup> Std		Graduate and above		
Knowledge score	n	%	n	%	n	%	
<5	26	81.3	16	50.0	11	30.6	0.001***
5 - 7	4	12.4	11	34.4	21	58.3	
>7	2	6.3	5	15.6	4	11.1	
Total	32	100.0	32	100.0	36	100.0	

P-value by Chi-Square test. P-value<0.05 is considered to be statistically significant. \*\*\*P-value<0.001.

**Table 2:** Distribution of knowledge score according to mother's education in the study group.

The knowledge score amongst mothers with third child was higher than amongst mothers with first and second child (P-value<0.001) (Table 3).

The older mothers (25 years and above) had better knowledge score regarding infant oral health as compared to younger ones (P-value<0.001) (Table 4).

	Birth order						P-value
	1 <sup>st</sup> Child		2 <sup>nd</sup> Child		3 <sup>rd</sup> Child		
Knowledge score	n	%	N	%	n	%	
<5	41	78.8	11	33.3	1	6.7	0.001***
5 - 7	10	19.2	17	51.5	9	60.0	
>7	1	1.9	5	15.2	5	33.3	
Total	52	100.0	33	100.0	15	100.0	

P-value by Chi-Square test. P-value<0.05 is considered to be statistically significant. \*\*\*P-value<0.001.

**Table 3:** Distribution of knowledge score according to birth order in the study group.

The mothers with upper socioeconomic status had better knowledge score as compared to mothers with lower socioeconomic status (P-value<0.001) (Table 5).

	Mother's age (years)						P-value
	18 - 21		22 - 25		25 and above		
Knowledge score	n	%	N	%	n	%	
<5	32	91.4	21	55.3	0	0.0	0.001***
5 - 7	3	8.6	17	44.7	16	59.3	
>7	0	0.0	0	0.0	11	40.7	
Total	35	100.0	38	100.0	27	100.0	

P-value by Chi-Square test. P-value<0.05 is considered to be statistically significant. \*\*\*P-value<0.001.

**Table 4:** Distribution of knowledge score according to mother's age in the study group.

	Socio-economic status						P-value
	Lower		Middle		Upper		
Knowledge score	n	%	n	%	n	%	
<5	29	96.7	24	51.1	0	0.0	0.001***
5 - 7	1	3.3	21	44.7	14	60.9	
>7	0	0.0	2	4.3	9	39.1	
Total	30	100.0	47	100.0	23	100.0	

P-value by Chi-Square test. P-value<0.05 is considered to be statistically significant. \*\*\*P-value<0.001.

**Table 5:** Distribution of knowledge score according to mother's socio-economic status in the study group.

## Discussion

Dental caries can be prevented if mothers of infant are aware of risk factors associated with development of caries. For awareness about infant oral health, mothers' education plays an important role. If mothers have adequate knowledge regarding oral health of infant and its maintenance, then prevalence of ECC will decrease. This will promote good oral health in children [8].

In the present study, our first aim was to evaluate basic knowledge of mothers about their infant's oral health. More than half (53%) mothers had knowledge score <5 which indicates that they don't have basic knowledge about infant oral health and are not aware about risk factors associated with development of dental caries. Similar studies conducted to assess knowledge of mothers about infant oral health also concluded that most of mothers lack basic knowledge regarding maintenance of good oral hygiene and prevention of development of disease [7,9-12].

Our second aim was to correlate knowledge of mothers about infant oral health with mother's education, order of child birth, age of mother at child birth and socioeconomic status.

### Correlation of mother's knowledge and awareness with mother's education

Previous studies have proved that mother's knowledge and awareness regarding infant oral health is directly proportional to their education level. Mothers with higher education levels are more aware about their infant's oral health [9,13-15]. The present study concurs with previous studies regarding mother awareness and her education. In the present study, significant positive correlation was observed between mother's knowledge and her education ( $p < 0.05$ ). Mothers with lower education had poor knowledge as compared to mothers with higher education. With education, knowledge and awareness increases about importance of good oral hygiene and its maintenance in infants.

### Correlation of mother's knowledge and awareness with birth order of child

In the present study, significant positive correlation was observed between mother's knowledge and order of child birth. 78.8% mothers with first child had poor knowledge about oral health of infant as compared to 6.7% mothers after their third child. It may be because mothers were not much aware and had limited knowledge about infant oral health during their first child

and with experience their knowledge increases with next child birth. Our results concurs with similar studies in literature [16,17].

### Correlation of mother's knowledge and awareness with her age at child birth

In the present study, significant positive correlation was observed between age of mother at child birth and awareness ( $p < 0.05$ ). It may be hypothesized that with time and age, mother's knowledge and awareness about maintenance of infant oral health increases. Our results are similar to other studies. 10,16-17 Some studies found no relationship between age of mother at child birth and her knowledge and awareness about infant oral health [15,18].

### Correlation of mother's knowledge and awareness with socioeconomic status

The present study showed that there was statistically significant relationship between mother's knowledge and awareness with her socioeconomic status. 96.7% mothers with low socioeconomic status had poor knowledge and awareness (score <5) as compared to high socioeconomic status in which 60.9% mothers scored 5-7 (good knowledge) and 39.1% scored >7 (excellent knowledge). None of mothers with high socioeconomic status scored <5 indicating that mothers with high socioeconomic status are more concerned about oral health of infant as they are more educated, having social media exposure and can assess more health care facilities as compared to mothers with low socioeconomic status. Various studies support our results that socioeconomic status is directly linked to mother's knowledge and awareness [9,13,18].

Mothers act as role model for her children. If mother is more aware and have adequate knowledge regarding infant oral health, this will not only reduce prevalence of ECC but also reduce financial burden and promote good oral health among children. In our study, we observed that overall mothers are not aware and have less knowledge about infant oral health. Mothers should be motivated and provided prenatal counseling and anticipatory guidance so that they can participate and play their role in promotion of good infant oral health.

## Conclusions

From this study it can be concluded that mothers have inadequate knowledge about infant oral health. Factors like mother's education, birth order of child, mother's age at child birth and her socioeconomic status are related to mother's knowledge and

awareness. The health care providers/dental surgeons are more focussed on curative treatment. Activities like parental counselling, lectures, mass education at family welfare centres, educational plays and videos etc. should be organised by the health care providers/dental surgeons to improve mother's knowledge and awareness to promote good oral health amongst the future generation.

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