International Journal of Enhanced Research in Medicines & Dental Care (IJERMDC),
ISSN: 2349-1590, Vol. 12 Issue 12, December 2025

Knowledge, Attitude and Awareness of Parents Regarding Children's Oral Health

Shruti Baban Deshmukh[1], Asmita Ramesh Hamand[2]

[1]Krishna Vishwa Vidyapeeth, School of Dental Sciences, Karad, India, ORCID iD: 0009-0009-1814-0697
[2]Krishna Vishwa Vidyapeeth, School of Dental Sciences, Karad, India, ORCID iD: 0000-0002-3927-0177

ABSTRACT

To assess knowledge, awareness and attitudes of caregivers/parents of children aged 4–15 years regarding oral health and maintenance of oral hygiene in western Maharashtra. A cross-sectional descriptive questionnaire-based study was conducted using an online Google Forms survey. The survey included 12 multiple-choice items addressing knowledge, attitudes and practices (KAP) related to caries transmission, fluoride, sealants, toothbrush use, and tongue cleaning. Descriptive statistics (counts, percentages) and χ^2 tests were used to explore associations between demographic variables and KAP responses. Significance was set at $p < 0.05$. Most caregivers recognized that caries can spread between persons; awareness of fluoride and pit-and-fissure sealants varied, with gaps noted in specific knowledge domains. Practice patterns (toothbrush replacement, tongue cleaning) were heterogeneous. Education level and parental age were associated with several knowledge items (χ^2, $p < 0.05$). Targeted parental education and school-based oral health promotion are likely to improve knowledge and practices. While general awareness about oral health exists among caregivers, targeted interventions are necessary to address specific knowledge gaps and improve preventive practices.

Keywords: parental knowledge; oral health; children; fluoride; pit and fissure sealants; early childhood caries

INTRODUCTION

Oral health in childhood is a vital determinant of lifelong well-being, influencing not only dental outcomes but also nutrition, speech, appearance, and psychosocial health. Early childhood caries (ECC) remains one of the most common chronic conditions of children worldwide. It disproportionately affects children in low- and middle-income countries, and those from disadvantaged groups in high-income countries. The consequences include dental pain, impaired chewing, absenteeism from school, high treatment costs, and long-term morbidity. Importantly, ECC is largely preventable through affordable measures such as early initiation of tooth brushing, fluoride exposure, pit-and-fissure sealants, and routine dental visits [1].

Caregivers and parents play a decisive role in establishing children's oral health behaviours. From determining dietary patterns and dental attendance to supervising brushing and reinforcing preventive practices, caregivers act as primary gatekeepers of their children's oral well-being. Their own oral health knowledge and beliefs directly shape children's practices [2,3]. Evidence demonstrates that children of parents with poor oral health literacy are more likely to develop caries and less likely to receive preventive care [4].

Caries is now recognized as a biofilm-mediated, diet-modulated, multifactorial, no communicable disease with clear transmissibility. Mothers and primary caregivers frequently transmit cariogenic bacteria such as Streptococcus mutans through practices like food tasting or sharing utensils [5]. These behaviours, often driven by cultural norms or lack of awareness, accelerate bacterial colonization and caries onset. Parental misconceptions also persist around the importance of primary teeth, timing of first dental visits, and safety of preventive therapies such as fluoride varnish [6].

Globally, surveys highlight significant variation in caregivers' knowledge and acceptance of preventive measures. While general awareness about brushing and sugar consumption is widespread, gaps remain in the uptake of professional prevention. For example, studies in Saudi Arabia and India report low parental awareness of fluoride varnish, despite its

proven safety and efficacy [7,8]. Similarly, pit-and-fissure sealants remain underutilized worldwide, with awareness rates lagging far behind actual need [9].

Socioeconomic determinants strongly influence parental knowledge, attitudes, and practices (KAP). Caregivers with higher education are more likely to appreciate the significance of primary teeth, initiate brushing earlier, and seek preventive dental services for their children [10, 11]. Conversely, lack of health literacy compounds barriers such as limited access, cost, and cultural beliefs.

School- and community-based interventions involving parents have demonstrated improvements in short-term knowledge and attitudes [12]. However, sustained translation into reduced caries prevalence requires bundling knowledge transfer with service delivery—such as school-based fluoride varnish application and sealant programs [13]. These observations emphasize the need for localized KAP studies that identify specific gaps within communities and inform targeted oral health promotion strategies.

In India, despite national oral health programs, caregiver awareness of preventive dental practices remains variable. Few studies have systematically evaluated caregivers' KAP in western Maharashtra. Therefore, this study aimed to assess the knowledge, attitudes, and practices of caregivers/parents of children aged 4–15 years regarding oral health and hygiene maintenance. By analyzing associations between KAP and sociodemographic variables, this research provides evidence to guide targeted parental education and preventive oral health programs in the region.

METHODOLOGY

Study design and participants: This cross-sectional descriptive study used an online questionnaire (Google Forms) disseminated via WhatsApp to caregivers/parents whose children aged 4–15 years. The study aimed for a sample size of 500; responses received were analyzed. Inclusion criteria: caregivers of children aged 4–15 years who consented to participate. Exclusion criteria: caregivers declining consent.

Questionnaire: The instrument comprised 12 multiple-choice items assessing (1) beliefs about caries transmissibility, (2) awareness of preventive measures (fluoride, sealants), (3) child oral hygiene practices (toothbrush replacement, age at initiation of brushing), (4) toothpaste brands, (5) brush condition, and (6) tongue cleaning. The questionnaire was pilot tested for clarity.

Data collection: Data were collected via Google Forms. Responses were exported to Excel and analyzed. Ethical considerations: Participation was voluntary, anonymous and preceded by informed consent; the study protocol was approved by the Institutional Ethics Committee (Protocol no. 111/2025-2026).

Statistical analysis: Data were cleaned and exported to CSV. Descriptive statistics included frequencies and percentages. Associations between categorical demographic variables (e.g., caregiver age group, education) and KAP items were analyzed using Pearson's χ^2 test. A p-value less than 0.05 was considered statistically significant. Analyses were conducted in Python and Microsoft Excel.

RESULTS

Demographics: Major sociodemographic variables included caregiver age, gender, education and child's age.

When asked if dental caries can spread from one individual to another, most caregivers (62.4%) responded "No." Only 20.0% correctly recognized its transmissibility, while 15.2% were uncertain and 2.4% reported having no knowledge as mentioned in [Table 1]. These findings reflect considerable misconceptions about the infectious nature of dental caries. the demographic distribution of participants. The majority were female (74.4%), aged 20–25 years (63.1%), and undergraduate students (58.4%).

Table 1: Responses on awareness of caries transmission

Response	Count	%
No	312	62.4%
Yes	100	20.0%
Maybe	76	15.2%
I don't know	12	2.4%

Over half of the respondents (51.6%) did not believe that vaccines exist for preventing dental problems. About one-fifth (20.0%) expressed uncertainty, 18.8% believed such vaccines exist, and 9.6% admitted they did not know as mentioned in graph no. 1. This highlights gaps in awareness of preventive strategies beyond brushing and diet.

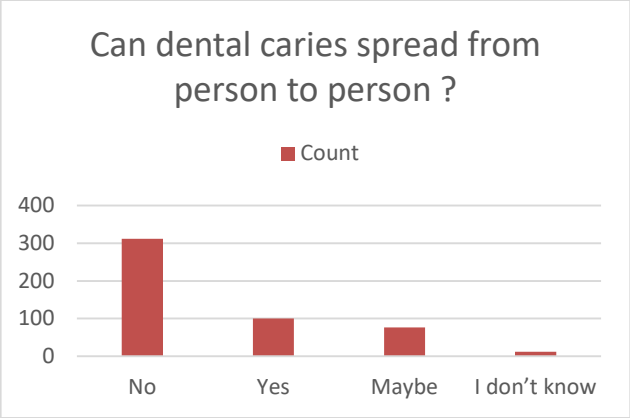

Figure 1. Caries spread

More than half of caregivers (56.8%) reported that their child had never experienced caries. However, 28.0% confirmed that their child had carious lesions, while 11.2% were unsure [Table 2]. These responses suggest a mix of awareness levels, with some caregivers possibly underestimating or unaware of their child's oral health status.

Table 2: Caregiver reports on child caries experience

Response	Count	%
No	248	56.8%
Yes	140	28.0%
Maybe	56	11.2%
I don't know	20	4.0%

Only 40.0% of respondents acknowledged the importance of maintaining primary (milk) teeth. One-third (33.6%) considered them unimportant, while 17.6% were uncertain and 8.8% admitted no knowledge [Table 3]. This reflects common misconceptions that milk teeth are temporary and therefore less significant.

Table 3. Caregivers' perception of primary teeth importance

Response	Count	%
Yes	200	40.0%
No	168	33.6%
Maybe	88	17.6%
I don't know	44	8.8%

When asked about toothbrush replacement, nearly half (46.0%) of caregivers replaced brushes every three months, aligning with recommended guidelines. However, 28.0% replaced every six months, 17.6% replaced monthly, and 8.4% delayed replacement for an entire year [Table 4]. This reveals that although many followed appropriate practices, a substantial proportion did not.

Table 4. Toothbrush Replacement Practices

Response	Count	%
Every 3 month	230	46.0%
Every 6 month	140	28.0%
Every month	88	17.6%
Every year	42	8.4%

Responses revealed variability in when parents introduced toothbrushing. About 39.2% initiated brushing at 12 months, 37.2% at 18 months, and 14.4% at 24 months. Only 9.2% reported starting as early as six months, even though recommendations suggest initiation upon eruption of the first tooth [Table 5].

Table 5. Age at initiation of brushing

Response	Count	%
12 months	196	39.2%
18 months	186	37.2%
24 months	72	14.4%
6 months	46	9.2%

Colgate was by far the most commonly used brand (48.4%). Other popular choices included Sensodyne (20.8%), Patanjali (18.4%), and Dabur (9.2%). Very few reported alternative brands such as Pepsodent (1.2%) or child-specific options (<1%). This demonstrates both reliance on commercial brands and limited dentist-guided choices.
Most caregivers (75.2%) recognized the importance of monitoring toothbrush condition, while 11.2% responded "Maybe," 9.6% disagreed, and 4.0% were unsure. This shows reasonably good awareness of maintaining brush quality [Table 6].

Table 6. Responses on importance of brush condition

Response	Count	%
Yes	736	75.2%
Maybe	56	11.2%
No	48	9.6%
I don't know	20	4.0%

Knowledge of fluoride was limited. More than half (51.2%) of caregivers reported no awareness, 30.0% recognized its role, 11.6% were unsure, and 7.2% did not know. These findings indicate significant gaps regarding one of the most effective preventive measures for caries [Table 7].

Table 7. Awareness of fluoride use

Response	Count	%
No	256	51.2%
Yes	150	30.0%
Maybe	58	11.6%
I don't know	36	7.2%

Only 21.2% of respondents were aware of sealants, while 60.8% reported no knowledge, 10.0% were uncertain, and 8.0% did not know at all. This highlights very low awareness of preventive dentistry interventions [Table 8].

Table 8. Awareness of pit-and-fissure sealants

Response	Count	%
No	304	60.8%
Yes	106	21.2%
Maybe	50	10.0%
I don't know	40	8.0%

An encouraging finding was that 91.6% of families reported that each member used a separate toothbrush. Only 4.8% admitted to toothbrush sharing, while 2.4% were unsure and 1.2% responded "Maybe" [Table 9].

Table 9. Household awareness toothbrush practices

Response	Count	%
Yes	458	91.6%
No	24	4.8%

I don't know	12	2.4%
Maybe	6	1.2%

Three-quarters (75.2%) of caregivers reported practicing tongue cleaning regularly, 11.6% admitted they did not, and smaller groups were uncertain. This indicates relatively strong adherence to tongue hygiene compared with other practices [Table 10].

Table 10. Tongue cleaning practices

Response	**Count**	**%**
Yes	376	75.2%
No	58	11.6%
Maybe	40	8.0%
I don't know	26	5.2%

Narrative summary: Across {N} respondents, a majority recognized that caries can spread between persons; however, knowledge about fluoride and sealants varied. Practices such as toothbrush replacement ranged across respondents, with many reporting replacements at intervals longer than recommended. Tongue cleaning awareness was moderate. Associations between education level and knowledge items were observed (χ^2 tests), suggesting that higher educational attainment correlated with better knowledge and practices.

DISCUSSIONS

This study assesses KAP among caregivers in western Maharashtra and reveals key strengths and gaps. The present study contributes important insights into caregiver knowledge, awareness, and practices related to child oral health in western Maharashtra. Overall, the findings revealed moderate general awareness but significant gaps in knowledge of preventive therapies such as fluoride varnish and sealants. These patterns echo both national and international literature, highlighting the universality of these gaps and the need for reinforced preventive messaging.

1. General awareness vs. preventive specifics.
Most respondents recognized that dental caries can spread from person to person, consistent with studies showing increasing parental awareness of caries' infectious nature [14]. However, detailed preventive knowledge—particularly regarding fluoride and sealants—remains underdeveloped. Our findings mirror those of Almehmadi et al. (2022) in Saudi Arabia, where only 41% of parents had heard of fluoride varnish [7]. Similarly, Lakshmanan and Gurunathan (2020) in India observed that while over 70% of parents believed sealants could prevent caries, only one-third of children had received them [9]. This knowledge–practice gap underscores that while parents may conceptually value prevention, service uptake requires system-level facilitation.

2. Influence of parental education.
Consistent with previous reviews, our results demonstrated significant associations between caregiver education level and knowledge items [10, 11]. Folayan et al. (2024) emphasized the global gradient linking parental education with ECC prevalence, identifying education both as a marker of socioeconomic advantage and a mediator of healthier practices [10]. Education equips parents to interpret health messages, seek care proactively, and supervise behaviours effectively. This finding suggests that interventions should prioritize accessible messaging for caregivers with limited schooling, using visual aids, local language content, and culturally resonant narratives.

3. Transmission of cariogenic bacteria.
Caregiver behaviours such as food sharing remain common and biologically significant. Damle et al. (2016) confirmed the vertical transmission of S. mutans between mothers and children in India [5]. Our results support the persistence of these practices in the community. Awareness campaigns must emphasize simple behavioural changes—avoiding utensil sharing or pre-tasting food—that directly reduce early bacterial inoculation.

4. Preventive therapies: fluoride and sealants.
Fluoride varnish is strongly evidence-based for caries prevention, yet parental uncertainty about its safety and effectiveness persists [6,7]. Hendaus et al. (2016) showed that parental acceptance rose dramatically after receiving clear information, highlighting the value of clinician–parent dialogue [6]. Sealants likewise are highly effective in reducing occlusal caries incidence, as demonstrated in a Cochrane review (2017), yet remain underutilized [13]. Interventions that combine

education with immediate access to sealant services, such as mobile school dental clinics, are proven strategies to improve uptake.

5. Oral hygiene practices.
Caregiver responses about toothbrush replacement intervals and initiation of brushing revealed variability, with many delaying brushing beyond the recommended age of first tooth eruption. Similar findings were reported by Vu et al. (2023) in Vietnam, where parents endorsed brushing but inconsistently supervised or replaced brushes [8]. Furthermore, awareness of tongue cleaning was moderate in our sample, paralleling global surveys that show wide variability in this practice [15]. These gaps are easily addressable with structured parent workshops, dental counseling, and school-based demonstrations.

6. Effectiveness of school-based parental education.
Our findings reinforce the evidence that school-based workshops can significantly improve caregiver knowledge. Shan et al. (2023) demonstrated sustained improvements in parental oral health knowledge at 12 months after a school program in China [12]. While immediate caries outcomes were unchanged, the authors concluded that knowledge gains are essential precursors to behavioural change. For maximum impact, such workshops should be coupled with on-site preventive services and regular reinforcement.

7. Implications for public health.
The results of this study highlight the need for integrated, multi-pronged interventions in western Maharashtra. Recommendations include:

a. School-based workshops with live demonstrations of brushing and tongue cleaning.
b. Integration of fluoride varnish into routine pediatric care, empowering non-dental professionals to apply it.
c. Mobile sealant clinics visiting schools to deliver preventive care at scale.
d. Culturally tailored education dispelling myths about fluoride and emphasizing the value of primary teeth.

These approaches align with global recommendations from WHO (2022), which emphasize prevention-focused, community-based models of care [16].

8. Limitations and strengths.
This study was limited by its cross-sectional, self-reported design, potential response bias, and lack of clinical caries indices. Nonetheless, it benefits from a relatively large sample, a structured questionnaire, and statistical analysis of associations between demographics and KAP responses.

9. Future directions.
Future research should link parental KAP with clinical outcomes (dmft scores), evaluate the cost-effectiveness of school-based prevention bundles, and use qualitative methods to explore the cultural beliefs underpinning parental practices. Implementation trials that measure both knowledge gains and caries incidence reduction will be critical in moving from awareness to tangible health improvements.

CONCLUSION

While caregivers show general awareness of oral health principles, targeted educational interventions are needed to bridge specific knowledge gaps and promote preventive practices for children. Programs integrating school-based workshops, community outreach and routine dental counseling could be effective strategies to reduce ECC prevalence.

ACKNOWLEDGMENT

The authors thank all participants and the staff of Department of Public Health Dentistry for their support. We sincerely acknowledge the valuable assistance of biostatisticians for guidance in data analysis and interpretation.

REFERENCES

[1]. Kaushik M, Sood S. A systematic review of parents' knowledge of children's oral health. Cureus. 2023;15(7):e41485. doi:10.7759/cureus.41485
[2]. Rai NK, Kaur S, Bhardwaj A, et al. Parental factors influencing the development of early childhood caries in developing nations: A systematic review. Front Public Health. 2018;6:64. doi:10.3389/fpubh.2018.00064.
[3]. Folayan MO, Coelho EMR, Ayouni I, et al. Association between early childhood caries and parental education: a scoping review. BMC Oral Health. 2024;24:517. doi:10.1186/s12903-024-04291-w.

[4]. Schroth RJ, Brothwell DJ, Moffatt MEK. Caregiver knowledge and attitudes of preschool oral health and early childhood caries. Int J Circumpolar Health. 2019;78(1):1571384. doi:10.1080/22423982.2019.1571384.
[5]. Damle SG, Yadav R, Garg S, et al. Transmission of mutans streptococci in mother–child pairs. Indian J Med Res. 2016;144(2):264–270. doi:10.4103/0971-5916.195042.
[6]. Hendaus MA, Jama HA, Siddiqui FJ, et al. Parental preference for fluoride varnish: a new concept in a rapidly developing nation. Patient Prefer Adherence. 2016;10:1227–1233. doi:10.2147/PPA.S109269.
[7]. Almehmadi AH, Bannan A, Ahmad A, et al. Parental knowledge and awareness of fluoride varnish application on their children: a cross-sectional study. Int J Gen Med. 2022;15:7435–7442. doi:10.2147/IJGM.S378194.
[8]. Vu DA, Nguyen TT, Tran N, et al. Parental knowledge and practice on childhood caries prevention in northern Vietnam. Front Public Health. 2023;11:1254479. doi:10.3389/fpubh.2023.1254479.
[9]. Lakshmanan L, Gurunathan D. Parents' knowledge, attitude, and practice regarding pit and fissure sealant therapy. J Family Med Prim Care. 2020;9(1):385–389. doi:10.4103/jfmpc.jfmpc_881_19.
[10]. Zhou N, Wong HM, McGrath C. Toothbrush deterioration and parents' suggestions to improve design of toothbrushes for children with special needs. BMC Pediatr. 2020;20:443. doi:10.1186/s12887-020-02347-8.
[11]. Nepaul P, Mahomed O. Influence of parents' oral health knowledge and attitudes on children's practices in KwaZulu-Natal. J Int Soc Prev Community Dent. 2020;10(5):605–612. doi:10.4103/jispcd.JISPCD_273_20.
[12]. Shan Z, Liao C, Lu J, et al. Improvement of parents' oral health knowledge by a school-based oral health promotion: a prospective study. BMC Oral Health. 2023;23:890. doi:10.1186/s12903-023-03567-x.
[13]. Wright JT, Tampi MP, Graham L, et al. Sealants for preventing dental caries in children and adolescents. Cochrane Database Syst Rev. 2017;7:CD001830. doi:10.1002/14651858.CD001830.pub4.
[14]. Schroth RJ, Rabbani R, Loewen G, et al. Parental knowledge and perceptions of oral health: results from a Canadian survey. BMC Oral Health. 2021;21:597. doi:10.1186/s12903-021-01959-4.
[15]. Bhagat T, Shinde A, Jadhav S. Awareness of tongue cleaning practices among parents of schoolchildren: a cross-sectional study. J Indian Soc Pedod Prev Dent. 2019;37(4):380–384. doi:10.4103/JISPPD.JISPPD_197_19.
[16]. World Health Organization. Oral health fact sheet. WHO; 2022. Available from: https://www.who.int/news-room/fact-sheets/detail/oral-health.