

# Hispanic Seasonal Farmworker Caregivers' Beliefs and Perceptions of Early Childhood Caries

Yesenia Rivera, RDH, MSDH; Linda D Boyd, RDH, RD, EdD; Lory Libby, RDH, MSDH

## Abstract

**Purpose:** Children of Hispanic seasonal or migrant farmworkers in the United States (US) experience high rates of Early Childhood Caries (ECC) and have high rates of untreated dental caries. The purpose of this study was to explore Hispanic seasonal farmworker caregivers' beliefs and/or perceptions regarding ECC their children's oral health.

**Methods:** A qualitative explanatory model interview approach was used with a purposive sample of Hispanic parents/caregivers, working and residing in Orange and Ulster Counties, New York. The Explanatory Model Interview Catalogue (EMIC) was used as a guide to the semi-structured, recorded interviews conducted in locations selected by the participants. The texts were independently read and thematically analyzed by two researchers.

**Results:** A total of 20 parents/ caregivers consented to participate. Six themes were identified for the components of the EMIC and included: etiology: eating candy/sweets (65%); sign/symptoms of decay: tooth color change (50%); pathophysiology: not brushing daily (75%); course of disease/impact on daily life: appearance (40%); impact of caries on child's future health: affects child until adult teeth erupt (25%); treatment for pain: tooth brushing (55%). Over half of the respondents (55%) indicated that getting dental care for their children was a priority.

**Conclusion:** Results from this study showed that Hispanic seasonal farmworkers have a desire to maintain their children's oral health. However, they lacked knowledge in some key concepts related to the disease process and prevention of ECC. Caregivers need additional oral health education with consideration for oral health literacy.

**Keywords:** Hispanic seasonal farmworkers, migrant farmworker, early childhood caries, oral health beliefs, caries etiology, qualitative research

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## Introduction

Dental caries is one of the most common chronic health conditions among children living in the United States (US).<sup>1</sup> The prevalence of dental caries in 2015-2016 for children aged 2-19 was 45.8%, and of these children, 13% were identified as having untreated dental caries.<sup>1</sup> However, the prevalence of dental caries was reported to be much higher in Mexican – American or other Hispanic children, (57.1%),<sup>1</sup> and Mexican American children suffer from a much higher incidence of untreated dental decay (21.3%).<sup>2</sup>

Historically, migrant farmworkers have come from Mexico with their families, including spouses and children, for seasonal agricultural work in the US. Hispanic populations have been shown to experience health disparities that are

manifested with higher rates of chronic conditions such as hypertension and type 2 diabetes.<sup>3,4</sup> Previous research has indicated low health literacy in Spanish-speaking Hispanic adults, which may impact health seeking behaviors and overall health.<sup>3,4</sup> Acculturation has also been associated with lower levels of health literacy in Hispanic populations.<sup>3</sup> Cultural aspects of the Hispanic community must be considered when developing health literacy and education programs.<sup>3</sup>

Hispanic parents and caregivers have been shown to have strong-rooted health beliefs and may prefer home remedies, rather than over-the-counter drugs, due to cultural health beliefs.<sup>5,6</sup> Research has shown that Hispanic mothers may also opt for naturopathic or home remedies as the first line

of treatment for signs of illness in their children.<sup>5</sup> In regards to oral health, studies conducted among Mexican- American mothers indicate gaps in their knowledge regarding caries etiology.<sup>7-12</sup> Mothers in one study demonstrated an understanding that sugar consumption, oral hygiene and bottle use played a role in tooth decay; however, they lacked knowledge regarding the role of bacteria in the decay process.<sup>7</sup> These mothers also held the attitude that young children should be able to perform oral hygiene routines independently.<sup>7</sup> Mexican-American parents have also demonstrated uncertainty regarding the appropriate time for a child's first dental visit, with many young children not seeing a dentist until the age of three or older.<sup>8</sup> The literature also suggests that there is a delay in initiating oral hygiene in practices among Hispanic mothers.<sup>9</sup> In a study of Mexican-American mothers, only a minority (13%) followed the recommendation to initiate toothbrushing by 12 months, and 41% did not transition to regular toothbrushing until the age of two or older.<sup>9</sup> Many mothers held the belief that regular toothbrushing should only begin when the child is able hold the brush without assistance.<sup>9</sup>

Previous research has shown that Hispanic parents/caregivers have a limited understanding of when to start oral hygiene care at home, fail to see the association between a high sugar or carbohydrate diet and dental caries, and understand decay prevention strategies such as fluoride toothpastes and dental sealants.<sup>13,14</sup> They are also unaware of the importance of routine professional dental care for children, what age to start going to the dentist, and the consequences of an untreated bacterial infection due to dental caries.<sup>13-15</sup> Much of the research conducted concerning this population is outdated, suggesting the need for further investigation. The purpose of this study was to update the understanding of the perceptions and beliefs of Hispanic seasonal farmworker caregiver's beliefs towards early childhood caries (ECC).

## Methods

A qualitative explanatory model interview approach study design<sup>16</sup> was used to gain a deeper understanding of this topic due to the limited available research. The study was granted exempt status by the MCPHS Institutional Review Board. The principal investigator (PI) was of Mexican descent, came from a migrant farmworker family, and was fluent in Spanish and English. The PI's background promoted a sense of trust, which was an important element due to deportation fears that are common among Hispanic seasonal farmworkers who may be undocumented.

## Sample population

A purposive, convenience sample was used. Participants were of Hispanic or Mexican descent, eighteen years or older, employed as a seasonal agricultural worker in Orange and Ulster Counties, New York, and were currently caring for a child/children aged five years and under or had previously cared for a child of this age in the past five years. Participants speaking English or Spanish were included; speakers of indigenous Mexican languages were excluded. Participants were recruited by distributing flyers at community events, migrant farmworker health centers, health fairs, and through personal verbal invitations made by the PI on the farms. Snowball sampling was also used to supplement recruitment.<sup>17</sup>

## Instruments

Demographic data was collected on the following: age, sex, race, ethnicity, number of children in the family or how many children they have cared for under the age of five in the past five years, current employment setting, socioeconomic status, and level of education.

The explanatory model interview catalogue (EMIC) was used to develop the interview questions.<sup>18</sup> The EMIC incorporates epidemiological and anthropological research methods<sup>18,19</sup> Health beliefs are often culturally based so the EMIC explores patterns of distress, perceived causes of illness, inclinations for seeking treatment, and common illness beliefs constitute a framework for the explanatory model for illness.<sup>18,20-21</sup> The EMIC approach entailed asking subjects questions through an explanatory procedure of qualitative inquiry. Participants were able to give multi-layered answers and information regarding their experiences with prevention and management of oral disease.<sup>18,19</sup> The framework for the EMIC questions included: etiology of early childhood caries; complaints (signs and symptoms); pathophysiology, course of the disease, future impact of the disease, and treatment options (Table I).

The interview procedures, questions, and transcription were pilot tested with three seasonal farmworker caregivers who met the sample criteria. Modifications to interview questions were made based on pilot testing and included the use of pictures to help the participant understand the questions being asked. The Flesch-Kincaid Grade Level for the questions was 3.3, with a Flesch Reading Ease of 91.6.

## Data Collection

Face to face interviews were conducted in the communities of Goshen and New Paltz, New York, in settings where confidentiality was protected.<sup>22</sup> Interview locations were

**Table I. EMIC Interview Guide**

EMIC Framework	Interview Questions
Etiology	What do you think is the reason why children might have tooth decay? What would you do to make the problem better?
Complaints	What do you think are the main signs and symptoms of decay? How would you describe tooth decay? How do you think these symptoms might affect your child's daily life?
Pathophysiology	Reasons you think your child might not be at risk for tooth decay?
Course of disease	How has tooth decay impacted your child's health or would?
Future implications	How do you think decay will affect your child's life or health?
Treatment	What options do you have if your child has oral pain? What type of home remedies have you used in the past? What stops or prevents you from getting the treatment you choose for your child? Do you have any concerns or fears of your child having treatment for tooth decay or pain?

selected by the participant and included the participant's home, the farm, or the Federally Qualified Health Center where they receive medical and/or dental care. After obtaining informed consent, interviews were conducted in either English or Spanish, based on the participants' preference, and began with the demographic questions. Subsequent questions were posed using the interview guide to address the components of the EMIC.

The purpose and guidelines of the study were reviewed at the beginning of each session. The PI shared her background and interest in the population. Participants were encouraged to speak freely in their own words and share their beliefs and/or perceptions of questions asked. A \$25 gift card for a local grocery store was provided as an incentive. Interviews lasted from 15-35 minutes, depending on the participant. An interview guide was used for all sessions, and the PI took handwritten notes. Audio recordings were transcribed verbatim, and interviews conducted in Spanish were translated by the PI into English. The goal was a minimum sample of 12 participants, and recruitment continued until data saturation was reached, meaning no new themes emerged from the interviews.

### **Data analysis**

Inductive coding was conducted for each component of the EMIC framework. Data was reviewed for like terms, general themes, tones, and impressions independently by two investigators.<sup>23</sup> Specific words and phrases were highlighted to create codes and organized into themes and groups relating to the EMIC framework. Participant quotes were used to illustrate

the depth and breadth of the themes. Interpretation was kept to a minimum by using the participants' own words along with a summary of main themes.

## **Results**

### **Demographics**

A total of 20 parents/caregivers agreed to participate and consisted of fathers (n=6), mothers (n=12) and grandmothers (n=2). The majority of the participants (95%) were born outside of the US, identified Mexico as their country of origin (80%), and had an average of 2.3 children. A little more than one half (52%) of the children were under the age of five years. Participants reported being low-income (median weekly income=\$200-300) and 45% had completed middle school education. Demographics are shown in Table II.

The EMIC framework was used to report the findings, Theme response frequencies are shown in Table III.

### **Etiology of Early Childhood Caries**

Most caregivers stated multiple causes for caries. The most common cause was the consumption of candy/sweets (60%), followed by not brushing (45%), and non-compliance of the parent to perform oral care or resistance of the child (15%). Examples of the theme include:

*"Most say it's because they have do not have good hygiene, eating too many sweets, if you do not drink much milk."*

*"What they eat, the sweets."*

*"They say that because they eat a lot of sweets, that's what I've heard, but the truth is - who knows."*

When asked how they could make the problem of dental caries better, most caregivers reported using some type of over-the-counter medication.

### **Complaints related to signs and symptoms**

The major themes identified related to sign and symptoms of tooth decay included:

**Table II: Demographic Characteristics of Study Population (N=20)**

Demographic	N	(%)	Demographic	N	(%)
<b>Gender</b>			<b>Weekly Income</b>		
Male	6	(30%)	\$100-200	2	(10%)
Female	14	(70%)	\$200-300	10	(50%)
<b>Caregiver Type</b>			\$300-400	3	(15%)
Mother	12	(60%)	\$400-500	4	(20%)
Father	6	(30%)	\$500-600	1	(5%)
Grandmother	2	(10%)	<b>Years in the United States</b>		
<b>Age</b>			1-5 years	2	(10%)
18-26	1	(5%)	5-10 years	2	(10%)
27-35	11	(55%)	10-15 years	11	(55%)
36-44	6	(30%)	15-20 years	4	(20%)
45-53	1	(5%)	U.S. Citizen	1	(5%)
54-62	1	(5%)	<b>Number of children in immediate family</b>		
<b>Nationality</b>			One	6	(30%)
Mexican	16	(80%)	Two	5	(25%)
Guatemalan	2	(10%)	Three	6	(30%)
Honduran	1	(5%)	Four	3	(15%)
Puerto Rican/Honduran	1	(5%)	<b>Do any of your children have dental decay?</b>		
<b>Caregiver's Place of Birth</b>			No	15	75%
Mexico	16	(80%)	Yes	4	20%
Guatemala	2	(10%)	No answer	1	5%
Honduras	1	(5%)	<b>What do you feel are more important?</b>		
United States	1	(5%)	Permanent teeth are more important than primary teeth	9	45%
<b>Education</b>			Permanent teeth have the same value	5	25%
None	2	(10%)	No answer	5	25%
Elementary	4	(20%)	Primary teeth are more important than permanent teeth	1	5%
Middle School	9	(45%)			
High School	2	(10%)			
GED	1	(5%)			
College	2	(10%)			

tooth color change (50%) and crankiness/crying inconsolably (40%). An example of the main theme included:

*“They get black teeth, yellow, pitted, smelly mouth.”*

Regarding the impact of dental caries on daily life, pain was the most common theme expressed by more than one-third of the participants.

*“Getting sick and ... then their head starts to hurt.”*

**Pathophysiology**

Three-quarters (75%) of the participants reported their children were caries free based on the outcome of the required dental visit. These participants believed that their children

were not at risk of caries due to daily tooth brushing and because the majority of their children actively attended, or had previously attended, a farmworker daycare center. Children are taught how to brush their teeth and brush after every meal at the daycare centers. The childcare centers require parents to provide proof of visiting the dentist following eruption of the first tooth and every six months thereafter. The major theme for pathophysiology is illustrated by the following statement:

*“She goes to a daycare in New Paltz and they teach them how to brush their teeth...from a young age. They arrive, they have breakfast, they brush their teeth, and they have lunch then after they wash their teeth. They are well disciplined there in the daycare.”*

**Table III. Question response frequencies following the EMIC guide**

Response	N	%*	Response	N	%*
<b>Etiology</b>			<b>Course of Disease</b>		
<i>What do you think is the reason why children might have tooth decay?</i>			<i>How do you think decay will affect your child has oral pain?</i>		
Candy/sweets	12	60	Child judged by appearance	8	40
Not tooth brushing	9	45	Child bullied due to appearance	7	35
Lack of insistence of parents	3	15	Child can't eat properly	7	35
Bad diet	2	10	Lose teeth	7	35
<i>What would you do to make the problem better?</i>			Affects child's self-esteem	4	20
Give Tylenol®	9	45	<b>Future impact of tooth decay</b>		
Pay more attention to child's tooth brushing	7	35	<i>How do you think decay will affect your child's life or health?</i>		
Give Motrin®	7	35	Affect child until adulthood	3	15
Not give child candy	4	20	Affect permanent teeth of child	2	10
Take child to the doctor	2	10	Child's health would not be affected	2	10
Take child to the dentist	2	10	Child can't eat well as an adult	2	10
<b>Complaints</b>			Affect child's stomach in future	2	10
<i>What do you think are the main signs and symptoms of decay?</i>			<b>Treatment</b>		
Tooth color change	10	50	<i>What options do you have if your child has oral pain?</i>		
Crankiness/crying inconsolably	8	40	Child brushes teeth after meals in daycare	6	30
Sensitivity	5	25	Child brushes teeth daily	5	25
Bad breath	2	10	Child uses mouthwash	3	15
Tooth color change	2	19	Child uses floss	1	5
<i>How would you describe tooth decay?</i>			<i>What type of home remedies have you used in the past?</i>		
Yellow color	10	50	Cloves	8	40
Black color	7	35	Teac	7	25
Hole	6	30	OTC pain reliever	4	20
Brown	3	15	Garlic	3	15
<i>How do you think these symptoms might affect your child's daily life?</i>			<i>What stops or prevents you from getting the treatment you choose for your child?</i>		
Pain is unbearable	7	35	Nothing	6	30
Get an infection	2	10	Nothing, receiving adequate care	5	25
Can't perform daily activities	2	10	Lack of insurance	2	10
Child can't eat	2	10	Cost	2	10
Pain will go away on its own	2	10	<i>Do you have any concerns or fears of your child having treatment for tooth decay or pain?</i>		
<b>Pathophysiology</b>			No	10	50
<i>Reasons you think your child might not be at risk for tooth decay?</i>			That child may need braces	3	15
Child brushes teeth daily	15	75	Child is too small to have treatment, but would do treatment	3	15
Child visit dentist every six months	2	10			
Child does not eat candy	2	10			
Child eats healthy	2	10			
Child is physically active	2	10			

\*% is based on n=20 for each response

Although the majority of the children were considered to be caries free based on caregiver report, 20% of caregivers reported their children still suffered from dental caries. Participants who reported their children had a history of dental caries felt it was due to lack of oral health education in their home country, children not being raised in the US and not having the same healthcare opportunities in their home country. One participant who had a child born outside of the US stated:

*“The difference is the place where they were born to start, because here [in the US] you have more access to many things and information. There [in their homeland] is no information or money, much less dentists, are scarce, and that is very difficult.”*

### **Beliefs regarding Early Childhood Caries (ECC)**

When discussing the course of early childhood caries, most participants felt their children would be affected/judged by their appearance (40%) or bullied for their appearance (35%). One participant stated the following:

*“..He’ll get bullied.”*

*“Oh, you think he’ll get bullied because of his appearance?” (PI)*

*“Yes. He won’t smile.”*

The second most commonly mentioned effects of ECC was the inability to eat (35%) and tooth loss (35%). Regarding the importance of permanent versus primary dentitions, 45% percent of caregivers felt permanent teeth were most important, 5% felt primary teeth were most important, and 25% felt both primary and permanent teeth had the same value. One participant responded:

*“I say that permanent teeth have more value than milk [primary] teeth. Yes, because they are going to stay until they are older and those milk [primary] teeth are going to fall out and they will be replaced and the permanents will not.”*

All participants indicated that they wanted the best dental care and outcomes for their children.

*“This is the responsibility of the parents. You have to do everything you can as a mother or father, or whatever, to help them first.”*

### **Impact on future health**

The effect of dental caries on the child’s future was divided, with about 15% of the participants responding that it would affect the child until adulthood (15%) or affect the permanent teeth (10%). One participant indicated that:

*“You can lose your teeth, you can use. .... I do not know.... I do not know what it is called.”*

*“Denture” (PI)*

*“Denture....that can affect the course already for their maturity, to be adults.”*

*“And it affects a lot, because there are certain foods that one cannot chew, because they’re false, because they are false teeth.”*

Other participants did not believe that untreated dental caries was a serious disease without detrimental consequences. One participant stated:

*“Well, their health....it’s not a problem.... it’s not permanent and your physical health is fine, it’s just your teeth.”*

### **Treatment**

Although some participants mentioned having used home remedies for their own dental conditions such as cloves (40%) and teas (25%), the majority of participants reported having dental insurance coverage for their children and took them to the dentist regularly. Participants reported that if their child needed dental treatment not covered by the child’s dental insurance, that they would find a way to pay for these services. For example:

*“I would have to take him, no matter what, I would pay. I will not let something happen to him ...”*

### **Discussion**

The majority of participants in this study believed sweets/candy were the main cause of ECC. These findings are consistent with previous research on Hispanic caregiver perceptions of the etiology of dental caries.<sup>9,12,15</sup> Parents lacked knowledge about the role of bacteria in conjunction with consumption of fermentable carbohydrates in caries etiology. In addition, these participants felt their child would not be at risk for ECC if they brushed their teeth daily. These findings are consistent with previous research on Hispanic caregiver oral health beliefs.<sup>9,12,15</sup> Although the participants indicated believing that regular tooth brushing is the main reason why their children are not at risk for dental caries, they lacked the knowledge regarding the benefit of fluoridated toothpaste for caries prevention.

While half of the participants caregivers indicated that a change in the tooth color would be the first sign or symptom of ECC, when asked to describe this color change they said it would be a yellowish color. However, when shown a picture of a white-spot lesion, 65% correctly selected it as an early sign of dental caries.

Participants in this study reported using home remedies for oral pain relief for themselves, which is consistent with previous research.<sup>24</sup> However, when asked what they would do if their child was experiencing oral pain, the majority indicated that they would visit a dentist and that they would follow through with necessary treatment. Recent research designed to better understand the influence of parental oral health beliefs and behaviors on the caries status of Hispanic children has shown that parents of caries free children reported higher oral hygiene behavior scores, perceived fewer barriers to accessing preventive dental care and considered their children to be more susceptible to caries as compared to parents of children with active caries.<sup>25</sup> Parents in the caries free group recognized that their children were more vulnerable to tooth decay and tried to establish good oral hygiene care for their children.<sup>25</sup> Oral health care providers need to take the belief system of the parents/caregivers into consideration when planning approaches to improve the oral health of Hispanic children.<sup>25</sup>

Daycare centers were shown to play an important role in influencing the participants beliefs and practices regarding ECC. The daycare centers were state funded and followed the American Academy of Pediatric Dentistry guidelines of instituting daily tooth brushing after meals in their facilities and the importance of having a dental home.<sup>26</sup> Participants recognized the importance of regular oral care and followed through the recommended practices. Considering the role that the daycare center can play in influencing the beliefs and practices of this population, including a direct access dental hygienist as a regularly scheduled site visitor could help increase access to preventive services to further reduce the risk for ECC in this population. Dental hygienists are well prepared to expand into a role that could be similar to school nurses. Other approaches for providing health information to this vulnerable population include programs sponsored by community or religious organizations, messaging from media such as television and radio,<sup>27</sup> parent education programs at migrant seasonal Head Start and daycare programs,<sup>28</sup> and educational programs led by Community Dental Health Workers.<sup>29</sup>

This study had limitations. Sampling was purposive and not random. The sample size was small; however, this is common in qualitative research.<sup>23</sup> Despite the small sample size, saturation was met, and new information did not contribute to the research topic.<sup>30</sup> Although the sample was non-random, using a purposive sample ensured participants were qualified to speak to the research topic and provide essential data and insight.<sup>16</sup> There may also have been recall bias on behalf of the caregivers.<sup>23</sup> Limitations of the EMIC model may include self-report, limitations of participants articulating their beliefs, and the assumption beliefs about dental caries and causes are related to culture rather than individual beliefs. Data collection was gathered from a

limited geographic location in upstate New York and may not be representative outside of that area. Social desirability on behalf of the participant could also be a limitation. A final limitation was researcher bias, due to oral health knowledge and the sample population.<sup>23</sup> Despite these limitations, findings from this research adds to the literature by providing information to oral health care providers regarding this population's ECC knowledge and oral health care practices for their children.

## Conclusion

Seasonal Hispanic farmworker caregivers in this study had a desire to maintain their child's oral health. However, they appeared to lack knowledge of some key concepts related to the etiology and prevention of ECC, including the use of fluoride, role of bacteria and fermentable carbohydrates (beyond candy and sweets) in the caries process. Hispanic caregivers need additional oral health education with consideration for oral health literacy and cultural beliefs. Research is needed to include caries risk assessment and oral examinations in farmworker daycare centers further explore the impact of these centers on improving oral health of Hispanic children.

*Yesenia Rivera, RDH, MSDH* is an adjunct faculty member in the dental hygiene program, Orange County Community College, Middletown, NY.

*Linda D. Boyd, RDH, RD, EdD* is a professor and the Associate Dean of Graduate Studies, Forsyth School of Dental Hygiene; *Lory Libby, RDH, MSDH* is an assistant professor, Forsyth School of Dental Hygiene; both at MCPHS University, Boston, MA.

Corresponding author: Linda D. Boyd, RDH, RD, EdD;  
linda.boyd@mcphs.edu

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