

## MATERNAL AWARENESS, ATTITUDE AND PRACTICES REGARDING TODDLER ORAL CARE: A CROSS-SECTIONAL STUDY IN A TERTIARY CARE HOSPITAL, GUNTUR, ANDHRA PRADESH, INDIA

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### ABSTRACT

**Introduction:** Dental caries remains one of the most prevalent chronic diseases affecting infants and young children. Maternal knowledge regarding infant oral health plays a crucial role in its prevention. This study aimed to assess mothers' knowledge, attitude and practices regarding toddler oral health care. **Materials and Methods:** A cross-sectional study was conducted among 230 first-time mothers of children aged 0–3 years attending a tertiary care hospital in Guntur. Data was collected using a structured questionnaire comprising socio-demographic details and sections on knowledge, attitude, and practices related to infant oral health. **Results:** The mean age of participants was  $25.4 \pm 3.04$  years. A large proportion of mothers (78.3%) were unaware that decay in primary teeth can affect permanent teeth, and only 13.5% had ever visited a dentist. However, most participants (98.3%) expressed willingness to receive further information on infant oral care. Regarding practices, 62.2% reported adding sugar to milk during bottle feeding, while 73.5% cleaned their infant's gums using fingers and 60.9% practiced once-daily oral cleaning. **Conclusion:** The study reveals inadequate knowledge but generally positive attitudes and partially satisfactory practices among mothers. A significant association was observed between socioeconomic status and attitude and practice scores, whereas no association was found with knowledge. Targeted educational and behavioral interventions are necessary to improve early childhood oral health outcomes.

**KEYWORDS:** Early childhood caries, maternal awareness, oral health practices, toddlers, maternal knowledge.

## INTRODUCTION

Early childhood caries (ECC) is a common and preventable chronic disease affecting young children worldwide, with significant impacts on oral health and quality of life.<sup>[1]</sup> In India, ECC remains highly prevalent, affecting nearly half of the pediatric population, particularly in socioeconomically disadvantaged groups.<sup>[2,3]</sup>

Maternal knowledge, attitudes, and practices (KAP) play a crucial role in shaping a child's oral health behaviours. Mothers, as primary caregivers, influence feeding patterns, oral hygiene practices, and utilization of dental services.<sup>[4]</sup>

Early colonization of *Streptococcus mutans* through maternal transmission, along with inappropriate feeding habits and poor oral hygiene, further contributes to ECC development.<sup>[5,6]</sup>

Although early dental visits and parental guidance are recommended by the American Academy of Pediatric Dentistry,<sup>[7]</sup> gaps persist in maternal awareness and the translation of knowledge into appropriate practices, especially in developing and semi-urban settings.<sup>[4]</sup> Additionally, socioeconomic factors significantly influence attitudes and practices related to child oral health.<sup>[8]</sup>

Therefore, this study aimed to assess the knowledge, attitudes, and practices of mothers regarding toddler oral health care in a tertiary care hospital in Guntur, Andhra Pradesh

## MATERIALS AND METHODS

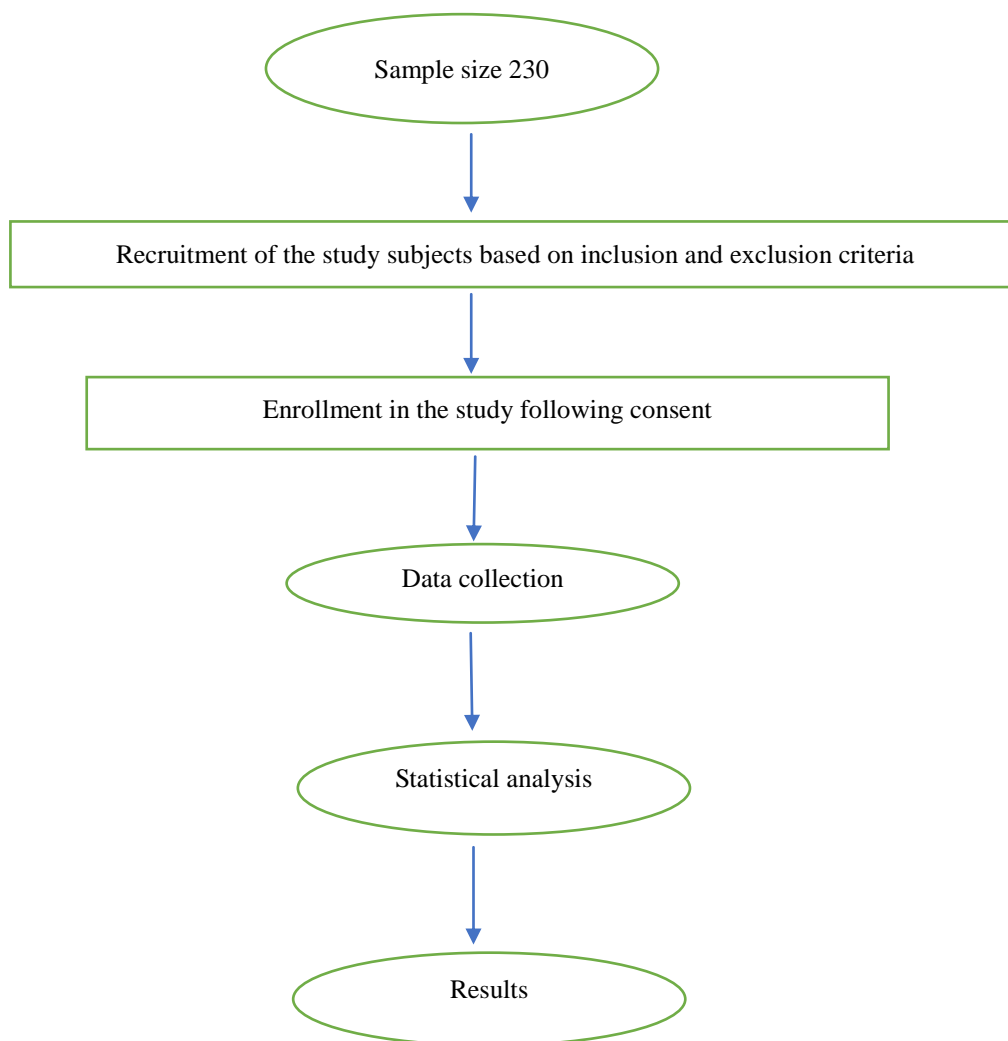
This cross-sectional study was carried out among mothers who were selected using simple random sampling from those attending a tertiary care hospital in Guntur, Andhra Pradesh, India. The study population comprised of first time mothers of children aged between 0 and 3 years who visited the hospital during the study period. Participants were included if they had children within this age group, were willing to participate, and provided informed consent. Mothers who were unwilling to participate or those with medically compromised children were excluded from the study.

The sample size was determined using G\*Power software (version 3.1.9.4), considering an effect size of 0.3, an alpha error of 0.05, and a study power of 95%. Based on these parameters, the final sample size was calculated to be 230 participants.

Data were collected using a structured questionnaire consisting of four sections: sociodemographic details, knowledge related to toddler oral health, attitudes toward oral care, and oral health practices. The questionnaire included a total of 20 items designed to assess maternal awareness and practices regarding oral health in young children. The questionnaire was initially developed in English and subsequently translated into Telugu, followed by back-translation to ensure linguistic accuracy. Content validity was high and consistent across both versions, with I-CVI, S-CVI, and universal agreement values of 0.96, 0.95, and 0.94, respectively.

Ethical clearance for the study was obtained from the Institutional Ethics Committee, and written informed consent was secured from all participants prior to data collection. The collected data were entered and analyzed using SPSS software (version 26). Descriptive statistics were used to summarize the data, while inferential analyses, includes ANNOVA. A p-value of less than 0.05 was considered statistically significant.

Study flowchart



RESULTS

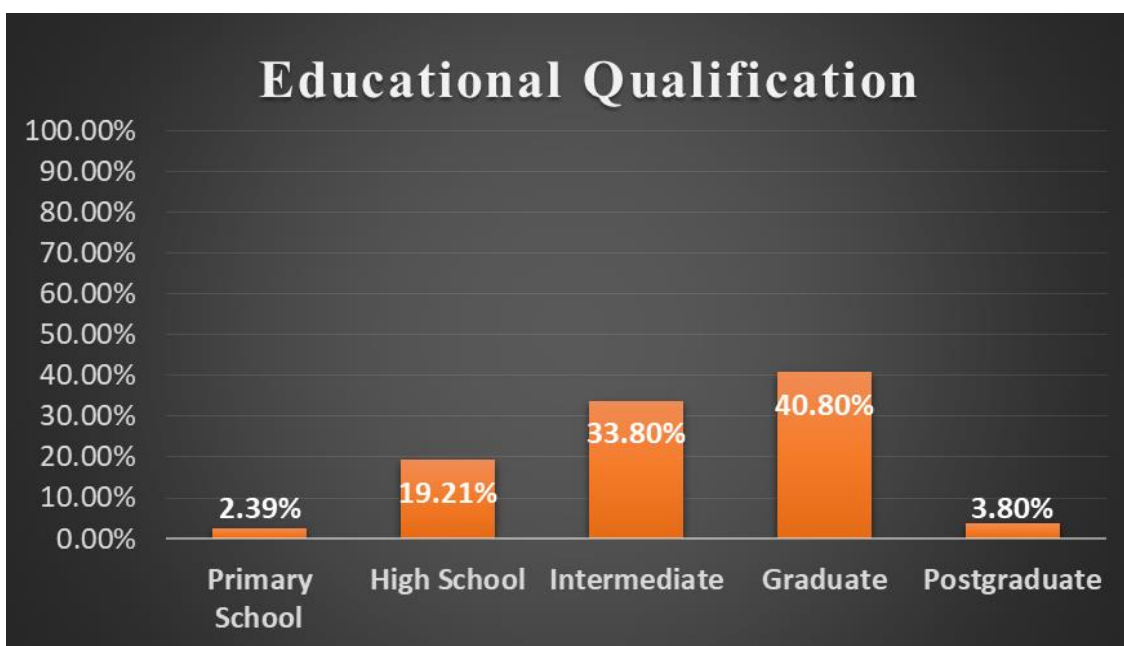


Figure 1: Distribution of Study Participants Based on Educational Qualification.

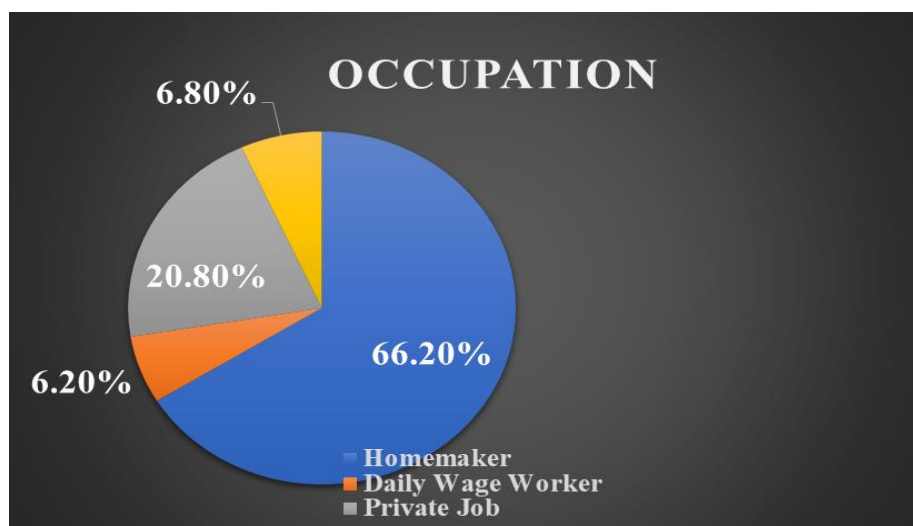


Figure 2: Distribution of Study Participants Based on Occupation.

Table 1: Distribution of Study Participants Based on Knowledge.

QUESTION (KNOWLEDGE)	FREQUENCY	percentage
<b>1. When will the infant's first tooth erupt?</b>		
a) After 6 months	161	70%
b) After 1 year	64	27.8%
c) Don't know	05	2.2%
<b>2. When should be child's 1st dental visit scheduled?</b>		
a) As soon as child's 1st tooth erupts	168	73%
b) When all milk teeth have erupted	53	23%
c) If the child has any dental problem	7	3%
d) Don't know	2	0.9%
<b>3. Milk teeth set consists of how many teeth?</b>		
a) 20	175	76.1%
b) 32	32	13.9%
c) Don't know	23	10%
<b>4. Prolonged bottle feeding will cause decay in your child's teeth?</b>		
a) Yes	215	93.5%
b) No	15	6.5%
c) Don't know	0	0%
<b>5. Are you aware of pacifier?</b>		
a) I know	201	87.4%
b) Don't know	29	12.6%
<b>6. Do you know that prolonged pacifier use will affect your child's teeth?</b>		
a) I know	12	5.2%
b) Don't know	218	94.8%
<b>7. When is the best time to feed sugary foods and drinks to your toddler?</b>		
a) At meals	68	29.6%
b) In between meals	162	70.4%
c) Before sleep during night time	0	0%
<b>8. Are you aware about separate tooth brush and toothpaste for young children?</b>		
a) I know	164	71.3%
b) Don't know	66	28.7%
<b>ATTITUDE</b>		
<b>9. Do the child's decayed milk teeth affect their permanent teeth?</b>		
a) Yes	50	21.7%
b) No	0	0%

c) Don't know	180	78.3%
<b>10. Milk teeth do not require good care as they are going to fall anyway?</b>		
a) Yes	9	3.9%
b) No	221	96.1%
<b>11. Is dental problem less important than any other health problem?</b>		
a) Yes	8	3.5%
b) No	222	96.5%
<b>12. Have you ever visited a dentist before?</b>		
a) Yes	31	13.5%
b) No	99	86.5%
<b>13. Would you like to receive more information regarding infant oral care?</b>		
a) Yes	226	98.3%
b) No	4	1.7%
<b>PRACTICES</b>		
<b>14. How will you feed/fed milk to your child?</b>		
a) Breast feed	126	54.8%
b) Bottle feed	29	12.6%
c) Breast feed and bottle feed	75	32.6%
<b>15. Do you/did you add sugar in milk while bottle feeding your child?</b>		
a) Yes	143	62.2%
b) No	44	19.1%
c) Sometimes	43	18.7%
<b>16. Are you giving pacifier to your child?</b>		
a) Yes	32	13.9%
b) No	198	86.1%
<b>17. Do/did you clean your infant's gum pads?</b>		
a) Yes	230	100%
b) No	0	
c) Sometimes	0	
<b>18. How do/did you clean your infant's gum pads?</b>		
a) With clean cotton cloth	21	9.1%
b) With your finger	165	71.7%
c) With water	44	19.1%
d) With toothbrush	0	0%
<b>19. How do you clean your infant's mouth after the teeth erupts?</b>		
a) With plain toothbrush	90	39.1%
b) With toothbrush and toothpaste	118	51.3%
c) With your finger	22	9.6%
d) With any other aids	0	0%
<b>20. How often will you clean your child's mouth daily?</b>		
a) Once daily	140	60.9%
b) Twice daily	90	39.1%
c) More than that	0	0%

Table 2: Association socioeconomic status with knowledge, Attitude and Practice Scores.

Variable	Source of Variation	Sum of Squares	df	Mean Square	F value	p-value
<b>Knowledge</b>	Between Groups	0.258	1	0.258	0.643	0.424
	Within Groups	91.637	228	0.402		
	Total	91.896	229			
<b>Attitude</b>	Between Groups	3.688	1	3.688	16.456	0.000*
	Within Groups	51.095	228	0.224		
	Total	54.783	229			
<b>Practice</b>	Between Groups	34.742	1	34.742	30.158	0.000*
	Within Groups	262.650	228	1.152		
	Total	297.391	229			

## ONEWAY ANOVA

\* -  $p < 0.05$  statistical significance

**Figure 1** shows the distribution of study participants according to their educational qualification. The largest proportion of participants were **graduates (40.80%)**, followed by those with **intermediate education (33.80%)**. Participants who had completed **high school** constituted **19.21%** of the sample. In contrast, only a small proportion had **postgraduate education (3.80%)**, and an even smaller percentage had education limited to **primary school (2.39%)**.

**Figure 2** depicts the distribution of study participants based on their occupation. The majority of participants were **homemakers (66.20%)**, accounting for more than two-thirds of the study population. This was followed by individuals engaged in **private jobs (20.80%)**. A smaller proportion of participants were **government employees (6.80%)** and **daily wage workers (6.20%)**.

A total of 230 study participants were included in the analysis. The distribution of participants based on their knowledge, attitude, and practices toward infant oral health is presented in Table 1.

**Knowledge**

Regarding the timing of eruption of the first tooth, the majority of participants (161; 70%) correctly reported that it occurs after 6 months, while 64 (27.8%) believed it occurs after one year and 5 (2.2%) did not know.

When asked about the appropriate timing of the child's first dental visit, 168 participants (73%) correctly responded that it should be scheduled as soon as the first tooth erupts. However, 53 (23%) believed it should be after the eruption of all primary teeth, 7 (3%) reported that it is necessary only when a dental problem arises, and 2 (0.9%) were unaware.

Knowledge regarding the number of teeth in the primary dentition was relatively high, with 175 participants (76.1%) correctly identifying it as 20 teeth. In contrast, 32 (13.9%) reported 32 teeth, and 23 (10%) did not know.

A large proportion of participants (215; 93.5%) were aware that prolonged bottle feeding can lead to dental decay, whereas 15 (6.5%) believed otherwise.

Awareness about pacifiers was reported by 201 participants (87.4%), while 29 (12.6%) were not aware. However, only 12 participants (5.2%) knew that prolonged pacifier use could adversely affect the child's teeth, with a vast majority (218; 94.8%) lacking this knowledge.

Regarding feeding practices, 162 participants (70.4%) incorrectly reported that sugary foods and drinks should be given between meals, whereas only 68 (29.6%) correctly identified mealtimes as the appropriate time.

Awareness of the use of separate toothbrushes and toothpaste for young children was present in 164 participants (71.3%), while 66 (28.7%) were not aware.

**Attitude**

In terms of attitude, only 50 participants (21.7%) believed that decayed primary teeth could affect permanent teeth, while a majority (180; 78.3%) were unaware of this association.

Encouragingly, most participants demonstrated a positive attitude toward oral health. A total of 221 participants (96.1%) disagreed with the statement that milk teeth do not require care, and 222 (96.5%) disagreed that dental problems are less important than other health problems.

However, dental service utilization was low, with only 31 participants (13.5%) reporting a prior dental visit, while 199 (86.5%) had never visited a dentist.

Almost all participants (226; 98.3%) expressed willingness to receive more information regarding infant oral care.

### **Practices**

Regarding feeding practices, 126 participants (54.8%) reported exclusive breastfeeding, 29 (12.6%) bottle feeding, and 75 (32.6%) both methods.

Among those who practiced bottle feeding, 143 participants (62.2%) reported adding sugar to milk, while 44 (19.1%) did not, and 43 (18.7%) did so occasionally.

Pacifier use was reported by 32 participants (13.9%), whereas the majority (198; 86.1%) did not use pacifiers.

All participants (230; 100%) reported cleaning their infant's gum pads. Among them, the most common method was using a finger (165; 71.7%), followed by water (44; 19.1%) and clean cotton cloth (21; 9.1%).

After tooth eruption, 118 participants (51.3%) used a toothbrush with toothpaste, 90 (39.1%) used a plain toothbrush, and 22 (9.6%) used their finger.

Regarding frequency of oral hygiene practices, 140 participants (60.9%) reported cleaning their child's mouth once daily, while 90 (39.1%) reported twice daily cleaning.

The association between socioeconomic status and the three domains—knowledge, attitude, and practice—was assessed using ANOVA (Table 2). Socioeconomic status showed no significant association with knowledge scores ( $F = 0.643$ ,  $p = 0.424$ ). However, a statistically significant difference was observed for attitude ( $F = 16.456$ ,  $p < 0.001$ ) and practice scores ( $F = 30.158$ ,  $p < 0.001$ ) across groups. The influence of socioeconomic status was more pronounced on practice compared to attitude. Overall, socioeconomic status affected attitude and practice, but not knowledge.

### **DISCUSSION**

This study provides important insight into maternal knowledge, attitudes, and practices regarding toddler oral health in a tertiary care setting, highlighting a persistent gap between awareness and behaviour. While mothers demonstrated acceptable baseline knowledge and largely positive attitudes, deficiencies in specific domains and suboptimal practices remain evident.

Although general awareness—particularly regarding tooth eruption and the need for early dental visits—was satisfactory, critical gaps were observed in understanding the long-term implications of early oral health. Notably, limited awareness regarding the significance of primary teeth and the consequences of deleterious oral habits reflects a superficial level of knowledge. Similar trends have been reported in previous studies, where caregivers possessed

fragmented knowledge that did not extend to preventive or risk-related aspects.<sup>[9,10,11]</sup> This suggests that existing information channels may emphasize basic concepts while failing to address clinically relevant details.

A key finding of this study is the persistence of inappropriate feeding practices despite partial awareness of their risks. The continued use of sugar-containing feeds and unfavorable timing of sugary food intake indicate a disconnect between knowledge and behavior. This observation is consistent with earlier reports, which emphasize that dietary practices are strongly influenced by cultural norms and habitual behaviors rather than knowledge alone.<sup>[12]</sup> Such findings reinforce the need for oral health education strategies that move beyond information dissemination toward behavior-oriented interventions.

The misconception regarding the limited importance of primary teeth remains a significant concern. This has been widely documented in the literature and continues to contribute to delayed preventive care and increased susceptibility to early childhood caries.<sup>[13,14]</sup> The persistence of this belief, even among mothers accessing tertiary healthcare, underscores the inadequacy of current educational strategies.

In contrast, oral hygiene practices in the present study were relatively encouraging, with most mothers reporting some form of cleaning of the child's oral cavity. However, the methods and consistency of these practices were not always optimal, indicating incomplete translation of knowledge into appropriate action. This partial adoption of recommended practices has also been observed in previous studies, suggesting gradual improvement but persistent gaps in practical guidance.<sup>[15]</sup>

Despite favorable attitudes toward oral health and a strong willingness to receive further information, dental service utilization was notably low. This discrepancy aligns with findings from earlier research demonstrating that positive attitudes do not necessarily translate into preventive health-seeking behavior.<sup>[16]</sup> Structural and perceptual barriers, including lack of perceived need and limited emphasis on preventive dental visits, may contribute to this pattern.

The observed association between socioeconomic status and attitude and practice—but not knowledge—further supports the concept that behavioral outcomes are shaped by contextual factors beyond awareness alone. This is in agreement with previous findings emphasizing the role of socioeconomic determinants in influencing health behaviors through access, affordability, and lifestyle patterns.<sup>[17]</sup>

Collectively, these findings are consistent with broader evidence identifying maternal factors as key determinants of early childhood oral health outcomes.<sup>[3,18]</sup> However, the present study adds to the literature by demonstrating that even in populations with reasonable access to healthcare, significant gaps persist in the translation of knowledge into practice.

### **Strengths and Limitations**

A major strength of this study lies in its focus on first-time mothers, enabling early identification of gaps at a critical stage for intervention. The use of a validated, culturally adapted questionnaire enhances the reliability of the findings, and the comprehensive assessment of KAP provides a holistic perspective. The present study provides important insights; however, certain methodological considerations should be noted. As a cross-sectional study, it reflects findings at a single point in time, and longitudinal studies could offer a better understanding of changes over time. The hospital-based setting provides a structured context, though inclusion of community-based populations in future studies may

enhance generalizability. Additionally, while self-reported data were collected using a validated questionnaire, further exploration of contextual and behavioral factors could enrich future research.

## CONCLUSION

The findings indicate that maternal awareness of toddler oral health is **adequate but incomplete**, with significant gaps in critical knowledge areas and preventive practices. The consistent disconnect between knowledge, attitude, and behavior highlights the limitations of conventional educational approaches.

Future interventions should prioritize **behavioral change strategies, culturally sensitive counseling, and integration of oral health education into maternal healthcare services**. Addressing these gaps at an early stage is essential to reduce the burden of early childhood caries and improve long-term oral health outcomes.

## ACKNOWLEDGEMENTS

NIL

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