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Oral Health Behaviors and Predictive Factors Among Parents of Preschoolers in an Industrial Urban Setting: A Case Study in Mueang District, Samut Sakhon, Thailand

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Abstract

Objectives: Early childhood caries is a significant oral health issue that progresses rapidly and affects the long-term health and quality of life of preschool children. Therefore, this study aimed to study the oral health behaviors and their predictors among parents of preschool children in Samut Sakhon, Thailand.

Methods: A cross-sectional design was employed with a sample of 351 parents of preschool children, selected through multi-stage random sampling. Data were collected using a questionnaire developed based on theoretical frameworks and study objectives, comprising four parts: personal factors, oral health knowledge, Health Belief Model-based oral health beliefs, and parental oral health behaviors. The instruments demonstrated a content validity (IOC) of 0.66–1.00 and a Cronbach's alpha coefficient of 0.896. Descriptive statistics, correlation analysis, and stepwise multiple regression were used for data analysis.

Results: The results indicated that 53.6% of parents exhibited moderate oral health behaviors for their children (Mean=55.95, SD=10.575). Factors significantly predicting oral health behaviors, accounting for 32.4% of the variance ($R^2=0.324$, $p<0.05$), included cues to action ($\beta=0.323$), perceived barriers ($\beta=0.296$), oral health knowledge ($\beta=0.125$), educational background ($\beta=0.117$), and perceived severity of oral health issues ($\beta=0.103$).

Conclusions: Findings suggest the need for targeted interventions to improve oral health behaviors among parents, focusing on oral hygiene, milk bottle care, nutrition, and dental visits. Programs should raise awareness and provide educational resources on preschool oral health to promote better oral hygiene practices.

Keywords: children, health belief model, oral health behavior, predictive factors, preschool

Introduction

Oral health is one of the parts of desirable health affecting good health and quality of life.⁽¹⁾ 3.7 billion people worldwide have been affected by oral health problems, which lead to significant health, social, and economic burdens.⁽²⁾ Oral health problems can happen at any age, and the most common problem is dental caries.⁽²⁾ The incidence of dental caries is highest in childhood, even though it is preventable, with a prevalence as high as 53%. More than 530 million children worldwide have untreated deciduous teeth caries and are at high risk of growing up to be adults with oral health problems.⁽³⁾ The prevalence of deciduous tooth caries in young children in Asia is as high as 27.5%, with an average of 5.1 caries extracted and filled teeth per person.⁽⁴⁾ Dental caries in young children remains a serious public health problem that needs to be addressed.^(1,5,6)

Early childhood caries occurs in baby teeth in children aged from birth to 71 months.⁽⁷⁾ When caries in early childhood occurs, it will affect the quality of life, physical health, and development in various aspects in the long term. It also indirectly affects children's mental health, such as loss of confidence due to black caries, chipped teeth from caries, bad breath making them not dare to speak or smile, and lacking self-confidence.⁽⁸⁾ Children with oral health problems are 1.53 times less likely to have age-appropriate development than children without oral health problems⁽⁹⁾, and children with more than 4 caries are more likely to be underweight compared to children without caries.⁽¹⁰⁾ Therefore, dental caries in preschool children not only affect oral health but also affect children's overall health and quality of life.⁽⁶⁾

According to the report of the 9th National Oral Health Survey 2023 in Thailand⁽¹¹⁾ for children aged 3 and 5 years, when compared to the 8th National Oral Health Survey 2017⁽⁵⁾, early-stage tooth caries tended to increase by 38.0% in children aged 3 years and 45.5% in children aged 5 years.⁽¹¹⁾ Additionally, untreated tooth caries was as high as 46.1 % and 70.4 % in children aged 3 years and 5 years, respectively. Also, children aged 3 years had 40.6% of bacterial plaque while children aged 5 years had as high as 77.1% of bacterial plaque.⁽¹¹⁾ The factors that can reduce the risk of oral diseases include quality tooth brushing where parents must brush their children again, drinking fresh milk, and stopping using milk bottles when they are 1 year old.^(11,12) The survey revealed that parents

let their children brush their teeth by themselves by 31.1% in 3-year-old children and 71.2% in 5-year-old children. For milk drinking in children aged 3 and 5 years, it was found that 36.7% and 43.3% of children drank sour milk and sweetened milk at home, respectively.⁽¹¹⁾ It was also found that 38.0% of 3-year-old children used a bottle, and 15.2 % of 5-year-old children still sucked milk from a bottle. Therefore, paying attention and giving importance to the oral health of children from early childhood by parents is crucial to reduce the chance of tooth caries.⁽⁸⁾

Moreover, the health belief model affecting the oral health care of preschool children.⁽¹³⁾ This can be explained through the health belief model, which is a behavioral theory explaining how individuals' beliefs affect their health behaviors and the individuals under their care. These factors are related to, influence, and affect oral health behaviors among preschool children's parents. Past studies identified various factors that have the power to predict oral health behaviors among preschool children's parents in different provincial contexts of Thailand. However, in the context of urban industrial areas where life is hectic and most of the time is spent working, the factors of oral health behaviors among preschool children's parents may vary.

Samut Sakhon Province is a large industrial center of the country, with over 6,400 factories, as a top industrial city.⁽¹⁴⁾ Therefore, life is hectic, with overtime work and most of the time spent working. This affects the life and care of family members.⁽¹⁵⁾ In terms of oral health, Samut Sakhon Province is one of the target provinces in the 8th National Oral Health Survey in 2017⁽⁵⁾, which found that the prevalence of tooth caries in children aged 3 years was highest at 57.9% in the Central region and children aged 5 years at 74.2%.⁽⁵⁾ Moreover, data from public health officials who recorded data in the area found that plaque on the teeth, tooth decay, and gingivitis. Children also had tooth caries at a young age, although Samut Sakhon Province had a network of public health dentists and dentists who work both reactively and proactively.

Therefore, the researchers are interested in studying the factors predicting oral health behavior among preschool children's parents in Mueang District, Samut Sakhon Province, using personal factors, knowledge factors, and health belief model as variables in this research. This research aimed to study the oral health behaviors among preschool children's parents, the relationship,

and factors predicting oral health behaviors among preschool children's parents. The results will be information and guidelines for planning and developing appropriate models for oral health promotion among preschool children and solving dental health problems of preschool children under the context of an industrial city where parents have a busy life and spend most of their time working, for children to have good oral health, reduce oral and dental health problems, and prevent future tooth caries.

Materials and Methods

This study obtained a Human Research Ethics Certificate from the Faculty of Public Health, Mahidol University, MUPH 2024-058, on June 6, 2024.

Study design, population, and sample

This cross-sectional analytical study was conducted among parents of preschool children in Mueang District, Samut Sakhon Province, Thailand. The target population consisted of 1,637 parents whose children were enrolled in child development centers within the district.⁽¹⁶⁾ While, the sample included 351 parents of preschool children studying at the Child Development Center in Mueang District, Samut Sakhon Province. Calculated from The Daniel equation was employed to find the proportion estimation with known population size.⁽¹⁷⁾ From the calculation, the sample size was 292 people. To prevent errors during data collection and incomplete questionnaire responses, the researcher increased the size by 20%⁽¹⁸⁾, which is 59 people, resulting in a total of 351 people.

The sampling procedure involved four steps to enhance representativeness and minimize selection bias: Step 1: Five local administrative organizations (LAOs) in Mueang District, Samut Sakhon, with child development centers were randomly selected using simple random sampling without replacement from a total of 15 centers. Step 2: The number of parents to be included from each LAOs was calculated proportionally according to the number of preschool children enrolled. This proportional-to-size allocation ensures that LAOs with more children were represented appropriately in the final sample. Step 3: The total sample size of 351 parents was proportionally allocated across 10 child development centers that were located within the selected LAOs. Step 4: Within each center, parents were randomly selected from each cen-

ter using simple random sampling without replacement, based on a list of preschool children. Both the selection of the five LAOs (Step 1) and the parents (Step 4) were conducted using a computer-based random number generator to ensure true randomization. While simple random sampling without replacement technically means conditional probabilities change after each selection, this method ensures that every parent in the sampling frame had an equal and known initial probability of being selected, which is the foundational principle of this design. To minimize nonresponse bias, participants were informed about the study's purpose and assured of confidentiality. Participation was voluntary, and anonymous responses were collected during routine parent meetings organized by the centers.

Research instrument

The research instrument was a structured, self-administered questionnaire consisting of four parts with a total of 70 items. Part 1 covered personal factors with 8 questions; Part 2 assessed knowledge of oral health among preschool children's parents with 16 questions; Part 3 measured oral health belief of preschool children's parents with 26 questions; and Part 4 focused on oral health behaviors among preschool children's parents with 20 questions.

Part 1 (Personal factors) was measured using categorical scales, while Part 2 (Knowledge) consisted of 16 true or false items, where a correct answer was scored as 1 and an incorrect answer as 0. The total knowledge score ranged from 0 to 16. Part 3 (Oral health beliefs) comprised 26 items measured on a 5-point rating scale, ranging from 1 (Strongly disagree) to 5 (Strongly agree). The total belief score was the sum of all items ranged from 5 to 25, and Part 4 (Oral health behaviors) included 20 items assessing the frequency of behaviors on a 5-point rating scale, such as 0 (Never) to 4 (Always), resulting in a total score range of 0 to 80. For analysis, the scores for Part 2, 3, and 4 were categorized into three levels (Low, Moderate, High) using Bloom's cut-off points: Low (<60% of total score), Moderate (60-79%), and High ($\geq 80\%$).

The questionnaire was developed through a multi-stage process to ensure content validity and reliability. The initial items were constructed from a review of relevant literature on oral health behaviors and the Health Belief Model. Three experts in dental public health, health pro-

motion, and public health behavioral sciences evaluated the content validity of each item. The Index of Item–Objective Congruence (IOC) ranged from 0.66 to 1.00, indicating acceptable validity. A pilot test was conducted among 30 parents with similar characteristics to the study population to assess clarity, feasibility, and reliability. Feedback was used to revise ambiguous wording and ensure cultural appropriateness. Cronbach’s alpha coefficient for the entire instrument was 0.896, indicating high internal consistency. The reliability for the specific sub-scales was also confirmed: Part 2 (Knowledge) yielded a Kuder-Richardson 20 (KR-20) coefficient of 0.701, Part 3 (Oral health beliefs) had a Cronbach's alpha of 0.823, and Part 4 (Oral health behaviors) had a Cronbach's alpha of 0.833.

Data collection

Data were collected from August 16 to September 4, 2024. Initial arrangements were made with the 10 child development centers to schedule data collection. On the appointed dates, the researcher and assistant visited the centers to explain the study's purpose, objectives, and confidentiality measures to parents, requesting their cooperation. Participants signed consent forms before completing the questionnaires independently. Once completed, the questionnaires were collected for data analysis.

Statistical analysis

The data analysis was conducted with statistics including frequency distribution, percentage age, mean, and standard deviation. The data described personal factors, knowledge of oral health among children, the health belief model, and oral health behaviors among preschool children's parents. The relationship was analyzed by using Pearson's correlation and stepwise multiple linear regression analysis to identify factors predicting oral health behaviors and to generate the predictive equation for these predicting factors among preschool children's parents with a statistical significance of 0.05.

Results

Personal factors

Personal factors were divided into 2 sub-sections: general information and the level of knowledge of oral health behaviors among preschool children's parents as shown in Table 1. (1) General information: There were 351

parents. 271 people were female or 77.2%, and 80 people were male or 22.8%, with a mean age of 34.75 ± 7.868 years. As for the information on preschool children, 177 were male, or 50.4 % and 174 were female, or 49.6 %, with a mean age of 3.39 ± 0.559 years. and (2) The level of knowledge of oral health behaviors for preschool children's parents was at a high level with a mean knowledge score of 13.72 ± 2.053 points. 282 parents or 80.3% had knowledge about oral health care for preschool children at a high level.

Oral health behaviors among preschool children's parents

Parents had a moderate level of oral health behaviors among preschool children's parents with a mean score of 55.95 ± 10.575 . Most parents had a moderate level of oral health behaviors among preschool children's parents of 53.6%. Regarding oral cleaning behavior, most parents practiced it almost every time, namely brushing the child's teeth for at least 2 minutes (33.9%). Regarding milk bottle care, it was practiced every time, namely letting the child drink milk from a box instead of sucking from a bottle (44.7%). Regarding food care, most parents practiced it every time. The most practiced was choosing plain milk for the children (50.1%). Regarding taking the child to receive dental services, parents practiced it every time. The most practiced question was, "Do you take your children to the dentist when you know that your child has an oral health problem from a dental checkup at the child development center?" (35.0%).

Relationships and factors predicting oral health behaviors among preschool children's parents

The analysis results revealed that the variables were related to the oral health behaviors among children's parents, namely educational background, average monthly family income, and oral health belief model of preschool children. The results revealed that the correlation coefficients were between -0.367 and 0.594, and all variables were related to oral health behaviors among children's parents with statistical significance at 0.05 as shown in Table 2.

The result of the stepwise multiple regression analysis found that 5 variables could significantly predict oral health behaviors among preschool children's parents in Mueang District, Samut Sakhon Province at a statistical

Table 1: Personal factors classified by personal factors of parents and preschool children (n=351).

Personal factors		n	%
1. General information			
(1) Parents			
Gender			
Male		80	22.8
Female		271	77.2
Age			
20-30 Years		116	33.0
31-40 Years		159	45.3
41-50 Years		60	17.1
51-60 Years		16	4.6
M=34.75, S.D.=7.868, Min=20, Max=60			
Education background			
No education		8	2.3
Primary School		43	12.3
Junior High School		66	18.8
Senior High School/Vocational Certificate		98	27.9
Diploma / High Vocational Certificate		52	14.8
Bachelor Degrees		78	22.2
Higher than Bachelor Degree		6	1.7
Average total family income per month			
Less than 10,000	baht per month	30	8.5
10,001-15,000	baht per month	106	30.2
15,001-20,000	baht per month	85	24.2
20,001-30,000	baht per month	73	20.8
30,001-40,000	baht per month	20	5.74
40,001-50,000	baht per month	24	6.8
More than 50,000	baht per month	13	3.7
(2) Preschool children			
Gender			
Male		177	50.4
Female		174	49.6
Age			
3 Years		227	64.7
4 Years		111	31.6
5 Years		13	3.7
M=3.39, S.D.=0.559, Min=3, Max=5			
Birth order			
No. 1		208	59.3
No. 2		116	33.0
No. 3		24	6.8
No. 4		2	0.6
No. 5		1	0.3
2. The level of knowledge of oral health behaviors among preschool children's parents			
High level (13-16 points)		282	80.3
Moderate level (10-12 points)		59	16.8
Low level (0-9 points)		10	2.8
M=13.72, S.D.=2.053, Min=0, Max=16			

level of 0.05, arranged by the weight as follows: perceived motivators for parents to practice, perceived obstacles to oral health care, knowledge of oral health care for pre-school children, educational background, and perceived severity of oral health problems which could predict health promotion behaviors with statistical significance at 0.05, with a predictive power of 32.4%. When considering the direction and weight of the relationship of the predictive variables, there was a positive relationship, with the predictive equation as standard scores: $Z=0.323 (ZX2)+0.296 (ZX3)+0.125 (ZX4)+0.117 (ZX1)+0.103 (ZX5)$ as shown in Table 3.

Discussion

Overall, oral health behaviors among preschool children's parents were at a moderate level, or 53.6%. This may be because most parents still did not consistently practice oral health behaviors or parents believed that baby teeth are not important since permanent teeth will replace them later. Therefore, parents sometimes neglect to take care of their children's oral health⁽¹⁹⁾, resulting in parents' oral health care behaviors at a moderate level. In addition, the context of Mueang Samut Sakhon District is mostly an industrial area with 2 industrial estates^(20,21) and 3,928 factories.⁽²²⁾ The working-age population in

Mueang District, 94.89%.⁽²³⁾ Factory workers often lack personal time, affecting their quality of life and work-life balance. Since their primary focus is making a living, they may be unable to provide adequate care for their children.⁽²⁴⁻²⁶⁾ Therefore, children's oral health may be neglected. This is consistent with the study of factors predicting oral health behaviors among children aged 1.5 to 3 years of parents in Wiang Sa District, Nan Province, which found that 51.0 % of parents had a moderate level of oral health behaviors since parents did not practice oral health behaviors regularly and inconsistently.⁽²⁷⁾ Similarly, the study of factors related to oral health behaviors among preschool children's parents in Chamuang Subdistrict, Khuan Khanun District, Phatthalung Province found that most parents had a moderate level of oral health behaviors among preschool children (82.7%) since most parents may worked and could not take care of their children all the time.⁽²⁸⁾ This moderate level of oral health behaviors found in our study and other Thai contexts reflects a global challenge, particularly in industrial or low-income settings. The international studies have also found that parents employed in demanding, low-wage, or shift-based labor face significant time and resource constraints that directly impede consistent preventive health practices for their children.^(29,30) The fact that behaviors were moderate

Table 2: Results of correlation coefficient analysis (n=351).

Factors	M	SD	Min	Max	X1	X2	X3	X4	X5	(Y)
Perceived susceptibility (X1)	20.41	3.166	5	25	1.000	.195*	.428*	.506*	.386*	.383*
Perceived severity (X2)	20.64	3.359	5	25		1.000	.458*	.133*	.323*	.181*
Perceived benefits (X3)	26.67	3.011	6	30			1.000	-.176*	.594*	.366*
Perceived barriers (X4)	10.54	4.189	4	20				1.000	-.145*	-.367*
Cues to action (X5)	25.96	3.869	6	30					1.000	.435*
Oral health behaviors among children's parents (Y)	55.95	10.575	0	80						1.000

* $p<0.05$

Table 3: Results of multiple regression analysis (n=351).

Predictive factors	b	SE	β	t	p-value
Cues to action as motivators for parents' practices	0.883	0.132	0.323	6.682*	0.000
Perceived barriers to oral health care among children	0.741	0.119	0.296	6.238*	0.000
Knowledge of oral health care for preschool children	0.646	0.244	0.125	2.644*	0.009
Education background	9.536	3.636	0.117	2.623*	0.009
Perceived severity of oral health problems among children	0.324	0.151	0.103	2.149*	0.032
Constant=7.372, R=0.569, R ² =0.324, Adj.R ² =0.314, Durbin-Watson=1.923, F=33.070, * $p<0.05$					

Note: b=regression coefficient, β =standardized regression coefficient

rather than low suggests that parents may possess baseline knowledge, but the socioeconomic and employment context of Samut Sakhon likely creates a practice gap, preventing the translation of this knowledge into consistent, high-level protective behaviors. This high-stress environment, focused on economic subsistence, may lead to parental depression, mental health problems, and prioritization of immediate needs over preventive long-term health, a phenomenon documented in other vulnerable working populations.^(31,32) When considering the oral health behaviors among preschool children's parents in terms of oral cleaning, most parents had the behavior of letting the children brush their teeth and the parents brushed their children's teeth again, and also checked the cleanliness of the children's mouths after brushing their teeth in the morning and before bedtime. However, some parents have never done this for their children. This means letting the children brush their teeth without brushing their teeth again or checking the cleanliness after brushing their teeth. Children at this age could not help themselves so parents need to take care of them to have good oral and dental health. This is consistent with the study of factors associated with early childhood caries among children living in sugar palm plantation communities, Phetchaburi province, Thailand showing that children who received daily tooth brushing by their parents were related to dental caries among preschool children. Regular tooth brushing and the use of fluoride toothpaste could reduce dental caries.⁽³³⁾ Similarly, the study of Parents' oral health care behaviors and caries status of preschool children in Kaengkhroi District, Saraburi Province showed that baby teeth caries and the oral cleaning behaviors of parents were correlated.⁽³⁴⁾ Therefore, tooth brushing is crucial for preschool children as it helps prevent dental caries and promotes good oral health. Tooth brushing can remove bacterial plaque accumulated on the tooth surface, which is the main cause of dental caries. The results suggest that the primary challenge is not merely inadequate tooth brushing but rather insufficient parental assistance and supervision. This suggests that public health messages should extend beyond emphasizing the importance of brushing a child's teeth and instead provide practical strategies to facilitate parental involvement, even under conditions of fatigue following long work shifts. Addressing parental fatigue as a practical barrier, which arises from the demands of industrial work environments,

may therefore be more critical than focusing solely on a deficit in knowledge.

Factors that can predict oral health behaviors among preschool children's parents in Mueang District, Samut Sakhon Province with statistical significance at 0.05 with a predictive power of 32.4% included: (1) perceived parents' motivators to practice. Parents will tend to change their health behaviors only when they are aware of external or internal factors that motivate them to practice. Therefore, it can predict oral health behaviors among preschool children's parents ($\beta=0.323$) since most parents may be aware of the results of oral health examinations of preschool children in child development centers by dental personnel or from experiences of oral health problems that they do not want to happen to their children. This is consistent with the study of Rathajak *et al.*,⁽²⁷⁾ (2) perceived obstacles to oral health care can predict oral health behaviors among preschool children's parents ($\beta=0.296$) since most parents of preschool children may have low perceived obstacles to oral health care for preschool children. They believed that brushing their teeth repeatedly and checking their mouth after brushing is not a difficult and time-consuming task, and taking children to the dentist every 6 months is not an obstacle. This fosters the practice of oral health behaviors among preschool children's parent. This is consistent with the study by Rathajak *et al.*,⁽²⁷⁾ and Kabiri *et al.*,⁽³⁵⁾ which found that parents' perceived obstacles to preventing oral health problems in children can predict oral health behaviors. (3) Knowledge of oral health behaviors among preschool children's parents can predict oral health behaviors among preschool children's parents ($\beta=0.125$) since most of the parents of preschool children may have an understanding of oral care, practicing oral health behaviors for preschool children and promoting good oral health in children. This is consistent with the study of Kaushik and Sood⁽³⁶⁾, who found that parents' knowledge about oral care affected oral care among children, especially oral care during childhood, which can prevent oral health problems in the future. Knowledge makes parents aware of the importance of oral care in childhood and can promote good oral health behaviors among children. The study of Shan *et al.*,⁽³⁷⁾ found that parents' knowledge of oral care affected oral care among preschool children. Parents who have knowledge about oral care tend to promote good behaviors. (4) Parents' educational background can

predict the oral health behaviors among preschool children's parents ($\beta=0.117$) since parents with higher educational background may have more knowledge and skills in caring for children's oral health, which may result in parents having better behaviors in promoting oral health of preschool children. From the study of Chen *et al.*,⁽³⁸⁾ the educational background of parents is a factor affecting the oral health behaviors of children, where parents with higher educational background would take good care of their children's oral health. (5) Perceived severity of oral health problems can predict oral health behaviors among preschool children's parents ($\beta=0.103$) since most parents of preschool children may be aware that children with severe tooth caries would eat less food with lack of nutrients, and if tooth caries were not treated, it would cause facial swelling and premature loss of baby teeth. The perceived impact often encourages parents to be aware and improve their children's oral behaviors to prevent tooth caries and maintain their children's oral health properly. This is consistent with the study of Kabiri *et al.*,⁽³⁵⁾ that the perceived severity of children's oral health problems can predict oral health behaviors of parents.

However, this study has certain limitations. Unmeasured factors may have influenced parental behaviors. For example, parental dental anxiety may serve as a significant barrier to seeking care, irrespective of parental knowledge.^(39,40) Moreover, the influence of social support networks and alternative caregivers, such as grandparents who may play a critical role given the demands of parental work schedules, was not examined and warrants further investigation. Workplace-related factors, including the availability of paid leave for dental appointments and employer-supported health education, also constitute potentially important unmeasured variables that may mediate child oral health outcomes within industrial contexts. Therefore, our findings underscore the need for customized public health interventions that are tailored to this industrial community. To combat the significant barrier of parental time constraints, strategies must be highly accessible. This could include implementing oral health promotion programs directly at factory worksites, offering services like screenings, fluoride application, and education on-location. Furthermore, since health literacy was a key predictor, communication should be adapted for accessibility, prioritizing low-cost digital formats like social media videos over traditional, text-heavy pam-

phlets. At the policy level, it is essential for public health agencies to collaborate with factory owners in Samut Sakhon. These partnerships should aim to establish family-supportive policies, such as flexible work schedules to accommodate pediatric dental appointments or integrating child oral health education into existing employee wellness programs. By embedding support directly within the community's employment structure, this approach can effectively address the key resource barriers faced by parents.

Conclusions

This study identified that oral health behaviors among parents of preschool children in Samut Sakhon, an industrial province in Thailand, were moderate overall, indicating the need for targeted interventions across four domains: oral hygiene, bottle-feeding practices, dietary habits, and dental visitation. Parental perceived motivators, perceived barriers, and knowledge of preschool oral health emerged as the strongest predictors of behavior. However, our findings underscore the need for tailored interventions in this industrial community. The on-site programs offering screenings, fluoride application, and oral health education can help overcome parental time constraints. Communication should account for oral health literacy, favoring accessible digital formats. Collaboration between public health agencies and factory management to implement flexible schedules and integrate child oral health education into health promotion programs can effectively address parental resource barriers.

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