

ORAL HEALTH KNOWLEDGE AMONG PARENTS AND CAREGIVERS OF CHILDREN IN A RURAL MIGRANT COMMUNITY

*Conocimiento sobre salud oral de los padres y cuidadores de niños
en una comunidad rural de migrantes*

POR

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Abstract

This study aimed to assess oral health knowledge among parents and caregivers in a rural migrant community and to examine the relationship between parents' and caregivers' level of education and their child's oral health status. A cross-sectional study was conducted using a convenience sample of 162 parents or caregivers who completed a structured, eight item questionnaire during their child's initial dental visit. A group of ninety ($n=90$) participants completed the same questionnaire at a 3-month or 6-month follow-up visit. Children's oral health status was assessed by dental hygienists using standardized clinical indices. The majority of participants were Hispanic (79.6%), with 11.1% reporting no formal education and 48.8% having less than high school education. Over half of the children (54.3%) were born outside the United States, and 63.6% of families were recent migrants. The mean age of the children was 5.35 years, with an average of 3.68 ± 4.05 decayed teeth in the primary dentition. Approximately 28% of children were identified as having urgent dental needs. A statistically significant association was found between parental education level and baseline oral health knowledge ($p<0.007$). Among those who completed both questionnaires, a paired sample t-test revealed a statistically significant improvement in oral health knowledge between the initial visit and the follow-up visit ($p<0.001$). Culturally and linguistically tailored dental health education delivered within a community dental outreach setting significantly improved parents' and caregivers' oral health knowledge in a high-risk migrant population. These findings support the implementation of targeted educational interventions to reduce oral health disparities among underserved children in rural migrant communities.

KEYWORDS: Oral health knowledge, migrant families, dental caries, education level.

Resumen

Este estudio tuvo como objetivo evaluar el conocimiento sobre salud oral de los padres y cuidadores en una comunidad rural de migrantes y examinar la relación entre el nivel de educación de los padres o cuidadores y la salud oral de sus hijos. Se realizó un estudio de corte transversal utilizando una muestra de conveniencia de 162 padres o cuidadores que completaron un cuestionario estructurado de ocho preguntas durante la primera visita dental de su hijo. Noventa ($n=90$) participantes completó el mismo cuestionario en la visita de seguimiento de 3 o 6 meses. El estado de salud oral de los niños fue evaluado por higienistas dentales utilizando índices clínicos estandarizados. La mayoría de los participantes eran hispanos (79,6%), con un 11,1% que reportó no tener educación formal y un 48,8% con educación inferior a la secundaria. Más de la mitad de los niños (54,3%) nacieron fuera de los Estados Unidos y el 63,6% de las familias eran migrantes recientes. La edad promedio de los niños fue de 5,35 años, con un promedio de $3,68 \pm 4,05$ dientes cariados en la dentición primaria. Aproximadamente el 28% de los niños fueron identificados con necesidades dentales urgentes. Se encontró asociación estadísticamente significativa entre el nivel educativo de los padres y el conocimiento inicial sobre salud oral de los mismos ($p<0.007$). Entre quienes completaron ambos cuestionarios, la prueba t-test para muestras pareadas reveló un mejoramiento significativo del conocimiento entre la primera visita y las visitas de seguimiento ($p<0,001$). La educación en salud oral adaptada a la cultura y el idioma, impartida en un centro de extensión dental comunitaria, mejoró significativamente los conocimientos de los cuidadores en una población migrante de alto riesgo. Estos hallazgos respaldan la implementación de intervenciones educativas específicas para reducir las disparidades en salud oral entre los niños desfavorecidos de las comunidades rurales migrantes.

PALABRAS CLAVE: Conocimiento sobre salud oral, familias migrantes, caries dental, nivel de educación.

Introduction

Dental caries remains one of the most prevalent chronic conditions affecting children worldwide. Despite being largely preventable, it continues to pose a significant public health challenge, particularly among underserved and vulnerable populations¹. According to the 2024 Centers for Disease Control and Prevention (CDC) Oral Health Surveillance Report², 11% of children aged 2–5 years in the United States have at least one primary tooth with untreated decay. The development of dental caries is multifactorial, with parental knowledge and behaviors playing a critical role in shaping children's oral health outcomes.

A growing body of evidence underscores the influence of parents' knowledge, beliefs, and attitudes on their children's oral hygiene practices and risk of developing dental caries^{3,6}. Key risk factors for dental caries include the presence of cariogenic bacteria, inadequate fluoride exposure, high sugar consumption, and poor oral hygiene habits⁴. Among these, parental education has consistently emerged as a pivotal determinant of children's oral health status.

Disparities in oral health outcomes are particularly pronounced among rural, immigrant, and low-income populations. Rural communities, for example, experience higher rates of dental caries and tooth loss due to limited access to dental care, lower rates of insurance coverage, and socioeconomic barriers⁵. Hispanic and migrant farmworker families often face additional challenges, including language barriers, limited oral health literacy, and reduced access to preventive services⁶. While clinical observations support these concerns, there remains a lack of community-based data to inform targeted interventions, especially in underserved regions^{7,8}.

Although the overall prevalence of dental caries has declined in many high-income countries, recent trends suggest a plateau or even a reversal among young children. The distribution of disease has also become increasingly skewed, with a disproportionate burden borne by specific subgroups⁹. This is especially concerning given that untreated dental caries in preschool-aged children is associated with pain, impaired nutrition and growth, reduced quality of life, and elevated risk of future oral health problems.

This study aims to assess the effectiveness of a brief, culturally tailored educational session on oral health delivered by a promotora, or community health educator, in improving parental oral health knowledge and reducing children's risk for dental caries. Specifically, the study seeks to: 1) characterize the oral health knowledge of parents and caregivers whose children received preventive dental services at Naples Children Foundation (NCF) Wellness Center in Immokalee, Florida; 2) assess the association between parent/caregiver level of education and parental oral health knowledge; and 3) examine the relationship between parental oral health knowledge and children's clinical oral health status.

Methodology

A cross-sectional study was conducted to assess and characterize oral health knowledge among parents and caregivers in a rural migrant community in Immokalee, Florida. A convenience sample of 162 parents or guardians of children aged 0–14 years was recruited from the NCF Wellness Center between May 2023 and August 2024. Eligible participants were those who accompanied their child for an initial dental visit and at either a 3-month or 6-month follow-up appointment. Parents or caregivers who spoke only dialects not supported by the available questionnaire translations were excluded from the study.

A structured, language-appropriate questionnaire was administered in English, Spanish, or Haitian-Creole. The instrument consisted of eight items divided into two sections. **Section I** collected demographic information, including (a) child's age; (b) highest level of education attained by the parent; (c) whether the child was born in the United States; and (d) immigration status and length of residence in the U.S. **Section II** assessed parental knowledge of key oral health topics, including (a) caries transmission; (b) the benefits of fluoride; (c) recommended at-home oral health practices; and (d) cultural beliefs related to oral hygiene.

Each item offered three response options: Correct, Incorrect, or Do Not Know. Responses were scored and summed to generate a composite knowledge score. Scores were categorized using a modified Likert scale as follows: Good (6–8 correct answers), Fair (4–5 correct answers), and Deficient (0–3 correct answers).

Clinical oral health assessments were conducted by a registered dental hygienist and documented in the patient's dental chart. Data collected included the status of primary dentition using the deft index (decayed, extracted, and filled teeth), status of permanent dentition using the DMFT index (decayed, and missing, and filled teeth), caries risk assessment, gingival health, plaque accumulation, presence of calculus, and urgent dental care¹⁰. Following the initial questionnaire, participants received a brief, tailored educational session in their preferred language. The session reviewed questionnaire responses and provided individualized oral hygiene and nutrition guidance based on the child's caries risk, following American Academy of Pediatric Dentistry (AAPD) guidelines¹¹. Topics included caries etiology and progression, transmission pathways, dietary risk factors, fluoride use, and proper oral hygiene techniques. Participants who returned for a follow-up visit at 3-month or 6-month were readministered the same questionnaire to assess changes in oral health knowledge. A total of 90 participants (55.5%) completed both the baseline and follow-up assessments.

Data was deidentified and statistical analyses were performed using SPSS version 28.0. Descriptive statistics were used to summarize demogra-

phic characteristics and knowledge scores. Chi-squared test, paired t-test, and bivariate analyses were employed to examine associations between parental knowledge, demographic variables, and children’s clinical oral health outcomes. This study was reviewed and approved as exempt by the University of Florida Institutional Review Board (IRB), under protocol number IRB202500269.

Results

A total of 162 parents or caregivers completed the baseline oral health knowledge questionnaire. Of these, 90 participants (55.5%) returned for a follow-up dental visit at either 3 or 6 months and completed the questionnaire a second time. The majority of participants identified as Hispanic (79.6%). Educational attainment varied, with 11.1% reporting no formal education and 48.8% having completed only elementary school. More than half of the children (54.3%) were born outside the United States, and 63.6% of families were classified as recent migrants. The mean age of the children whose parents participated in the study was 5.35 years (TABLE 1).

TABLE 1. Sociodemographic Characteristics of Participants (n=162).

Characteristic	Number	%
Ethnicity		
Hispanic	129	79.6
Haitian/Creole	31	19.1
Other	2	1.2
Level of Education		
Never attended	18	11.1
Elementary	79	48.8
Some High School	37	22.8
More than High	28	17.3
Age of Children (y)*		
<=3	58	35.8
4-6	48	29.6
7+	56	34.6
Born in United States		
Yes	74	45.7
No	88	54.3
Recent Migrant		
Yes	103	63.6
No	59	36.4

* [mean (SD)] = 5.35±3.6

Children’s oral health status is summarized in TABLE 2. The mean number of decayed teeth in the primary dentition was 3.68 ± 4.05, while the mean for permanent dentition was 0.75 ± 1.85. Decayed teeth were the main contributors for the respective dental caries indexes (deft/DMFT). Based on the Ca-

ries Management by Risk Assessment (CAMBRA) protocol, 96.9% of children were classified as high risk for dental caries. Additionally, approximately 28% (n = 45) presented with urgent dental care needs including pain and pathology, based on the basic screening survey guidelines from the Association of State and Territorial Dental Directors¹⁰. Oral hygiene was rated as fair in 54.3% of children and poor in 27.8%, while nearly half (49.4%) exhibited signs of gingival inflammation.

TABLE 2. Overall Oral Health Status of the Children (N=162).

Oral Heal Status	Number	%
Dental Caries present		
Primary dentition		
Yes	55	61.1
No	35	38.9
Permanent dentition		
Yes	23	25.6
No	67	74.4
Caries Risk Assessment (CAMBRA)		
High	157	96.9
Moderate	2	1.2
Low	3	1.9
Urgent Dental Need		
Yes	45	27.8
No	117	72.2
Oral Hygiene		
Good	29	17.9
Fair	88	54.3
Poor	45	27.8
Gingival Condition		
Healthy	59	36.4
Bleeding	23	14.2
Inflamed	80	49.4

The questionnaire assessed parental knowledge on topics such as caries transmission, fluoride use, oral hygiene practices, and cultural beliefs (e.g., appropriate age to discontinue bottle use and timing for the first dental visit). A statistically significant association was found between parental education level and baseline knowledge scores ($p < 0.007$) (TABLE 3).

Among the 90 participants who completed both the baseline and follow-up questionnaires, a paired-sample t-test revealed a statistically significant improvement in oral health knowledge ($p < 0.001$) (TABLE 4).

At baseline, the parents or caregivers’ oral health knowledge was poor or deficient (78.4%) (FIGURE 1).

TABLE 3. Overall Oral Health Knowledge of the Participants by Level of Education (N=162).

Level of education	Knowledge					
	Good		Fair		Poor	
	No.	%	No.	%	No.	%
Never Attended	1	5.6	6	33.3	11	61.1
Elementary	11	13.9	21	26.6	47	59.5
Some High School	10	27.0	11	29.7	16	43.2
More than High School	13	46.4	7	25.0	8	28.6

$\chi^2= 17.869$ ($p<0.007$)

TABLE 4. Paired Sample T-test for Parental Knowledge at Initial Visit and After 3-months or 6-months Follow-Up Dental Visit.

	t-value	p-value	Mean Difference	95% Confidence Interval	
				Lower	Upper
Oral Health Knowledge at the first dental visit	16.370	<0.001	3.411	2.997	3.825
Oral Health Knowledge at the 3-month or 6- month follow-up dental visit	45.971	<0.001	6.411	6.134	6.688

FIGURE 1. Overall Parental Knowledge (N=162).

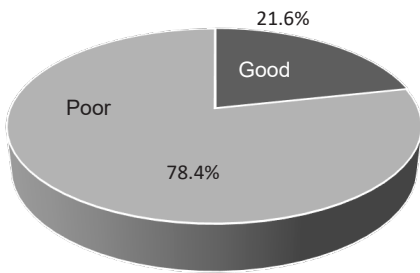


FIGURE 2 presents result from selected questionnaire items. Correct responses to the statement, “Cavities are caused by germs in the mouth” increased from 57.8% at baseline to 88.9% at follow-up. Similar improvements were noted on other items, such as the risks of sharing utensils. The greatest improvement was observed in knowledge of the recommended age for the first dental visit of the child (43.4%) and discontinuing baby bottle or sippy cup use at bedtime, with a 46.7% increase in correct responses. There was observed a statistically significant difference ($p<0.001$) in the responses between the two surveys.

Finally, the results showed that children whose parents had no formal education or only elementary education had a higher prevalence of caries in the primary dentition (**FIGURE 3**). However, this difference was not statistically significant ($p>0.05$).

FIGURE 2. Correct Responses during First and Second Dental Visits by Question* (n=90).
*(paired sample T-test, $p < 0.001$)

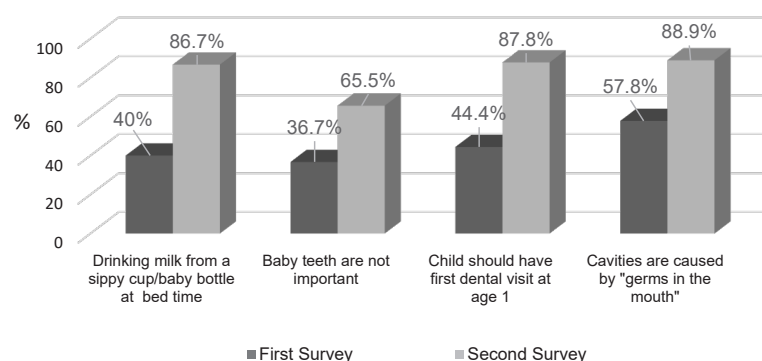
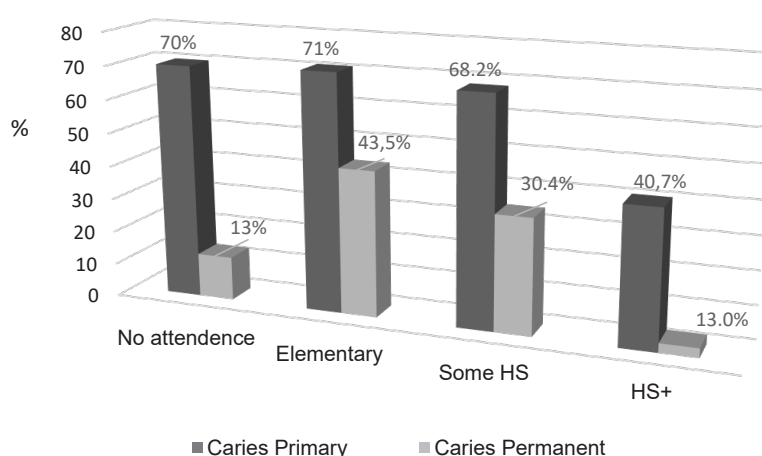


FIGURE 3. Parental Level of Education and Caries Experience in Primary and Permanent Dentition (n=162)*.
*($p > 0.05$)



Discussion

This study provides valuable insights into the oral health knowledge of parents and caregivers in a rural migrant community and highlights the impact of brief, culturally tailored educational interventions delivered through community-based dental outreach programs. At baseline, nearly half of the participants demonstrated limited understanding of key oral health concepts, including caries transmission, the role of fluoride, and early childhood oral hygiene practices. These findings are consistent with previous research that has documented disparities in oral health literacy and outcomes among underserved and immigrant populations in the United States^{3,6,8}.

Notably, participants who completed the follow-up questionnaire showed a statistically significant improvement in oral health knowledge. This suggests that culturally and linguistically appropriate education delivered in the context of ongoing dental care can effectively bridge knowledge gaps among parents and caregivers^{6,13}. One of the greatest gains was observed in knowledge related to the appropriate discontinuation of baby bottles and sippy cups, highlighting the effectiveness of targeting messaging in shifting parental perceptions and behaviors^{9,14,15}.

Parental education level was significantly associated with baseline oral health knowledge, reinforcing findings from prior studies that emphasize the influence of parent or caregiver education on oral health literacy and behaviors^{4,9,12,13}. However, unlike some studies where access to care was the primary barrier among seasonal farmworker families⁷, our findings suggest that limited formal education may play a more prominent role in this population. Interestingly, while children of less-educated parents had a higher prevalence of caries in the primary dentition, this association was not statistically significant. This may reflect the complex interplay of factors such as recent migration status, limited access to preventive care, and the socioeconomic stressors that contribute to elevated caries risk in this population. The high number of children classified as high caries risk or having urgent dental needs further underscores the need for early, preventive interventions^{10,11}.

These findings support the integration of behavioral education into clinical settings^{12,13}, where immediate feedback and risk-based instruction may encourage lasting changes in parental practices and health behaviors. Embedding oral health education with routine care visits may be especially effective in reaching populations that face structural barriers to accessing traditional health education resources.

Nevertheless, broader systemic challenges such as limited access to dental care, lack of insurance coverage, and social determinants of health must be addressed to sustainably reduce oral health disparities in rural migrant communities. Future efforts should consider multi-level interventions that combine clinical care, community outreach, and policy-level strategies to promote oral health equity.

Conclusion

Parental oral health knowledge is a critical determinant of children's oral hygiene behaviors and caries risk. This study demonstrated that a brief, culturally and linguistically tailored educational intervention delivered within a community dental outreach setting can significantly enhance oral health knowledge among underserved migrant families. Furthermore, the findings of this study regarding oral health knowledge of the parents fully reflected the oral care for their children's teeth. The findings of this study support the integration of literacy-sensitive, preventive education into routine dental care, particularly in high-risk populations. Sustained community engagement and culturally responsive strategies are essential to addressing persistent oral health disparities and promoting long-term improvements in child oral health outcomes.

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