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A LATINO ORAL HEALTH PARADOX? USING ETHNOGRAPHY TO SPECIFY THE BIO-CULTURAL FACTORS BEHIND EPIDEMIOLOGICAL MODELS

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Abstract

This article presents evidence of a “Latino oral health paradox,” in which Mexican immigrant parents in California’s Central Valley report having had better oral health status as children in Mexico than their U.S.-born children. Yet little research has explored the specific environmental, social, and cultural factors that mediate the much-discussed “Latino health paradox,” in which foreign-born Latinos paradoxically enjoy better health status than their children, U.S.-born Latinos, and whites. Through ethnography, we explore the dietary and environmental factors that ameliorated immigrant parents’ oral health status in rural Mexico, while ill-preparing them for the more cariogenic diets and environments their children face in the U.S. We argue that studies on the “Latino health paradox” neglect a binational analysis, ignoring the different health status of Latino populations in their sending countries. We use the issue of immigrant children’s high incidence of oral disease to initiate a fuller dialogue between U.S.-based studies of the “health paradox” and non-U.S. based studies of the “epidemiological transition.” We show that both models rely upon a static opposition between “traditional” and “modern” health practices, and argue that a binational analysis of the processes that affect immigrant children’s health can help redress the shortcomings of epidemiological generalizations.

Angélica, a 28-year old immigrant from a small town in rural Jalisco, Mexico, remembers that she began brushing her teeth at the age of eight to keep them “shiny” and “white.” Because toothpaste was not available in her *ranchito* of barely 200 houses—and would have been too expensive if it were—Angélica used to heat a tortilla until it grew hard and dry and then ground it into a fine polish. She had learned this trick from her mother, who herself had polished her teeth with charcoal. Yet despite her lack of preventive dental care, Angélica suffered no dental problems until several years after arriving in the U.S., in California’s Central Valley.

Partly because of her own childhood free of dental pain, Angélica was unprepared for the dental problems of Oscar, her son born in the U.S. When he was barely two and a half, she remembers, his teeth became “black.” “His teeth were falling out in pieces. And the woman at WIC [the federal Women, Infants, and Children program] told me that it wasn’t normal,” she said. Her son continued to have more cavities; by the time he was nine, he had already had five fillings and two extractions. Although epidemiologists may understand the different oral health profiles of Angélica and her son as evidence for a “Latino health paradox,” for Angélica, her son’s Early Childhood Caries (ECC) came as something of a shock. “Here I am, 28, and I’ve only had one tooth that hurt me. But just look at my poor son,” she lamented.

The contrast between Angélica's and Oscar's experiences would appear to support the epidemiological model of the "Latino health paradox," often used to describe a trend of worsening health among Latino immigrants as they acculturate to life in the U.S. Studies of mental health, drug use, cardiovascular disease, and child birthweight have been used to lend support to this much-noted "paradox" (Acevedo-Garcia et al. 2007; Escobar et al. 2000; Sundquist and Winkleby 1999). Yet studies on this "paradox" often lump together Latinos from a variety of cultural origins, and exactly what factors mediate the transition to poorer health status among second- and third-generation Latinos are not well understood. Specific environmental, social, behavioral, and cultural factors contribute to the different oral health profiles of Angélica and her son, and yet the "paradox" model neglects attention to the distinct bio-cultural environment that shaped Angélica's relatively caries-free childhood.

A second epidemiological model may be used to explain Angélica's childhood free of oral disease—that of the "epidemiological transition." This model posits a contrast and evolutionary transition between the disease profiles of developing and developed countries, as infectious diseases are believed to give way to chronic "lifestyle diseases." According to this model, Angélica's lack of cavities as a child may be due to oral disease being a disease specific to developed countries—that is, a "disease of civilization" caused by a modern diet. Yet the high rates of decay among children in some parts of Mexico (Cook et al. 2008) belie this facile contrast. Indeed, recent scholarship has debunked "the epidemiological transition" model as too simplistic, noting that it relies upon an essentialized opposition between "tradition" and "modernity" that ill-describes the health realities of the stalled modernity (Garcia-Canclini 1995) experienced by developing countries such as Mexico (Martinez and Leal 2003). Moreover, this model has rarely been put into productive dialogue with the model of the "Latino health paradox;" it has little to say about the causes of the pronounced degree of oral disease experienced by Angélica's son.

In this article, we will examine the severe oral disease of children such as Oscar against the backdrop of his mother's own experiences with oral disease, using ethnography to illuminate important gaps in both epidemiological models. We suggest that a careful ethnographic analysis of the causes of the high rate of oral disease among children of Latino immigrants—maintaining a binational framework—can help redress the limitations of each epidemiological model. Based on in-depth interviews with 29 Mexican immigrant caregivers in rural California and participant observation of family life, we reconstruct the diverse "epidemiological worlds" inhabited by parents in rural and urban Mexico to unravel the specific factors that help mediate this paradox. What explains the contrast in oral health profiles between U.S.-born children like Oscar and Mexican immigrant mothers like Angélica? What are the causes of the high rates of oral disease of the U.S.-born children of Mexican immigrants? In examining these questions, we argue that the health problems of children of immigrants must be understood within a bi-national context, and show that epidemiological models relying upon static oppositions between "traditional" and "modern" health practices and disease profiles must give way to more sophisticated processual analyses.

Placing Immigrant Health Problems in a Binational Context: Redressing Epidemiological Generalizations

This article highlights a disjuncture between two important fields of study in public health concerning Latino immigrant health—the "epidemiological transition" and the "Latino health paradox." The "epidemiological transition" model helps us understand the distinct disease profiles of sending countries. It posits that certain diseases and disease environments predominate in low-income and middle-income developing countries, helping to illuminate the specific health risks to which immigrants were exposed in their countries of origin. In

contrast, studies of a “Latino health paradox” concentrate on the lifestyles and environments that are prevalent in the U.S. Such studies focus almost exclusively on the health risks posed to immigrants by the receiving country’s health behaviors and environment, obscuring the effects of the bio-cultural environment of immigrants’ countries of origin on their health statuses and experiences. We intend this article to bridge sending and receiving contexts, critiquing the single-country focus of each. By examining how the “Latino oral health paradox” only makes sense within a binational context, we attempt to initiate a fuller dialogue between US-based studies of immigrant “acculturation” and non-US based studies proposing an “epidemiological transition.” Moreover, in specifying the distinct population for which this “health paradox” may apply, we illustrate how careful ethnographic analyses can help redress the analytical shortcomings of each.

Both epidemiological models are based upon a static dichotomy between the health behaviors and disease profiles of “modern” and “traditional” populations. At its most basic level, the “epidemiological transition” model posits that modernization ushers in a change from a disease profile dominated by infectious diseases to one characterized by non-communicable diseases associated with modern lifestyles. As first articulated by Abdel Omran, countries followed one of three distinct patterns of the epidemiological transition; either the “Classical” transition as seen in England, Wales and Sweden, the “Accelerated” transition as shown by Japan, or the “Delayed” model as represented by Chile and Ceylon (Omran 1971: 511). With the growth of public health vaccination programs and a “modern” health infrastructure in developing countries, he suggested, “premodern” killers such as malaria, typhoid, and tuberculosis will give way to “modern” chronic diseases such as obesity, diabetes, and heart disease (Omran 1971; 1977). As currently employed in international development programs, this model proposes that pandemics will inevitably and inexorably succumb to the triumph of medical technology, as the disease profiles of developing countries follow a course largely predetermined by the West. Yet as Martinez and Leal point out (2003), this one-size-fits-all model cannot account for the hybrid mix of “modern” and “traditional” in developing countries like Mexico—such as the conjunction of chronic diseases and an undeveloped health infrastructure or the resurgence of “premodern” infectious diseases in even the most “modernized” medical systems. Thus the “epidemiological transition” model obscures the varied “epidemiological worlds” of rural and urban, and rich and poor, populations in Latin America, making the critical mistake of basing health planning on the “illusory certainty of a predetermined destiny” (2003: 540).

While the “epidemiological transition” model posits a false teleological progression of disease profiles in developing countries, the “health paradox” model often relies upon a deterministic association of modern attitudes with ill-health. The “paradox,” crudely defined, is that foreign-born immigrants may have more favorable health statuses and behaviors than U.S.-born Latinos and even than U.S.-born whites, despite their lower average socioeconomic status. Moreover, their health only declines as they progressively acculturate to life in the U.S. “Acculturation” studies are used to bolster the “Latino health paradox.” Yet such studies suffer from “conceptual and methodological difficulties” inherent in the anthropological concept of acculturation (Gutmann 1999; Hunt et al. 2004). Models resting on the concept of acculturation suffer from the tendency to romanticize immigrants’ “traditional culture” as inherently more conducive to health, often positing the strength of untested variables such as “family cohesion,” “religiosity,” or “traditional gender roles.” These variables are poorly defined and crudely measured, and the concept of “culture” itself remains a kind of black box (Hunt et al. 2004: 976). In focusing on culture and “culture-loss” as key variables, such studies ignore the influence of broader contextual factors such as discrimination and social-economic inequality (Virruel-Fuentes 2007). Finally, such studies rarely incorporate a bi-national perspective to explore immigrants’ health behaviors pre-migration; they make no “effort to examine or document the presence

or absence of those behaviors and practices in the country in question” (Hunt et al. 2004: 980).

We suggest that a careful ethnographic analysis of the causes of the high rate of oral disease among children of Latino immigrants—maintaining a binational framework—can help redress the limitations of each epidemiological model. First, an understanding of the different “epidemiological worlds” of rural and urban Mexican caregivers can help illuminate why immigrant caregivers had very different experiences with oral disease than their children did. Second, careful attention to the distinct environments in which rural and urban Mexican immigrant caregivers were raised can help demonstrate the factors that may mediate their children’s higher rates of oral disease. In short, any analysis of the causes of the health problems of children of immigrants must be placed within a bi-national context. In the process, this kind of fine-grained ethnographic analysis can help reveal how the diverse epidemiological worlds of immigrant caregivers may help translate into specific illness patterns for their U.S.-born children.

Although we did find evidence that U.S.-born Latino children had worse oral health profiles than their Mexico-born parents, we found that this contrast held true particularly for those children with parents raised in rural Mexico. In examining the factors that shape this specific “Latino oral health paradox,” we show that such caregivers’ different bio-cultural circumstances in rural Mexico left them unprepared for the oral hygiene requirements of life in the U.S. Having grown up in areas in which preventive dentistry and the need for it were unfamiliar, parents born in rural Mexico were new to this “disease of civilization.” Although rural-born parents tended to adapt quickly to the material and environmental constraints on their diet in the U.S., their health behaviors and practices lagged further behind.

Methods

Let us begin with a description of the broader study and the literature that demonstrates Latino children’s poor oral health. Research has long shown that Latino children have worse oral health status than children from all other racial/ethnic groups; among Latino children, Mexican American children have the highest rates of decay (DHHS 2000). Among Mexican American children, farm worker children have even higher rates of decay. One study of farm worker children aged 2-9 in Alabama found that they had five times the rate of decay than Mexican American children reported by the Hispanic Health and Nutrition Survey (Nurko et al. 1998). Meanwhile, a study of farm worker children in the Yakima Valley, Washington, found that children’s rates of ECC was five times that of the general population (Weinstein et al. 1992).

Despite such poor oral health, studies have also documented that Latinos also have the lowest dental utilization rate of all racial/ethnic groups; Mexican Americans have a lower dental utilization rate than all other Latino subgroups. The National Health Interview Survey of 2000-2003 found that 16.7 percent of Latino children ages 2 through 17 – and 17.7 percent of Mexican American children – had never seen a dentist (Scott and Simile 2005). Wall and Brown (2004) reported a persistently lower dental care utilization rate for Mexican Americans and Mexican immigrants in particular—compared to other Latinos—even after external factors such as age, income, education, sex and dental insurance coverage had been taken into account. Mexican-Americans were two to three times more likely to visit a dentist than were immigrants born in Mexico but living in the United States. The authors conclude that the lower dental utilization rate specifically for Mexican-born immigrants calls for further research. Indeed, while much dental public health research has examined the specific caregiving practices of Latino parents, little research has examined immigrant parents’ own experiences with oral disease in their countries of origin. What were their oral health

histories, and what were the different bio-cultural environments that may have shaped their oral health experiences?

The broader study of which these findings are part serves as a comparison of the causes of oral health disparities for Latino children in one rural and one urban county in California. (see Barker & Horton 2008). The first community-based ethnography of Latino children's oral health in the U.S., this study sought to provide an ethnographic context for Latino children's high rates of oral disease and low dental utilization rates. This particular article is based upon the data from Mendota, a farm working community in the rural county, Fresno County. To understand parents' experiences with their children's oral disease as well as their own experiences with oral disease in their countries of origin, the first author conducted in-depth interviews with 41 immigrant caregivers of Latino children under the age of five. She asked children's caregivers—predominantly women--about their focal child's oral health problems, how they treated them, and about their own dental experiences and practices when they were children. She asked them when they first began brushing their teeth and how, when they first saw a dentist, and when they first experienced dental pain. She also asked them about the diet and child feeding practices common in their hometowns. To place such interviews in context, she conducted nine months of ethnography of caregiver practices and experiences in the dental health care safety net.

This article will focus specifically on the oral health-related experiences of Mexican immigrants, as this is the subgroup of Latinos with the worst oral health profiles. Of the 41 immigrant caregivers we interviewed, 29 were from Mexico. They had been in the U.S. a mean of nine years. The majority came from the states in western and central Mexico with a long history of sending migrants to the U.S.—states such as Michoacán, Jalisco, Zacatecas, and Guanajuato. Eleven interviewees were from Michoacán, five from Jalisco, and two each from Zacatecas and Guanajuato. Although western and central Mexico has long been linked to the Central Valley through migration networks, such networks were solidified during the Bracero Program of 1942-1964. During this period the US government legally imported 4.6 million Mexican laborers—mostly small landholders and peasants from rural Mexico--to work as temporary “guestworkers” in agriculture and the railroads. In short, migration networks from rural Mexico have long provided the supply of farm laborers to feed the demands of California agribusiness.

Indeed, our research suggests that a common migration route connects the rural Central Valley region and rural small towns in Mexico. The majority of interviewees responded that they had come to the Central Valley because of pre-existing social networks of family and friends, some of which dated to the Bracero Program. These pre-existing migration patterns may be only strengthened by immigrants' preferences; immigrants from rural Mexico stated that they selected rural U.S. towns over urban areas due to their perceived “dangerousness.” Only two interviewees from urban Mexico in our sample had attempted to settle first in urban areas in the U.S.—primarily in Los Angeles—but had found the city “too busy” and “too crowded.”

Our sample was predominantly from poor agricultural backgrounds. All but four of the Mexican caregivers we interviewed had spent their childhoods in small towns they described as “*ranchos*” or “*ranchitos*”—towns of 15,000 people or less. These immigrants typically had lived on a *milpa*, or a plot of land farmed by family members. Two of four caregivers raised in urban areas also had lived on a *milpa*, although they had family members who engaged in wage work to supplement their farm work. Only two caregivers who lived in small *ranchitos* had families that earned significant wages or owned stores to supplement their farm work. Thus all but four of our interviewees—two urban, and two rural--were raised in families in Mexico that subsisted almost entirely off of agriculture. Our sample,

then, provides a window onto the adaptation processes specific to poor rural Mexican immigrants adjusting to life in the U.S.

Placing Caregiver Experiences within a Binational Context

We discovered that our analysis of the causes of the high rates of oral disease among children of Mexican immigrants had to take into account Mexican caregivers' own oral health experiences and practices. Yet rather than assume that such caregivers had specific oral health profiles and experiences based upon epidemiological models, we eschewed generalizations in favor of careful analysis of immigrants' backgrounds. As David Phillips writes, "The rich and the poor, urban and rural dwellers and other subgroups of populations of many countries effectively live in different 'epidemiological worlds' (1991:XXX). Through in-depth interviews with caregivers, we strove to reconstruct these different "epidemiological worlds" of low-income immigrants from urban and rural Mexico. We then aimed to understand how these different "epidemiological worlds" in turn influenced caregivers' own oral health knowledge and practices.

We found a big difference in oral health experiences and knowledge of preventive oral hygiene practices between caregivers from rural and urban Mexico. Immigrant parents from rural areas had both less direct experience in seeing oral disease among children and much less exposure to oral health knowledge. In conducting interviews, the first author found that such caregivers often expressed surprise at the high rates of oral disease among U.S.-born Mexican American children. "I do think it's odd that kids' teeth go bad so early here," was a common refrain. One mother, Ana, from the small town of Capellania, Zacatecas, explained why she did not believe her U.S.-born three-year-old eldest daughter when she began complaining of pain in a molar: "Who ever heard of a cavity on a 3 year old?" She said. Although her daughter, now nine, has since had two molars extracted and three additional teeth filled, Ana said she herself had never experienced dental pain until ten years after arriving in the U.S. She reflected upon the decay her daughter has suffered: "I know that it's my fault for not brushing their teeth because when they were small I would say, 'no they are too small,' and now I know how important it is for them to brush twice a day." Ana said she did not begin brushing her teeth when she was about 10 due to embarrassment about having visibly "dirty teeth;" she had not been taught to do so in school. Unlike her daughter, who was diagnosed with cavities at the age of three, she herself had never visited a dentist.

Given Ana's depiction of an oral disease-free childhood, an examination of immigrant caregivers' very different experiences with oral disease in Mexico appeared in order. Of 29 caregivers, eleven reported having a first dental visit after the age of 10. Six, like Ana, had never seen a dentist in Mexico. The youngest reported age for a dental visit was 9. Only three caregivers—two from urban areas-- reported brushing their teeth before they were five. Rural caregivers also typically had fewer opportunities to buy toothbrushes and had less experience with formal dental care. One caregiver, Luisa, reported that she was only able to afford a toothbrush when she entered farm work in the fields in California. Having grown up in a small town in Guerrero an hour from Acapulco, Luisa developed dental pain at 11 and subsequently had four molars extracted. She explained that she likely developed such decay because her family was not able to afford toothpaste and a toothbrush when she was small: "Like I told my son, over there I never had a brush to brush my teeth. It was not easy to get one either until you were big enough to work to buy one," she said. Meanwhile, Ana reported that she began brushing her teeth after receiving a toothbrush at 10 as a novelty—a gift from her father returning to Zacatecas from his stint in California as a farm laborer. Despite this lack of both oral hygiene and professional dental care, many rural Mexican caregivers had developed resourceful methods of informal dental care. These included:

brushing with salt instead of toothpaste, brushing with burnt tortilla polish, and picking one's teeth with a sewing needle instead of with dental floss.

Although these rural caregivers' origins as small landholders and peasants may have mitigated against their ability to visit a dentist, only a few reported ever having suffered dental pain as a small child. One mother from the small town of El Platanal, Michoacán, said: "As a child I never had a cavity or pain in my mouth, but when I was about 18, I started getting molar pains and all of my molars began to go rotten." Another mother from the small town of Tiguamo, Jalisco said: "I think that when I was small I did not even know what a tooth brush was because we lived in a small ranch and there were nine of us. We were really poor, but I don't ever remember having a toothache." She bought her first toothbrush at 12, and had her first dental visit at 17. As this last example illustrates, most caregivers reported that due to their lack of early childhood caries, oral health was not a concern until they reached adolescence. Thus caregivers from rural Mexico had experienced childhoods that were relatively free of oral disease, and found themselves unprepared for the more marked oral hygiene requirements of life in the U.S.

In contrast, the three caregivers who had migrated from urban areas had more experience in both recognizing oral disease among children and understanding its etiology. For example, a mother from a small city in Michoacán reported that her nephew's teeth had turned "black" by the time he was three. Another, Raquel, recalled that in the *colonias* of the city of Colima, it was not uncommon to see small children with "black teeth" due to decay. She herself had a friend who had cavities "since I can remember," she said. Moreover, her own Mexico-born children had developed cavities in Mexico when they were small, unlike children who had accompanied caregivers from rural Mexico. She began brushing her Mexico-born children's teeth regularly at 1 ½, thanks to the advice given her at Colima's free clinic.

Urban caregivers also reported having begun brushing their own teeth earlier. Raquel had learned to brush when she was in kindergarten; she received a toothbrush in school as well. Bendita, a caregiver from the city of Opopeo, Michoacán, received a toothbrush and toothpaste each year from a public health campaign in a clinic near her home. She began brushing regularly well before she entered kindergarten. Thus urban caregivers had greater exposure both to early childhood caries and to preventive oral hygiene practices; such exposure better prepared them for the oral hygiene requirements of life in the U.S.

Mediating Factors: Diet

We have seen above that urban caregivers had greater access than rural caregivers to a health care infrastructure—whether free clinics or public health campaigns—that helped familiarize them with oral disease and preventive oral hygiene. Yet why, despite their lack of access to health care professionals, did rural caregivers still experience relatively little oral disease as children? Any understanding of the "Latino oral health paradox" first demands detailed analysis of the bio-cultural environment within which rural Mexican immigrant caregivers were raised. What specific bio-cultural factors mediated these three very different "epidemiological profiles"—that is, the difference in the incidence of oral disease and caregiver knowledge of it in rural and urban Mexico, and most strikingly, between rural Mexico and the U.S.?

In examining the sources of this difference in the oral health experiences of caregivers from rural and urban areas, we found that diet played a central role. Low-income caregivers from rural Mexico typically reported having had a diet low in cariogenic foods due both to food scarcity and to their livelihood on family farms. As children, caregivers in rural areas had lived on family farms where they grew subsistence crops including beans, corn, squash, and

rice; some also grew fruits such as grapes, mangos, guavas, apricots and watermelons. Although not all rural Mexican peasants could farm year-round due to lack of access to a consistent water supply, poverty generally restricted their diet to the basics. Most reported that their diets consisted largely of family crops supplemented by eggs and cheese. One mother, from rural Jalisco, explained that although processed foods such as candies, cookies, and chips certainly were available in the city an hour away from her family farm, her family lacked the transportation and money to buy them regularly. “Yes, they had those things there, but we never bought them. They were mainly for those with more money,” she said. Another mother, from rural Guerrero, said that scarcity had taught her to not even desire such luxuries: “I never even looked at them.”

Lupita, for example, grew up on a family farm in a *ranchito* of about 5,000 people in rural Michoacán. Her family grew rice, beans, garbanzos, and corn; they also raised chickens. She comments on the change in diet from her hometown to the U.S. “Back in Mexico, you just eat what you grow. Here, the kids eat a lot of *churros*, sweets, cookies, sodas—you buy them everything. But back there, you’re poorer, you can’t buy them all these things.” The shift in beverage consumption alone illustrates this. In Mexico, her family occasionally drank *aguas frescas* sweetened with a little sugar cane, not processed sugar. “There, soda is really expensive; you can barely afford one. I’d drink one soda every 8-10 days,” she said. Here, however, she said, soda has become a staple of farm worker households. In part, this is because her family can afford it, and in part this is because it is often the only beverage that is kept cold in the field.

There were two exceptions among rural caregivers in our sample—both who had alternative sources of subsistence. One was a woman whose family had also owned a store in rural Jalisco; because of her greater access to sweets, she reported having developed cavities on eight molars by the age of 13. Another, a caregiver raised outside the city of Culiacan, Sinaloa, was able to eat more treats as a child because both her parents worked outside the farm. She developed four decayed molars by the age of 9. Yet because of their diet low in cariogenic foods, caregivers whose families relied on agriculture for a living had little decay as children. Such rural caregivers were unprepared for the transition to a diet high in cariogenic foods in the U.S, and for the implications of this transition for their children’s oral health.

Meanwhile, low-income caregivers from urban areas generally had greater access to refined and processed foods through their wage labor. In contrast to the diet of those from rural areas, caregivers from urban areas had a greater intake of sugary breads, cookies, and snacks. Raquel, who grew up in the city of Colima, said her diet consisted of staples such as tortillas, corn, beans, and rice, but supplemented by additional store-bought items such as *bolillos* (sweet rolls), honey, and occasionally cookies. Although her single mother earned very little money doing laundry for others, she was able to purchase such goods at discount stores in the urban slums. Even those caregivers who grew up on family farms incorporated into urban areas had greater access to refined and processed foods. Bendita, for example, grew up on a family plot of land on the outskirts of Opopeo, Michoacán, where they grew corn, squash, green beans, peaches, plums, and *chayote*. Yet her father was a carpenter, and she also was able to enjoy more store-bought food than many of her rural peers—such as candy and the occasional soda. As a result, caregivers born in urban areas tended to have greater familiarity with the oral health implications of a processed diet and to be more sensitized to decay in their children.

Mediating Factors: The Transition from Breastfeeding to Bottlefeeding

Secondly, changes in infant feeding practices for both rural and urban-born caregivers played a great role in the increased incidence of oral disease among US-born Mexican

American children. Caregivers reported that breastfeeding was more common than bottle-feeding in both rural and urban areas when they were children. Of 15 women whom we interviewed on this topic, 14 were themselves breastfed for at least their first year; four were breastfed up until the age of at least 3. Only one woman, whose mother worked in a store in the adjoining city of Culiacan, Sinaloa, reported having been breastfed for less than a full year. Yet upon arrival in the U.S., immigrant mothers generally took up bottle-feeding partly because of their entry into work and partly because of their desire to be “modern” mothers.

Immigrant mothers said that the popularity of breastfeeding in both rural and urban Mexico was due to the perceived health benefits for children, poverty, and the high cost of infant formula. Norma, from El Platanal, Michoacán, reported on the common medical wisdom at work when she breastfed her two eldest daughters: “In Mexico the doctors would tell us that breastfeeding a child was like giving them their first vaccinations and that breastfed children had better defenses than bottle-fed children,” she said. Breastfeeding was such a normative form of infant feeding that Ana, from rural Zacatecas, answered the question of whether she was breastfed in this way: “I’m sure I was because what other way could it have been?” Economic considerations also made bottlefeeding with formula prohibitive for women in Mexico. Women reported that infant formula typically cost the equivalent of between \$15 and \$18 a month; a sum that low-income rural and urban dwellers could hardly afford. One urban mother whose children “would not breastfeed” reported that she spent \$18 each month out of her husband’s construction salary of \$50 to buy one can of powdered infant formula.

Upon arriving in the U.S., however, the majority of immigrant caregivers who themselves had been breastfed as children—rural and urban—chose to bottlefeed their children. Of 21 women, six had bottle-fed their focal child exclusively. Only one had breast fed her focal child exclusively; only one did so longer for six months. The most common pattern—followed by 11 of the 21 women—was to breastfeed for four months or less after birth and then switch to exclusive bottle-feeding once re-entering work. Women reported that their decisions to bottlefeed were shaped in part by a desire to be “working women,” and a perceived conflict between hard physical labor and breastfeeding. Their decisions were also conditioned by practicalities such as the economic need to earn money and the availability of discounted formula through WIC.

For some immigrant mothers, breastfeeding became a diacritical marker of a “traditional” Mexican woman, opposed to the less healthy “Americanized” practice of bottle-feeding. Norma, for example, explained that although she breastfed her first two children in Mexico, her third “refused the breast.” Norma tried everything she could to get her milk flowing, including eating *atole* (a drink made from corn), oatmeal, and milk—all foods said to produce milk. She spoke pejoratively of mothers who had stopped breastfeeding to work in the fields; they were just following trends, she said: “They are not doing them any good by doing that. They are just harming them with out thinking.” Similarly, many other women also reported that they believed that breastfeeding was a healthier practice, and that their husbands, mothers, and mother-in-laws back in Mexico had encouraged them to try to breastfeed. “If I could have breastfed, I would have, but I had to go back to work,” said one.

Immigrant mothers reported that they decided to bottlefeed their U.S.-born infants so that they could leave them with a babysitter and perform farm work to help their families. Given that farm work is seasonal and pays minimum wage, and that farm working families must have more than one wage earner to survive, economic considerations understandably dominated women’s decisions. Such decisions were further guided by a perceived division between hard physical labor and motherhood. As a mother from Michoacán put it: “That’s why I bottle-feed—so that when I take them to the sitter they will be able to eat and they won’t cry and struggle.” Thus those eleven women who did breastfeed their children for a

few months before returning to work struck an uneasy balance between being “modern” working women and “traditional” mothers.

A number of cultural assumptions regarding the incompatibility of breastfeeding and hard physical labor established a dichotomy between the work of a “modern” woman and “traditional” breastfeeding practices. Farm labor was perceived as dichotomous with breastfeeding due to mothers’ need to drink milk to replenish their milk supply and due to concerns that the heat of physical labor outdoors could “spoil” women’s milk. Women reported the belief that physical labor—and especially hard physical labor outdoors under the sun—would “heat” their milk and cause digestive problems among their nursing children. One said, “Like anything that’s hot, the heat of your body when you work heats the milk and causes harm to your child.” Another reported that her mother constantly worried on the phone that her daughter would breastfeed her child after returning from the fields, thus causing colic. This belief is most likely due to the hot-cold theory of disease, in which hot substances may harm small children, who are viewed as unformed and thus “cold.” Only one woman reported that she breastfed one of her four children while conducting farm work; she did so only by expressing the “hot” milk in her breasts before leaving the field to return home. Notably, although we found that all but one immigrant mother placed some stock in this belief, none of our U.S.-born sample did.

Second to the need to perform farmwork, women reported that they opted to bottlefeed due to their concern that strong emotions—such as grief, anger, or fright—might spoil their breastmilk. This explanation reiterates the notion of the interconnectedness of mother and child, suggesting that a mother’s strong emotions can affect the quality of breastmilk and cause digestive problems for infants. One caregiver from a small town in Sinaloa, for example, reported that she stopped breastfeeding her two-month-old because the death of her sister-in-law provoked such grief in her that it could “spoil her breastmilk.” Ana, from Zacatecas, said: “Like in Mexico, they say that if you get mad (*si le pasan corajes*) or upset, that hurts the baby, so rather than worry about all that I thought I’d just give them the bottle.” As a study on women who bottlefed in Bangladesh suggested (Zeitlyn & Rowshan 1997: 65), such statements must be viewed in a context in which women’s behavior and emotions are held responsible for the quality of their breastmilk and, ultimately, their children’s health. In a context in which women are held responsible for their breastfeeding infants’ illnesses, women’s decisions to bottlefeed are a means of absolving women from blame and externalizing the responsibility to the bottle.

Most importantly, since immigrant mothers were almost exclusively first-generation bottlefeeders, many were unprepared for the health implications of their children’s bottle use. Angélica, the mother raised in rural Jalisco whose U.S.-born son had developed cavities at 2 ½ years of age, was shocked to discover that her placing Gatorade in his baby bottle may have been partly to blame. Similarly, Leticia from a small town in Michoacán had begun bottle-feeding her daughter milk and juice at 3 months so that she could return to farm work. When her daughter’s front teeth began “breaking apart” when she was 1. ½ years of age, Leticia’s friends convinced her to stop bottlefeeding, yet she says she is still confused about why her daughter’s teeth “went bad.” In contrast, urban caregivers—in part due to their greater access to health professionals in Mexico—reported greater familiarity with the oral health implications of bottle-feeding. Raquel, from Colima, for example, had to bottle-feed her two Mexico-born children because they “would not breastfeed.” Yet Raquel made sure to never bottle-feed her children at night, and to wean them early. Staff at Colima’s free clinic had warned her of the oral health implications of prolonged bottle-feeding.

Thus immigrants from rural Mexico were less prepared than those from urban Mexico for the oral health implications of the bio-cultural transition they made to life in the U.S. Immigrants from rural Mexico underwent a transition from environments in which diets were relatively uncariogenic--and bottlefeeding was rare --to an environment in which processed foods were abundant and bottlefeeding was the norm. Although rural immigrants may have abandoned many their healthier lifestyles in Mexico, their knowledge of preventive oral health practices had not changed so quickly. Despite the fact that both rural and urban caregivers had experienced a transition from breastfeeding to bottle-feeding, urban caregivers had greater access to health professionals in Mexico and thus greater knowledge of its oral health implications. The description of the specificity of this transition—and its different impact on immigrants from rural and urban environments—helps shed light on the concrete factors that may shape a “Latino oral health paradox.”

Rethinking the Rural/Urban Dichotomy

Thus far we have reconstructed the diverse “epidemiological worlds” of rural and urban Mexican immigrant caregivers to discern how they have implications for their children’s oral health. Although the rural/urban dichotomy had particular salience at the time our interviewees were children in Mexico, contemporary realities have lessened the sharp distinctions between the two. First, caregivers’ backgrounds can only crudely be divided into a dominant rural-urban dichotomy due to the urbanization that has transformed Mexico over the past century. This has led to the incorporation of rural farming areas into urban cities and the massive flow of rural dwellers to urban slums (Martinez and Leal 2003). Thus even in urban areas with urban health care infrastructures, migrants may continue semi-rural lifestyles. Two of our four urban caregivers had been raised on family farms on the outskirts of sprawling urban areas, and thus relied on farm produce to supplement their diets. Yet they also had greater access to public health campaigns and free clinics. As Nestor Garcia-Canclini (1995) might put it, such cases speak to the “hybridity” of the life circumstances of Mexico’s population; “traditional” lifestyles and health behaviors may continue, yet amidst a “modern” health care infrastructure.

Even as some urban dwellers themselves followed “traditional” lifestyles, the “traditional” lifestyles of many rural dwellers have also been profoundly altered. The narratives of rural caregivers reported here document their memories of their childhoods in the 1970s and 1980s. Yet those who had recently returned to their hometowns often remarked on the lasting imprint their own migration had left on the area. After returning in 2002 from a trip to rural Michoacán, one caregiver remarked on the “*nortenzacion*” of her village’s diet. “Here they eat cereal, ‘Cup-o-Soups,’ pizzas, and things like that... Before when I lived over there they did not have things like that... Yes, now they even sell hamburgers and a lot of things...” Meanwhile, a caregiver from Guerrero reported that her sister in Mexico startled her own mother by introducing her children to chocolate milk drunk from a Sippy cup; her sister was able to afford such indulgences with the money this caregiver herself sent home. Thus bottle-feeding is becoming more common in rural parts of Mexico, a “social remittance” encouraged by return migrants from the U.S.

In short, migration is changing not only immigrants’ behaviors as they adapt to the U.S., but also their sisters’ and mothers’ behaviors back in Mexico (see Hirsch 2003). Migration and return migration expose even non-migrants to new practices and forms (Levitt 1998), unsettling the static oppositions that epidemiological models often presume between “traditional” and “modern” health behaviors and disease profiles. Remote parts of rural Mexico are now undergoing a greater incidence of early childhood caries (Cook et al. 2008), as caregivers there undergo a bio-cultural transition not dissimilar to that of their counterparts in the U.S. This change in health behaviors and disease profiles among both migrants and non-migrants reveals the need for research to attend carefully to the flow of

cultural practices in the transnational circuit connecting *both* sending and receiving countries. Attention to the rural-urban dichotomy must be complemented by attention to the production of health as a *process* in a country itself in constant flux.

Conclusion

By integrating an understanding of immigrant caregivers' oral health experiences and practices in Mexico into an understanding of their beliefs and behaviors regarding their U.S.-born children's oral health, this analysis helps shed light on the high rates of ECC among children of Latino immigrants. We have shown that the greater incidence of oral disease among U.S.-born Mexican American children relative to their immigrant parents is due to their parents' rapid transition to "American" dietary and feeding behaviors without a correspondingly rapid adoption of preventive oral health behaviors. This transition was particularly acute for rural caregivers, who faced a greater change in diet despite less knowledge of its oral health implications. Binational analysis can illuminate both which groups of immigrants may be most susceptible to a "Latino health paradox" as well as what specific factors may mediate the health decline of successive generations. Rural Mexican immigrant parents' rapid transitions to an American lifestyle also help illuminate the other health implications of this bio-cultural transition, including the higher incidence of diabetes and obesity among Latinos in the U.S.

Static epidemiological models cannot predict the specificity of such transitions nor how they are differently experienced by poor migrants from rural and urban areas. Careful analysis of intra-group variations helps complicate epidemiological models, which tend to instead focus solely on inter-country differences. Attention to the different experiences of subpopulations within sending countries can also better guide health planning for such immigrant groups in the U.S. In short, U.S. public health officials in areas with high proportions of rural Mexican migrants should develop preventive education programs targeted at increasing caregivers' awareness of the consequences of the pronounced bio-cultural transition they face. Applied and practicing anthropologists can play an important role in helping alert public health officials to the varied health profiles of subgroups of immigrant populations, and in helping to design effective health education programs. Indeed, health educators themselves need to be educated about the role of this transition in the incidence of oral disease for immigrants' children, so that they do not explain away oral disease as simply being due to "caregiver irresponsibility."

We have pointed out the relatively distinct oral health experiences of caregivers from rural and urban Mexico as serving an important role in forming their different oral health behaviors and knowledge. Yet we do not mean to substitute a new, more ethnographically-attuned model emphasizing a rural-urban dichotomy in lieu of epidemiological models such as the "Latino health paradox" and the "epidemiological transition." As we have seen, migration and return migration have dramatically altered the rural Mexico of many caregivers' childhoods, as even non-migrants are exposed to new cultural practices and forms. In short, in a world in which rural-urban dichotomies are unsettled by the constant flow of people and goods, the "epidemiological worlds" of dwellers in urban and rural Mexico are indeed constantly in flux. Fine-grained ethnographic attention to the specific form this change takes in each location is imperative, as we broaden our focus to include a bi-national perspective on the particular health behaviors and disease profiles that shape immigrant families' health.

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