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## **Original Research Article**

# A cross-sectional study on knowledge and awareness toward their children's oral health among parents in Khammam City, Telangana, India

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#### Abstract

**Background:** Maintaining good oral health is essential for a child's overall health and well-being, serving as the foundation for a disease-free life. As parents and caregivers play a pivotal role in a child's development, their knowledge and attitude toward oral health significantly impact the child's dental habits and long-term oral health outcomes.

Aim: The objective of this study was to assess parental knowledge and attitudes related to their children's oral health in Khammam, Telangana.

Materials and Methods: This study involved a random sample of 360 parents of children aged 5 to 15 years, who completed a self-administered anonymous questionnaire. The survey focused on preventive oral methods, care of deciduous teeth, children's oral habits, and the management and storage of traumatic dental injuries. The responses were collected and analyzed using statistical methods.

**Results:** There was a significant relation between age, occupation and income when awareness was assessed among parents regarding preventive oral methods and habits. Majority of parents have no idea on traumatic and sports injuries. The age showed significant association with the awareness of healthy milk teeth. The use of preventive procedures was significantly associated with income and education levels (P < 0.05).

Conclusion: Our study revealed that understanding of their children's dental health in the Khammam region is relatively moderate. To improve this, general awareness among parents should be enhanced through effective oral health programs and interventions.

Keywords: Oral health, Parents, Preventive procedures, Awareness, Traumatic injuries.

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# 1. Introduction

In developing countries like India, oral diseases are highly prevalent due to several contributing factors. These include limited access to dental care, inadequate primary oral health services, and the lack of widespread preventive measures, such as fluoride treatments. Rapid urbanization and lifestyle changes have also exacerbated the problem, with increasing consumption of junk food and diets high in free sugars serving as significant risk factors. Together, these challenges underscore the need for stronger public health initiatives and preventive strategies to improve oral health outcomes in these regions.<sup>1</sup>

Oral health significantly affects overall well-being, influencing comfort, eating, and development. Parents' understanding and modeling of good oral hygiene are crucial for children. Tooth decay, especially in permanent first

molars, is common and problematic, often due to poor awareness and delayed treatment, leading to severe complications and costs.<sup>2</sup>

Effective oral hygiene, particularly when combined with fluoride use, is essential for controlling dental caries. For instance, a lack of proper oral hygiene coupled with high sugar intake can quickly lead to visible carious lesions. However, these lesions can be reversed with improved oral hygiene and daily fluoride mouth rinses.<sup>3</sup>

Early childhood caries can develop early and progress rapidly, especially in high-risk children. This condition can severely affect a child's physical comfort, emotional wellbeing, and social interactions.<sup>4</sup>

The influence of parents and family members is critical in assessing a child's oral health, as they mold early behaviors

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and set the foundation for healthy routines through their parenting practices and health habits. The decisions parents make, which are often guided by their own attitudes, directly impact their child's oral health. Parental understanding and attitudes towards oral health significantly affect how often children brush their teeth. For instance, a mother's positive attitude towards dental care is linked to better oral hygiene in her child. Conversely, a negative attitude towards oral health can lead to higher rates of tooth decay in young children.<sup>5</sup>

Dental professionals are essential in educating parents and providing accessible information, aligning with the American Academy of Pediatric Dentistry's recommendation for a dental visit within a child's first year.<sup>6</sup> Preventing oral disorders early in infants is crucial for long-term dental health, with biological and socioeconomic, educational, and behavioral factors playing significant roles.<sup>7</sup>

The aim of this study was to explore parents' knowledge and practices related to their children's oral health and their impact on dentition at different stages in school-aged children under 15 years old in Khammam.

## 2. Materials and Methods

# 2.1. Study design

The present study assessed parents' awareness of basic dental health for children, their knowledge and use of preventive dental practices and their responses to dental injuries in children. In this cross-sectional study, a stratified random sampling technique was applied and conducted among parents of urban areas of Khammam city. A total of 360 questionnaires were distributed to children of age group 5-15 years in government schools. Of them, six were excluded from the study because they were either incomplete or multiple options being selected. Participation in the study was voluntary. The sample size was determined using a 5.5% margin of error, a 95% confidence interval (CI), and an estimated concordance of 50%. The minimum required sample size was 314 schoolchildren. To adjust for anticipated lower participation, the sample size was increased by 11%, resulting in a final total of 360 participants.

# 2.2. Questionnaire

Children in schools were handed out questionnaire and parents were asked to complete an anonymous, objective-type questionnaire. The questionnaire included questions about demographic factors (such as sex, age of child, parent occupation and income), use of fluorides, and utilization of preventive dental services, knowledge on care for primary dentition, malocclusion, care for traumatic injuries of teeth in children and oral habits. Participants could respond to questions regarding awareness on preventive methods, care for primary teeth, and traumatic dental injuries with 'yes,' 'no,' or 'I don't know.'

# 2.3. Validation of questionnaire

To ensure the questionnaire's validity, it was initially created in English and then translated into Telugu. Accuracy of the interpretation was verified by translating the Telugu version back into English.

#### 2.4. Method

Questionnaires were distributed to children in schools, who were instructed to give them to their parents. Each questionnaire included a consent form and description of the study. Parents were asked to review and answer the questions based on their knowledge and sign the consent form. The completed questionnaires were then collected from the children the following day.

#### 4. Results

# 4.1. Statistical analysis

The results were analyzed by evaluating the frequency distribution of the data. Descriptive statistics were calculated, and the chi-square test was used for analysis with a 95% confidence interval. Statistical analysis was performed using SPSS for Windows version 20.0 (SPSS). P-values less than 0.05 were considered statistically significant.

**Table 1** shows distribution based on awareness of parents on preventing methods. Out of 354 participants majority (98.3%) said their child brush the teeth daily and majority (96.3%) of them use tooth paste to brush their teeth. When awareness was compared with age, occupation and income there is a significant association between type of material used (p=0.000), use of preventive measures (p=0.000), rinse the mouth after eating/drinking (p=0.000) and schoolteachers, parents play an crucial role in the dental health of a young children (p=0.000). Whereas only occupation showed significant association with the awareness of necessary visiting dentist (p=0.000). The income was associated with parents' awareness that good oral health is connected to a child's overall health (p=0.000).

Table 2 shows distribution based on awareness of parents on care of primary dentition. Majority (69.4%) of parents were aware about snacking in between meals may cause caries in children and consumption of cool drinks causes erosion of child's teeth. When awareness was compared with age, occupation and income there is a significant association between awareness on various oral habits and their adverse effects on the future alignment of permanent teeth to income (p= 0.04). Whereas, awareness about breast/bottle feeding children during bedtime can increase the incidence of caries development (p=0.000), the most common cause of early childhood caries (p=0.000) and think primary teeth do not need as much care since they are eventually going to be replaced. (p=0.000) showed significant association with both education and income. The age showed significant association with the awareness of healthy primary teeth are crucial for properly chewing food

(p=0.036) and early loss of milk teeth and loss of permanent teeth in mesial drifting of child's teeth (p=0.010).

Table 3 shows distribution based on awareness of parents on traumatic injuries of teeth. Majority (40.1%) of parents have no idea of storage media of loss of any teeth due

to trauma, placing the loss tooth (avulsion) again in the socket and also about mouth guards help in preventing sports injuries. When awareness was compared with age, occupation and income there is a significant association between awareness of traumatic injuries with both education and income (p=0.000).

Questions	Response	Frequency	%	Age	Occupation	Income
				(chi-square-p value)	(chi-square-p value)	(chi-square, p- value)
Does your child	Yes	348	98.3	4.52,0.807(NS)	29.5,1.00(NS)	88.034,0.004*(S)
brush their teeth	No	6	1.6			
How many times	Once	256	72.0	10.02,0.263(NS)	87.197,0.12(NS)	71.47,0.80(NS)
does your child	Twice	99	27.9			
brush their teeth						
Which material	Tooth paste	341	96.3	24.325,0.083(NS)	89.25,0.000*(S)	96.45,0.008*(S)
	Tooth powder	9	2.54			
	Others	4	0.8			
Do you think	Yes	334	94.3	5.46,0.993(NS)	85.86,1.00(NS)	69.9,0.999(NS)
tongue cleaning is	No	9	2.54			, , ,
necessary for your child?	Don't know	11	0.03			
Do you practice	Yes	213	60.1	33.00,0.104(NS)	58.03,0.000*(S)	53.363,0.000*(S)
preventive	No	100	28.2			
measures for your	Don't know	41	11.5			
child such as						
flossing,						
mouthwash?						
Does your child	Yes	310	87.5	10.559,0.992(NS)	56.22,0.000*(S)	52.99,0.000*(S)
rinse the mouth	No	32	9.03			
after	Don't know	12	3.38			
eating/drinking?						
Does your child's	Yes	193	54.5	17.50,0.353(S)	47.70,0.445(NS)	129.8,0.439(NS)
toothpaste contain	No	92	25.9			
fluoride?	Don't know	69	19.49			
Do you know	Yes	279	78.8	19.19,0.259(NS)	17.58,0.039*(S)	98.91,0.807(NS)
proper method of	No	36	10.1			
brushing plays an	Don't know	39	11.01			
important role in						
good oral hygiene						
of your child?						
Do you use	Yes	212	59.8	13.8,0.608(NS)	150.08,0.391(NS	95.5,0.867(NS)
mouthwash for	No	121	34.1		)	
your child?	Don't know	21	5.93			
Do you think	Yes	215	60.7	14.37,0.571(NS)	68.9,0.093(NS)	112.0,0.482(NS)
Fluoridated	No	67	18.9			
toothpaste helps in	Don't know	72	20.3			
preventing your						
child tooth decay?	**	200		0.454.0.00.000	252 5 0 000 1 5	10.0000 111.55
Do you think	Yes	232	65.5	9.454,0.89(NS)	253.5,0.000*(S)	106.03,0.641(NS
visiting dentist is	No	116	32.7			)
necessary for your child?	Don't know	6	1.69			
	Yes	134	37.8	23.163,0.109 (NS)	47.6,0.221(NS)	i e

How frequently do	No	151	42.6			116.12,0.376(NS
you take your	Don't know	69	19.4			)
child to a dentist?						
Do you think	Yes	290	81.9	18.1,0.798(NS)	41.23,0.000*(S)	54.23,0.000*(S)
schoolteachers	No	38	10.7			
and parents play	Don't know	26	7.3			
an important role						
in the dental						
health of a child?						
Do you think good	Yes	1	0.2	23.5,0.487(NS)	53.0,0.075(NS)	92.32,0.000*(S)
oral health is	No	301	85			
related to good	Don't know	51	14.4			
general health of a						
child?						

<sup>\*=</sup>S=statistically significant, NS=not significant

 Table 2: Awareness of parents on care of primary dentition

Questions	Respons	Frequency	%	Age	Occupation	Income
	e			(chi-square, p- value)	(chi-square, p- value)	(chi-square, p- value)
Do you think habits	Yes	213	60.1	9.90,0.872(NS)	166.5,0.117(NS)	138.69,0.04*(S)
such as thumb sucking;	No	100	28.2			
nail biting and lip	Don't	41	11.5			
biting have adverse	know					
effects on the future						
alignment of						
permanent teeth of						
your child?						
Do you think	Yes	227	61.2	18.53, 0.304(NS)	144.7,0.514(NS)	102.98,0.717(NS)
consumption of	No	65	18.3			
cooldrinks causes	Don't	62	17.5			
erosion of child's	know					
teeth?	••	245	50.4	10.52.0.222.233	152 050 0 210	10150555070
Do you think snacking	Yes	246	69.4	19.72,0.233(NS)	152.970,0.310	104.7,0.675 (NS)
in between meals may	No	68	19.2		(NS)	
cause caries in children?	Don't					
children?	know	40	11.0			
D 4111	Others	40	11.2	15 70 0 00 c(NG)	24.50.0.000*(0)	20.76.0.000*(0)
Do you think	Yes	191	53.9	15.78,0.896(NS)	24.59,0.000*(S)	28.76,0.000*(S)
breast/bottle feeding children during	No	90	25.4			
bedtime can increase	Don't	73	20.6			
the incidence of caries	know					
development?						
What do you think is	High	106	29.9	31.039,0.515	88.69,0.000*(S)	84.21,0.000*(S)
the most common	sugar	100	27.7	(NS)	00.07,0.000 (B)	04.21,0.000 (B)
cause of early	intake			(115)		
childhood caries?	Improper	135	38.1	1		
	oral		23.1			
	hygiene					
	Congenit	43	12.1	1		
	al factors					
	All the	69	19.4			
	above					
	Yes	146	41.2	10.766,0.824(NS)	167.23,0.11(NS)	118.01,0.330(NS)

From your point of	No	158	44.6			
view can early	Don't	50	14.1			
childhood caries affect	know					
the permanent teeth in						
future?						
Do you think milk	Yes	192	54.2	17.46,0.983(NS)	529.8,0.000*(S)	456.82,0.000*(S)
teeth do not require	No	158	44.6			
good care as it is going	Don't	1	0.2			
to fall?	know					
	D	2	0.56			
Do you think healthy	Yes	276	77.9	27.54,0.036*(S)	126.0,0.88(NS)	83.32,0.980(NS)
milk teeth are essential	No	73	20.6			
to chew food properly?	Don't	4	1.12			
	know					
Do you think Brushing	Yes	285	80.5	25.15,0.067(NS)	137.9,0.671(NS)	137.23,0.06(NS)
the children's teeth at	No	34	9.6			
the age of 6 years and	Don't	34	9.6			
below should be done	know					
under the help of						
parents/caregiver?						
Do you know that	Yes	188	53.1	17.60,0.347(NS)	152.23,0.345(N	109.47,0.550(NS)
malalignment of child	No	80	22.5		S)	
teeth	Don't	86	24.2			
causesperiodontal	know					
disease?						
Do you think That	Yes	204	57.69	18.91,0.271(NS)	169.16,0.092(N	107.24,0.609(NS)
prolonged retention of	No	71	20		S)	
deciduous tooth is a	Don't	79	22.3			
risk factor for	know					
malocclusion of						
child's teeth?	*7	211	50.6	22.01.0.010#/5\	10.50.0.000.035	150.05.0.010.030
Early loss of milk teeth	Yes	211	59.6	32.01,0.010*(S)	19.72,0.233(NS)	153.97,0.310(NS)
and loss of permanent	No	75	21.1			
teeth in mesial drifting	Don't	68	19.2			
of child's teeth?	know					

<sup>\*=</sup>S=statistically significant, NS=not significant

Table 3: Awareness of parents on traumatic injuries of teeth

Questions	Response	Frequency	%	Age (chi-square-value)	Occupation (chi-square- value)	Income (chi-square-value)
Do you have any idea	Yes	101	28.5	18.55,0.972(NS)	26.69,0.000*(S)	45.422,0.000*(S)
of storage media of	No	142	40.1			
loss of any teeth due	Don't	110	31.0			
to trauma	know		7			
Do you have any idea	Yes	99	27.9	26.12,0.758(NS)	36.88,0.000*(S)	33.6,0.00*(S)
of placing the loss	No	162	45.7			
tooth (avulsion) again	Don't	91	25.7			
in the socket?	know					
Do you have any idea	Yes	106	29.9	23.8,0.850(NS)	41.4,0.00(S)	32.8,0.00(S)
of mouth guards help	No	136	38.4			
in preventing sports	Don't	110	31			
injuries?	know					

<sup>\*=</sup>S=Statistically significant, NS=not significant

#### 5. Discussion

Teeth are a vital asset, with primary (milk) teeth crucial for children's eating, speaking, appearance and space maintenance for permanent teeth. Issues with these teeth can cause pain, difficulty in chewing, and speaking problems.<sup>6</sup> Proper care is essential for a healthy dental start. Parents are crucial in this care and must be well-informed about primary teeth to help establish healthy oral habits in their children.<sup>7</sup>

In the present study, the age group of 5 to 15 years was selected as the target group, as children in this age range (specifically 5, 12, and 15 years) are considered a vulnerable population for the development of dental caries, according to the WHO.<sup>8</sup>

Results of the study showed that there was no significant difference between low and high income parent population regarding oral hygiene practices, whereas significant difference was seen in preventive measures. A study done by Nassar AA et al, was in contrast with present study, revealed that parents with lower incomes were more likely to provide incorrect answers.<sup>4</sup>

A significant statistical correlation was observed between accurate dietary knowledge and both the educational level and occupation of the participants, aligning with results from several earlier studies.<sup>3</sup>

In the current study, 96.3% of parents believe that teeth should be cleaned using toothpaste, while 2.54% prefer tooth powder. These findings are consistent with a study done by Patil AN et al., where 92.7% of parents indicated toothpaste as the preferred brushing material, and 6.3% opted for tooth powder. Similar results were observed in other studies by Bamba S (100%), Dikshit P (56.5%), Hans R (82%), and Suma G (93%), all of which showed a preference for toothpaste in dental cleaning routines. A Children who neglected to use a toothbrush and toothpaste for dental hygiene were 1.56 times more likely to develop dental caries compared to those who maintained proper oral care practices.

In this study, majority of parents practice preventive measures for their children, such as flossing and using mouthwash. This supporting the conclusions of Al-Batayneh OB.<sup>10</sup> In this study, majority of children (87.5%) rinse their mouths after eating or drinking, which is consistent with the results of Chandran V et al (91.1%).<sup>11</sup> However, a study done by Helal M et al has shown that only 26.25% children rinse their mouth after eating/drinking.<sup>12</sup>

Additionally, the results showed that 54.5% of parents are aware that their child's toothpaste contains fluoride, similar with the findings of Chala et al. <sup>16</sup> and Chandran et al, <sup>11</sup> and Helal M et al. <sup>7</sup> However, this contrasts with studies by Dali M., <sup>17</sup> Mohamed YS, <sup>18</sup> Salama AA et al, <sup>19</sup> and Nagarajappa et al, <sup>20</sup> which reported low parental awareness

of fluoride's function in toothpaste. This lack in awareness may be due to parents typically not paying attention to the ingredients in toothpaste. <sup>17</sup>

In this study, majority of parents are knowledgeable about the proper brushing technique, which is crucial for maintaining their children's oral hygiene. This finding is accordance with the study by Al-Batayneh OB.<sup>10</sup> However, despite their awareness of the importance of oral hygiene; inconsistencies were noted in their overall knowledge.

The majority of parents (81.9%) acknowledged that both school teachers and Parents have a crucial role in managing their children's dental health, as effective tooth cleaning cannot be accomplished by the child alone. This perspective aligns with the findings of Nassar AA<sup>4</sup> who reported that 98.1% of participants shared a similar view.

Furthermore, 60.1% of parents believe that habits like thumb sucking, nail biting, and lip biting can adversely affect the alignment of their children's permanent teeth, while 28.2% disagree and 11.5% are unsure. These findings align with a study by Kumar G, reported that 92% of participants acknowledged that such oral habits can lead to irregular teeth and jaw issues, with 4% disagreeing and 4% unaware of these effects. The majority of respondents recognized the importance of teeth, with most correctly understanding that various deleterious oral habits can impact permanent teeth alignment.

In our study, 53.9% of parents believe that breast or bottle feeding at bedtime can increase the risk of caries development in children. This is quite similar to a study that found 53.1% of parents thought night time bottle and breastfeeding could lead to tooth decay.<sup>4</sup> Another study indicated that breastfed children are significantly less likely to develop caries compared to those who are bottle-fed from birth, early childhood caries (ECC) can occur among breastfed children if breastfeeding continues at night after six months of age.<sup>22</sup> Despite breastfeeding being the best nutritional source for newborns, mothers should be aware of the potential risk of ECC and ensure their child's oral cavity is cleaned after feeding.

In our study, 54.2% of parents felt that milk teeth do not need extensive care since they will eventually fall out, while 44.6% disagreed. This is consistent with Dali MA et al.'s findings, where 58% of respondents viewed milk teeth as less important because they are temporary. Conversely, Dikshit P et al. found that 47.6% of parents disagreed with this view and Setty JV et al. reported a much lower figure (24%). Shetty RM et al. found that a majority (71.7%) of parents believed milk teeth still requires proper care; even though they will be shed. Most parents recognized that problems with primary teeth can affect the health of permanent teeth.

In our study, 77.9% of parents believe that primary teeth are important for chewing food. This finding is consistent

with Helal M et al., who reported 100% agreement on the significance of primary teeth.<sup>12</sup> However, it contrasts with the results of Patil AN et al.<sup>13</sup> This showing parents have knowledge on importance of primary teeth.

In our study, only few respondents were aware of the option to replant avulsed teeth into the socket. This finding is consistent with the study by Ozer S et al.<sup>25</sup> Inadequate knowledge of emergency management for avulsed teeth can greatly impact their prognosis, there is a clear need for educational campaigns to raise public awareness about proper emergency procedures for managing avulsed teeth.

#### 6. Conclusion

The present study found that parents in Khammam city had a reasonable level of knowledge and awareness regarding preventive methods for oral health. A clear association was observed between the parents' education level and their children's oral health status. However, parents demonstrated limited understanding of the appropriate actions to take in emergencies such as tooth avulsion, replantation, and sportsrelated injuries. Additionally, family income significantly influenced the parents' awareness of necessary treatments for primary teeth. It is essential to develop a positive attitude among parents and enhance their dental health awareness through comprehensive child-focused dental programs. These programs should emphasize the importance of primary teeth, their functions, and best practices for effective preventive care, while encouraging active parental involvement.

# 7. Ethical Approval

Not required.

### 8. Source of Funding

None.

# 9. Conflict of Interest

None declared.

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