

Oral Health of Children and Adults in Latino Migrant and Seasonal Farmworker Families

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Abstract Oral health is one of the greatest unmet health needs of immigrant farmworkers. This paper describes use of dental services and current oral health problems of children and parents in farmworker families. Interviews were conducted with 108 women in Latino farmworker families in western North Carolina and southwestern Virginia. Dental care had been received in the past year by 73% of children, 47% of mothers, and 37% of spouses. Children were most likely to have received care on a regular basis, while adults usually received no care or emergency care. In general, children's teeth were in better condition than parents' teeth. Children's receipt of dental care and their teeth condition were predicted by being born in the US. No family member's care was related to acculturation or mother's education, typical predictors of health behavior. Differences among family members suggest that access to services, not lack of education, is the primary barrier facing farmworker families.

Keywords Oral health · Oral hygiene · Agricultural worker · Latino · Minority health

Introduction

Oral health has been ranked as one of the major health problems facing migrant and seasonal farmworkers, as well as one of the unmet needs in farmworker health services [1–5]. While anecdotal reports of clinicians support this, few data have been published outside of clinic-based samples to document these problems. Most existing studies have documented the problems only for children of farmworkers, and they focus on these children in the mid- and far western US [1–3, 6, 7].

This paper describes oral health issues reported for a sample of farmworker families in western North Carolina and southwestern Virginia. This study expands on existing studies because (1) it reports data for the child and his or her parents, allowing comparison of the use of health services and oral health deficits for different members of the same families, (2) it is population-based rather than clinic-based, and (3) it reports data for migrant and seasonal farmworker families in the eastern US.

The goals of the paper are to (1) describe the use of dental services of children and parents in farmworker families, (2) describe preventive dental hygiene practices of these family members, and (3) describe current oral health problems reported by farmworker family members. These results will be used to suggest directions for oral health care among farmworkers.

Background

Although it is difficult to obtain an accurate count, Health Resources and Services Administration (HRSA)

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has estimated that there were 4.2 million seasonal and migrant farmworkers and their dependents in the US [8]. In North Carolina, there are over 100,000 migrant and seasonal farmworkers [9]. According to the National Agricultural Workers Survey 2001–2002 (NAWS), 77% of US farmworkers were foreign-born, with 96% of those born in Mexico [10]. Over 80% reported Spanish or an indigenous language as the first language. Fifty-three percent were not authorized to work in the US, which compromises their ability to access services. A majority of current farmworkers (70%) do not migrate internationally, so lack access to dental services outside the US. The average age of farmworkers in the US was 33 years. Farmworkers had a median level of education of 6 years, and 30% of all farmworkers had family incomes below the poverty line.

Poor oral health is prevalent among Latino migrant and seasonal farmworkers and their families [1–5]. Studies conducted in northwest Michigan showed that migrant farmworker children were more likely to have decayed tooth surfaces than US school children (65.18–16.8%) and were less likely to have filled surfaces (29.07% vs. 76%) [3]. Similarly, a study in Colorado found that the average decayed-missing-filled surfaces (DMFS) score for migrant children ages 6–15 was 3.56 while the national average was 2.50, indicating that migrant children had a higher prevalence of oral health problems than their non-farmworker counterparts [2]. These studies were further supported by a study conducted in the Yakima Valley Farm Workers Clinic, Washington, which found that migrant children had tooth decay rates twice that of the general population [7]. A review of clinic data for adult farmworkers in southern Illinois found that 69% presented with at least one decayed tooth surface and more than half, with three or more [5].

Many adult migrant workers do not seek oral health care. In two separate studies, researchers found that over half of migrant workers did not seek oral health care regularly [11, 12]. In contrast, 65% of the US population visited a dentist in 1999 [13]. One of the studies reported that 22% had never seen a dentist prior to the study [12]. Reasons for not seeking care included lack of time, money, transportation, and education concerning dental care [11, 12, 14].

Several studies cited poor oral hygiene as a reason for oral health problems among migrant workers and their families [2, 3, 6]. While studies indicated that most respondents brushed their teeth, two studies showed that only 10–11 percent of respondents flossed [1, 11]. Similarly, one study noted that some migrant children reported not owning a toothbrush [3].

High rates of decayed tooth surfaces, not seeking treatment, and poor oral hygiene leave Latino migrant workers and their families as a particularly susceptible group for poor oral health. Migrant workers whose children were not born in the US and do not speak English are more likely to have decaying teeth and less likely to have been to the dentist than migrant workers' children who were born in the US and speak English [1]. Similarly, the greater a migrant family's income, the more likely that the children had been to the dentist [1].

Maintaining proper oral health affects overall health in two ways. First, poor oral health alters behavioral patterns which lead to poor physical and mental health. Pain and problems with teeth can often cause patients to modify their diet and eating habits, making it difficult to eat a nutritious diet [15–17]. Similarly, poor oral health has been associated with modified social behavior such as reduced talking, smiling, and interacting in social situations, affecting a person's quality of life [18–20]. Secondly, poor oral health has been related to systemic health problems [21]. Research has shown associations between chronic oral health infections and stroke, heart and lung disease, and for pregnant women, premature birth or low-birth weight infants [22]. Thus, documenting the oral health problem of farmworkers and then taking steps to ameliorate them can have beneficial health effects beyond the immediate impacts on teeth, mouth, and gums.

Methods

Data were collected in face-to-face survey interviews with 108 women in Latino farmworker families in an area of five counties in western North Carolina and three counties in southwestern Virginia during October and November 2004. These women had participated as recipients of information on pesticide safety and household nutrition from lay health promoters over the previous 12–24 months as part of a community-based participatory research project. In the course of the final evaluation interview, data were collected on oral health issues at the request of the local community representatives active in the project. Women had received no intervention or education on oral health. The October–November interview was timed to reach as many of the participating families as possible. Most worked in Christmas tree harvest and wreath making so were in residence at the time.

To be eligible for the lay health promoter program, the household had to contain a family consisting of at least one person who was a seasonal, migrant, or

year-round farmworker employed in agriculture by someone outside of his/her family and at least one child 13 years of age or younger residing in the house. Selecting a sample of farmworker families is difficult because there is no existing list of such families and because they are a relatively "hidden" population. In this study, participants were recruited by 11 lay health promoters to receive monthly health lessons. These lay health promoters were located throughout the study area. Generally, they recruited women in their social networks or in the area near their place of residence. Each lay health promoter was asked to recruit up to 20 families. Because of the low population density in the mountainous terrain, most went beyond their social networks and neighborhoods to recruit participants. Numbers recruited ranged from 4 to 22 women per lay health promoter. This produced a sample of farmworker families that, while not random, was dispersed throughout the area. Recruitment took place during the entire calendar year, so was not biased by the farm work season.

Oral health data were reported by the mother for a focal child in the family, her spouse/partner, and herself. Data included dental services received in the past year, oral hygiene practices (child and mother only), and current dental problems, based on the data collection instrument used by Lukes and Miller [11]. For the purpose of the child oral health questions, the focal child was the child in the household older than five who was closest in age to five. If no child greater than five years of age was present, then a child between three and five was identified. Children less than three years of age were excluded because they typically do not receive dental services. If no children met these criteria, the mother only provided data for herself and her spouse/partner. In addition, the mother reported demographic data for the family members. As an indicator of acculturation, mothers were asked their preferred language for six circumstances (work, reading, media, interacting with friends, music, and use at home). This scale was developed by Alderete and colleagues [23] from a longer scale by Cuellar et al. [24]; in this sample, the Cronbach's alpha was 0.79. Those who responded Spanish for all six circumstances were considered to have a preferred language of Spanish; others were considered not to have a preferred language of Spanish.

Data were collected by interviewers who had not participated in the lay health promoter program. All were native Spanish speakers. Before conducting study interviews, interviewers participated in a day-long training session that reviewed study design, interview techniques, human subject protections, and interview

content. Practice interviews were conducted and reviewed before interviewers were certified to collect study interviews. Questionnaires were translated into Spanish by native Spanish speakers, and pretested with members of the target population and revised as necessary to ensure that there was no loss of meaning and that vocabulary was appropriate. The study used the intention to treat approach, so all persons who had been recruited by the lay health advisors were interviewed, regardless of how many subsequent contacts they had had from the lay health promoter.

Informed consent was obtained using procedures approved by the Institutional Review Board of Wake Forest University School of Medicine. Respondents received \$10 for their participation.

Data analysis included counts and percentages. Medians or means were calculated for central tendencies. Chi square tests were used to evaluate the relationships between personal characteristics and oral health variables.

Results

The sample consisted of 79 children, 108 mothers, and 102 spouses (Table 1). The mean ($\pm$ SD) age of mothers was 27.7 ± 6.4 years and 4.5 ± 2.9 years for the focal child. Most of the respondents (95.3%) were born in Mexico; 75.2% of children were born in the US. 88.7% of respondents were either married or living as married, while 10.3% were single. 44.9% had received only primary education and 40.2% had received secondary education, while 57.9% and 24.2% of spouses had received primary education and secondary education, respectively. Most respondents were not currently employed (65.4%), while most spouses were employed full-time (88.5%).

Children were the family members most likely to have received dental services in the last year with 73.4% having received care, followed by mothers with 47.2% having received care (Table 2). Spouses were the least likely (37.3%) to have received dental care. Among the 79 families with a child in the study care was received by: all three family members in 36 cases (45.6%), only the child in 22 cases (27.8%), and no family members in 11 cases (13.9%). In only 11 cases (13.9%) did one or both parents receive care, but not the child.

Dental cleaning was the most common service received across all three groups with 62.0% of children, 37.0% of mothers, and 24.5% of spouses having received a dental cleaning. For children and mothers, the next most common service received was a dental exam (29.1% and 15.7%, respectively). For adults, extractions

Table 1 Demographic characteristics of respondents and families

Characteristic	Mean $\pm$ SD or <i>N</i> (%)
Age of respondent (year)	27.73 $\pm$ 6.35
Age of focal child (year)	4.50 $\pm$ 2.85
Respondent's time lived in US (year)	4.93 $\pm$ 4.61
Respondent's country of birth	
United States	4 (3.7)
Mexico	102 (95.3)
Guatemala	1 (0.9)
Focal child's country of birth	
United States	79 (75.2)
Marital status	
Married	62 (57.9)
Living as married	33 (30.8)
Single	11 (10.3)
Divorced	1 (0.9)
Widowed	NA
Education of respondent	
Primary	48 (44.9)
Secondary	43 (40.2)
Preparatory	13 (12.1)
College	3 (2.8)
Education of spouse	
None	1 (1.1)
Primary	55 (57.9)
Secondary	23 (24.2)
Preparatory	13 (13.7)
College	3 (3.2)
Current employment	
No	70 (65.4)
Yes, part time	20 (18.7)
Yes, full time	16 (15.0)
Spouse current employment	
No	2 (2.1)
Yes, part time	9 (9.4)
Yes, full time	85 (88.5)
Language preferred: Spanish only	
Yes	86 (80.4)
No	21 (19.6)

was the next most common received (15.7% for mothers and 14.7% for spouses). In contrast, the least commonly received service for children was extractions (11.4%).

Over half the children received regular dental services in the US (39.2% and 17.7%, every six months or yearly, respectively). The remainder never received care (26.6%) or received it only in the case of emergency (12.7%). Adults showed a different pattern of dental service usage in the US. Adults were more likely to never have sought dental care (43.5% of mothers and 57.1% of spouses), followed by seeking dental care only in the case of emergency (29.6% of mothers, 25.5% of spouses). Less than 20% of adults had annual dental care, and even fewer had care every six months.

Very few families paid a fee for children's dental services (14.3%), while 76.2% of spouses and 68.9% of mothers paid for dental services. Mothers (48.1%) were most likely not to seek dental care even though they felt

they needed it, followed by spouses (39.8%). Adults were over twice as likely not to seek dental care even though they felt it was needed in comparison to children (16.9%). The most commonly reported reason for not seeking dental care when one thought it was needed was that fees for services were too expensive (children 61.5%, mothers 90.6%, spouses 86.1%), followed by transportation problems (children 23.1%, mothers 15.1%, spouses 13.9%). Other reasons preventing children from getting care included that the facility had limited hours of operation (23.1%) and fear of dental work (23.1%).

Mothers were also questioned about oral hygiene practices and that of the focal child (Table 3). They reported that 81% of children had been instructed on brushing teeth by a health provider, while only 24.7% of children had been instructed on flossing. Most children and mothers brushed their teeth twice a day (children 55.7%, mothers 48.1%), followed by brushing once a day (children 21.5%, mothers 38.0%). Most children (74.7%) and mothers (60.2%) never flossed.

Overall, the condition of mouth and teeth for children was ranked in better condition than that of mothers. The majority of mothers described the condition of their mouth and teeth as fair or poor (63.9%) (Table 4). On the other hand, the majority of children's mouth and teeth conditions were described as good or very good (59.5%). This is supported by data on current oral health problems. Mothers were twice as likely to be currently experiencing pain compared to children (13.9% vs. 6.3%). Similarly, mothers were 5 times more likely to report their gums bled while brushing than children (21.3% vs. 3.8%) and 4 times more likely to have a loss of permanent teeth (25.0% vs. 6.3%). Mothers were also 4 times more likely to experience sensitivity to hot, cold, and certain foods than children (22.2% vs. 5.1%). About a fifth reported that they and their spouses had trouble biting or chewing food such as firm meat or apples. This is reflected in about the same proportion reporting that they limit the kinds of amounts of foods they eat because of problems with their teeth or dentures (mothers 23.1%, spouses 18.6%).

The associations between several predictor variables related to the mother (mother's education, mother's employment, mother's language preference) and the child (whether born in the US) and child oral health characteristics were tested. The only statistically significant predictor was whether or not the child was born in the US: being born in the US was associated with the child having had a dental visit in the last year ($X^2 = 4.692$; $P = 0.030$). It was also associated with the condition of the child's mouth being excellent, very good, or good, compared to fair or poor ($X^2 = 4.078$;

Table 2 Dental service utilization of child, mother, and spouse

	Child <i>N</i> = 79 <i>N</i> (%)	Mother <i>N</i> = 108 <i>N</i> (%)	Spouse <i>N</i> = 102 <i>N</i> (%)
Received dental services in the last year	58 (73.4)	51 (47.2)	38 (37.3)
Service received			
Exam	23 (29.1)	17 (15.7)	6 (5.9)
Dental cleaning	49 (62.0)	40 (37.0)	25 (24.5)
Sealants	20 (25.3)	14 (13.0)	4 (3.9)
Dental x-rays	9 (11.4)	11 (10.2)	2 (2.0)
Restorations (fillings)	11 (13.9)	11 (10.2)	4 (3.9)
Extraction(s)	6 (11.4)	17 (15.7)	15 (14.7)
Dentures	0	4 (3.7)	1 (1.0)
Other	0	0	1 (1.0)
How often received dental services in the US			
Yearly	14 (17.7)	19 (17.6)	15 (15.3)
Every six months	31 (39.2)	8 (7.4)	2 (2.0)
Emergency (when in pain)	10 (12.7)	32 (29.6)	25 (25.5)
Has never sought dental care	21 (26.6)	47 (43.5)	56 (57.1)
Paid fees for services	11 (14.3)	42 (68.9)	32 (76.2)
Ever not obtained dental care even though felt that it was needed	13 (16.9)	55 (48.1)	39 (39.8)
Reasons for not obtaining dental care when needed ^a			
Fees for services too high	8 (61.5)	48 (90.6)	31 (86.1)
Did not have transportation	3 (23.1)	8 (15.1)	5 (13.9)
Too far away	0	2 (3.8)	2 (5.6)
Limited hours of operation	3 (23.1)	1 (1.9)	3 (8.3)
Fear of dental work	3 (23.1)	0	0
Postponing dental care till back in Mexico	0	3 (5.7)	4 (11.1)
Other	0	2 (100)	1 (100)

^a Percentages based on number reporting ever not obtaining dental care when needed

Table 3 Preventive oral hygiene practices of child, mother, and spouse

	Child <i>N</i> (%)	Mother <i>N</i> (%)	Spouse <i>N</i> (%)
Have been instructed on brushing teeth by a health provider	64 (81.0)	NA ^a	NA
How often brush teeth			
Three times a day	16 (20.3)	14 (13.0)	NA
Two times a day	44 (55.7)	52 (48.1)	NA
One time per day	17 (21.5)	41 (38.0)	NA
Occasionally (not every day)	1 (1.3)	0	NA
Have been instructed on flossing	19 (24.7)	NA	NA
How often floss teeth			
Every day	5 (6.3)	8 (7.4)	NA
Occasionally	10 (12.7)	34 (31.5)	NA
Never	59 (74.7)	65 (60.2)	NA

^a NA indicates data not obtained in interview with the mother

$P = 0.043$). There was no statistically significant association between the mother's receiving dental services herself in the last year and her education ($X^2 = 0.120$; $P = 0.729$), her language preference ($X^2 = 5.548$; $P = 0.476$), or how long she had lived in the US ($X^2 = 3.881$; $P = 0.275$).

Discussion

This study affirms a high prevalence of oral health problems in farmworker families. It extends previous

research in showing the differences among family members in both oral health problems and the use of services. Among the families, it appears that children are receiving care at a much higher rate than their parents: in 27.8% of families, children received care, but not parents, compared to only 12.7% where a parent, but not the focal child, received care. In most cases children are receiving services at no cost or at an affordable cost. The result is that children's oral health status is reported to be much better than that of their parents. These results suggest that most farmworker parents are able to access dental services for their

Table 4 Current oral health problems of child, mother, and spouse

	Child <i>N</i> (%)	Mother <i>N</i> (%)	Spouse <i>N</i> (%)
Self-rated oral health			
Excellent	4 (5.1)	1 (.9)	NA ^a
Very Good	11 (13.9)	4 (3.7)	NA
Good	36 (45.6)	34 (31.5)	NA
Fair	25 (31.6)	62 (57.4)	NA
Poor	3 (3.8)	7 (6.5)	NA
Current oral health problems			
Pain	5 (6.3)	15 (13.9)	NA
Gums bleeding while brushing	3 (3.8)	23 (21.3)	NA
Loss of permanent teeth	5 (6.3)	27 (25.0)	NA
Sensitivity to hot, cold, and certain foods	4 (5.1)	24 (22.2)	NA
Trouble biting or chewing any kinds of food, such as firm meats or apples	NA	24 (22.2)	20 (19.8)
How often limit the kinds or amounts of food one eats because of problems with teeth or dentures			
Always	NA	1 (.9)	1 (1.0)
Very often	NA	2 (1.9)	0
Often	NA	7 (6.5)	2 (2.0)
Sometimes	NA	10 (9.3)	14 (13.7)
Seldom	NA	4 (3.7)	2 (2.0)
Never	NA	83 (76.9)	83 (81.4)

^a NA indicates data not obtained in interview with the mother

children and either cannot or do not access them as often for themselves. Since a large proportion of these children were born in the US, it is likely that they have greater access to reduced cost services than do their parents. It is also likely that their better oral health status reflects public health measures such as fluoridated water in the US.

For both the mother and her partner, cost of services is reported to be the factor most often responsible for not receiving services when needed, with a minority reporting barriers such as transportation or distance and no one reporting fear of dental work. The importance of an economic barrier to dental care is supported by the lack of association between the mother's receiving care and factors commonly associated with health behavior: maternal education and indicators of acculturation (time lived in the US and language preference).

This study has several limitations. It is based on self-reports by the mother for herself, as well as her child and spouse. Faulty recall or lack of knowledge of spouse's dental care may limit accuracy of some data. Reported dental problems were not confirmed by dental examination. The sample is not random and because no census of farmworkers in the area exists, it is not possible to assess how representative it is. However, the dispersed nature of the health promoters and their efforts to go well beyond their normal social networks suggest that this sample should be more representative of the local population than a clinic-based sample, which would have been biased toward greater dental problems. An additional problem was

that insurance status and eligibility for government benefits were not ascertained. However, there are no migrant health centers offering dental care available in the study area and our experience is that most families use the health department and are unsure of the government payments made on their behalf. Future studies using examinations are needed to confirm the findings presented here as well as to obtain more detailed data on the oral health problems prevalent among farmworkers.

Despite these limitations, the farmworker population is considered "hard to reach" and survey research in this population is extremely difficult, particularly in the eastern US mountain area where it is at low density and highly dispersed. Therefore, being able to collect data on a community based sample spread across a large region is of significant value, even if appended to another study. Such findings can form the basis for a more comprehensive study.

These findings suggest that the unmet need for dental services for farmworker families noted in other parts of the country also affects workers in the eastern US. Within families, children rather than adults are likely to receive services. This suggests that child dental visits may present an opportunity for outreach to parents and dental health education; many parents may be used to receiving only emergency treatment for acute conditions and could be informed of the availability of preventive services. The recent NAWS report shows that, in comparison with earlier farmworker surveys, workers today are migrating less and not returning to their country of origin [10]. Therefore, it

cannot be assumed that dental care will be obtained elsewhere. States and communities with large farm-worker populations should address the need for farm-worker residents to obtain dental care. This may include extending benefits such as Medicaid to more non-citizens and those who lack immigration documents.

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