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Anticipatory Guidance about Child Diet and Physical Activity for Latino Farmworker Mothers

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Abstract

Background—This analysis describes farmworker child health care utilization, anticipatory guidance for child weight, and the association of anticipatory guidance with personal characteristics, practice characteristics, and child's health care utilization.

Methods—Data are from interviews conducted with 221 North Carolina Latino farmworker mothers with a child aged 4–5 years.

Results—Half of the children were healthy weight, 19.0% were overweight, and 28.5% were obese. Most (56.4%) had been with the usual practice for two years or longer; most had well-child visits less frequently than once per year (71.5%). Fewer children with well-child visits than without were obese (14.8% vs. 35.5%; $p=.01$). More children with obesity than with healthy weight or overweight received guidance messages; more children without a well-child care visit in the past 12 months received guidance messages.

Conclusions—Health care providers are addressing anticipatory guidance when the opportunity arises. Creative approaches to address disparate primary care for farmworker families are important.

Keywords

Immigrant health; rural health; health services; obesity; farmworkers

Farmworkers are a vulnerable population in the United States (U.S.) with limited access to health care.^{1,2} Most are Latino, have low educational attainment and low incomes, and many are undocumented.³ They seldom have health insurance,¹ and those who are undocumented are not able to obtain health insurance through the Affordable Care Act. Farmworkers often live in low-quality housing in rural neighborhoods with few services.^{4,5} Although many children in farmworker families are born in the U.S., due to their lack of resources and lack of documentation, farmworkers often do not avail themselves of health services for their children.²

Little is known about health care utilization for children in farmworker families. Data are limited to a few studies conducted on diverse topics in scattered locations around the country since 2000. They indicate that health care utilization for these children is limited, with utilization affected by lack of health insurance, transportation, parental documentation, and clinic characteristics (having interpreters).^{1,2,6,8}

Latino children have high rates of overweight and obesity,^{9,10} and Latino farmworker children are no exception.^{11,12} Rosado et al.¹¹ report that of 472 pre-school and elementary school-aged children (mean age of 6.4 years, SD=3.2) in Florida farmworker families, 27.0% are obese and 20.1% are overweight. They argue that health care providers setting goals is important to reduce overweight and obesity. Nichols et al.¹² report that, of 2–5 year old children in farmworker families, 10.2% are overweight and 18.2% are obese; of children 6 to 11 years, 21.2% are overweight and 29.4% are obese, and of children 12 to 19 years, 16.8% are overweight and 31.6% are obese. Obesity is greater among farmworker children compared with all children and Mexican American children participating in NHANES.¹²

The mainstay of primary-care based prevention and health promotion is anticipatory guidance, a key component of well-child visits.¹³ The American Academy of Pediatrics (AAP), via their national health care initiative *Bright Futures*, outlines how anticipatory guidance can help parents and children to focus on sound nutrition, physical activity, and achieving a healthy weight.¹⁴ Prevention of obesity and its associated cardiometabolic risks are two of the five anticipatory guidance priority areas endorsed by *Bright Futures*,¹⁵ and anticipatory guidance is a component of expert recommendations for the prevention and treatment of pediatric obesity.^{16,17} Interventions with parents alone, particularly focused on parenting skills, are increasingly recognized as an important strategy to prevent the development of obesity.^{18–20} Anticipatory guidance is one approach to addressing overweight and obesity among Latino farmworker children.²¹ However, research on anticipatory guidance for Latino farmworker children is limited.²²

This analysis has three objectives. The first is to describe the access and utilization of child health care by Latino farmworker mothers. The second is to describe the level and types of anticipatory guidance related to child weight that these mothers recall receiving. The final objective is to consider whether receiving anticipatory guidance related to child weight is associated with the child's or mother's personal characteristics, the characteristics of the usual practice at which the child receives care, and the child's pattern of health care utilization.

Methods

Data for this analysis are from *Niños Sanos*, a study of children in farmworker families designed to delineate the children's dietary and physical activity patterns over two years, and identify the individual, familial, and community factors associated with overweight and obesity. The Wake Forest School of Medicine Institutional Review Board approved the study protocol. The study obtained a Certificate of Confidentiality from the National Institutes of Health.

Sample recruitment and data collection

Participants were women in farmworker families with a child between 2.5 and 3.5 years of age at recruitment. A farmworker family was defined as having at least one adult member employed as a migrant or seasonal farmworker during the previous 12 months. No sampling frame of Latino farmworker families exists; therefore, a multi-pronged, site-based sample design^{23,24} was used to recruit farmworker families. This sample design is appropriate for what are often called *hard-to-reach* populations.²⁵ Sites were organizations or locations with which members of the target community are associated. Some families are associated with multiple sites. Site categories (and number of sites targeted within categories) in this study were: Head Start and Migrant Head Start Programs (7); migrant education programs (15); community health centers (4); Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (1); community partner non-profit organizations serving Latino immigrants (2); and stores, churches, and events predominantly serving farmworkers (7). In addition, door-to-door recruiting was undertaken in Latino neighborhoods and farmworker camps. Community interviewers contacted families from previous Latino health studies and from personal networks.

Native Spanish-speaking community interviewers contacted participants. The trained interviewers explained the study, including its requirements and incentives, screened for inclusion criterion, and asked the family to participate. Those who agreed provided signed informed consent, completed enrollment, and initiated the baseline data collection. A total of 248 participants (mother-child dyads) were recruited from April 2011 through April 2012. Participants completed up to nine interviews at quarterly intervals over two years.

The children's height and weight were measured with portable stadiometers and digital scales at each interview. Interviews were completed in the participants' homes or other locations determined by the participants. All interviews were completed in Spanish. Participants received \$10 for completing each interview. The anticipatory guidance questions were included in the final interview, with 221 women completing these questions from period April 2013 through April 2014.

We could not obtain precise figures to calculate refusal or participation rates due to the multi-pronged nature of the site-based sampling, organizations compiling lists of potential participants, as well as study staff conducting direct recruiting at sites. It was not possible to know if those refusing to release information were eligible. Organizations may have compiled incomplete lists from their participants, and potential participants could easily have avoided contact at events.

Measures

Mother personal characteristics at recruitment were age in the categories 18 to 25 years, 26 to 35 years, and 36 to 45 years; education in the categories zero to six years, seven to nine years, and 10 or more years; marital status with the values married/living as married or not married; employed with the values employment or not employed; years in the U.S. in the categories fewer than five, five to nine, and 10 or more; any adult in household with documents with the values of anyone or no one; and number of residential moves in the past three months with the values none or any. Child personal characteristics were gender; age with the values 4 years or 5 years; and weight status with the values of underweight (BMI-for-age < 5th percentile), healthy weight (BMI-for-age 5th to <85th percentile), overweight (BMI-for-age 85th to <95th percentile), and obese (BMI-for-age 95th percentile or greater).²⁶

Characteristics of the usual practice at which the child received care were practice type with the values private practice, federally qualified health center (FQHC), and county health department; location of practice with the values North Carolina, other state, and Mexico; and interpreter available at practice in the categories never, sometimes, often or frequently; almost always; and always or provider speaks my language. Health care utilization for child included duration with usual practice in the categories of fewer than six months, six to fewer than 12 months, 1 year to younger than 2 years, and 2 years or older; last child health care visit in the categories in past month, one to less than three months ago, three to less than six months ago, and six months ago or longer; and frequency of well-child care in the categories in last 12 months versus less than once per year, never get well-child care, or only take child when sick.

Anticipatory guidance measures were adapted from Shaikh et al.²⁷ These measures included recalling if the health care provider discussed child's weight; food related issues of what the mother should feed her child, feeding children fruits and vegetables, limiting outside food from restaurants, eating breakfast, having family meals together, and not serving soda and sweetened beverages; and activity related issues of time watching television and videos, playing video games or using computer, and amount of physical activity or exercise. A total food guidance measure was based on the total number of food-related issues the mother recalled (0–6); a total activity guidance measure was based on the total number of activity related issues the mother recalled (0–3).

Analysis

Counts and percentages are reported for all personal characteristics, health care utilization, and anticipatory guidance measures. Chi-square tests were performed to test for associations between individual anticipatory guidance measures and mother, child, health care utilization, and practice characteristics. One-way analyses of variance (ANOVAs) were conducted to measure the association between variables that showed at least marginal bivariate association ($p < .10$) with at least one individual anticipatory guidance measure (child weight status, duration with the same provider, and well-child visit in the past 12 months) and total food and activity guidance measures. Multivariate linear regression models were constructed using these three variables to predict total food and activity guidance, controlling for mother's age, mother's education, and the availability of an interpreter. Underweight

children were removed from the multivariate models due to a low sample size ($n=7$). All analyses were performed using SAS version 9.4 (SAS Institute Inc., Cary, N.C.).

Results

Mother and child personal characteristics

Characteristics of the mothers and children are presented in Table 1. A small number of families had any adult in the family with documentation to be in the U.S. (14.5%), and the residential stability of the families, with 9.0% having changed residence in the past year. About half (49.3%) of the children were of normal weight, with 19.0% overweight, and 28.5% obese.

Practice characteristics and child health care utilization

Private practices (49.5%) were the most common type of practice at which these children usually received care, with one-third receiving care at FQHCs, and 17.5% at health departments (Table 2). Almost all (93.4%) of the practices were located in North Carolina. Most (79.5%) always had an interpreter or provider who spoke the mother's language. Most of the children had been with the usual practice for two years or longer (56.4%), with an additional 12.7% being with the usual practice for more than one year. About one-quarter (23.5%) had had their last health care visits 6 or more months ago. A little more than one-quarter (28.5%) had a well-child visit in the last 12 months. Most (71.5%) never received well-child care, only received care when sick, or received well-child care less than once per year.

Child weight status was associated with well-child care ($p=.01$). Of those children who had a well-child care visit in the past year, 39 (63.9%) were healthy weight, 13 (21.3%) overweight, and nine (14.8%) obese. Of those children who had not had well-child care visit in the past year, 70 (45.8%) were healthy weight, 29 (18.9%) overweight, and 54 (35.3%) obese.

Anticipatory guidance—Almost all (98.2%) the mothers recalled the health care provider discussing their children's weight at the last health care visit (Table 3); and 52.3% were told their children's weight was fine for age. Many reported receiving some form of food-related anticipatory guidance; for example, 42.1% received guidance on feeding her child, 46.6% on her child eating fruits and vegetables, and 41.3% on the amount of sugar-sweetened beverages her child drinks. Fewer reported receiving guidance about their child's physical activity; for example, 24.7% received guidance on the time her child watches television and videos, and 30.1% on her child's physical activity or exercise.

Associations with anticipatory guidance—Child's gender or age, mother's age or education, practice type, and last child health care visit did not have significant bivariate associations with any of the specific anticipatory guidance measures. More of the mothers with obese children compared with those with children with a healthy weight or overweight recalled the health care provider speaking about specific food and activity guidance topics (Table 4). Those who had been with the same provider for two years or longer were less

likely to recall their provider discussing outside food, family meals, or video game and computer time, while those with the provider for six months or less were more likely to recall receiving this information. More of those who had not received well-child care in the past 12 months recalled the health care provider speaking about specific food and activity guidance topics.

Total food and activity guidance were significantly associated with child weight, such that the mean number of food and activity guidance messages was greater for children with obesity compared with those with healthy weight or overweight (Table 5). Total food and activity guidance messages were also significantly associated with well-child visits, such that the mean number of food and activity guidance messages was greater for children not having a well-child visit in the past 12 months. The mothers of children with no well-child visit in the past 12 months recall receiving a mean of 2.41 food guidance messages and 0.57 activity guidance messages; the mothers of children with a well-child visit in the past 12 months recall receiving a mean of 1.32 food and 0.22 activity guidance messages.

In a multivariate model (Table 6), weight status remained associated with total food guidance and total activity guidance. Children with obesity received 1.25 more food guidance messages and 0.58 more activity guidance messages than did children with healthy weight. Children with overweight did not differ from children with healthy weight. Duration of less than one year with the usual practice was associated with mothers reporting that they received 0.97 more food guidance messages, but was not associated with receiving activity guidance messages. Well-child visits remained associated with total food guidance, but not total activity guidance. Children with a well-child visit in the last 12 months received 0.85 fewer food guidance messages than those not having had a well-child visit. Mothers aged 26 to 35 years reported receiving 1.12 fewer food guidance messages than mothers 18 to 25 years old; otherwise, mother's age was not associated with the number of food guidance or activity guidance messages reported. Mothers with zero to six years and seven to nine years of education reported receiving 0.77 and 0.94, respectively, more food guidance messages than those with 10 or more years of education. Mothers with seven to nine years of education reported receiving 0.27 more activity guidance messages. Having an interpreter available or having a provider who spoke the mother's language was associated with mothers reporting they received 0.85 more food guidance and 0.35 activity guidance messages.

Discussion

Overall access to health care appears good for these children in farmworker families. Most mothers identified a usual health care provider for their children, with about half of these providers in private practice. Over half had been with the same practice for two or more years, but one-in-five had been with the practice for less than six months. Eight-in-ten reported that an interpreter was always available or their provider spoke her language; only 10% reported that an interpreter was never available. Most had taken their children to their providers in the last six months. However, almost two-thirds (65%) never got well-child care for children or only took their children for care when they were sick. This pattern differs from that described by Seid et al.⁶ who reported that over half the children in farmworker

families residing along the U.S.-Mexico border received their health care in Mexico; this difference is an artifact of the of proximity to Mexico. This pattern reflects results reported by Gentry et al.⁸ for children in North Carolina farmworker families who received care at consistent health care facilities, had an age-appropriate last visit, and were satisfied with the care received, but who reported not having a consistent health care provider and not having visits with recommended frequency. Unlike earlier studies,⁷ most mothers reported having had interpreters or providers who spoke their language. Parents struggle to take children to well-child care when many (61%) of these mothers work, but do not have paid sick leave (6.8%) or health insurance (7.6%);²⁸ few have spouses with paid sick leave or health insurance.¹

Similar to other farmworker populations in Florida,¹¹ about 30% of these children in farmworker families were obese and about 20% were overweight. Nichols et al.¹² report somewhat lower rates of obesity and overweight among children in Georgia farmworker families. However, as Nichols and colleagues point out, the level of obesity is greater among farmworker children compared with all children and Mexican American children participating in NHANES, which is worrisome as Mexican American children have some of the highest rates of childhood obesity⁹ and severe childhood obesity.²⁹

Almost all participants remembered having a provider discuss their children's weight at the children's last health care visit. Almost half recalled specific food guidance messages, and almost a third recalled specific physical activity message presented by their health care provider. This is consistent with results reported by Shaikh et al.³⁰ for seven rural California clinics, and with research using Medical Expenditures Panel Survey (MEPS) data showing that Latino children are more likely than non-Hispanic white children to receive diet and exercise counseling, regardless of insurance status.³¹ Many more mothers with obese children remember their provider giving guidance on weight, diet, and physical activity. Those who did not get well-child care for their children or who had been with their provider for a shorter period remembered their provider giving guidance on diet, and physical activity. We found no other reports of variation in receipt of anticipatory guidance among Latino or farmworker mothers with which to compare these results.

These mothers receive anticipatory guidance messages, particularly when delivered by a consistent doctor over periods of time, as it should be.²² Addressing issues of disparate primary care for farmworker families is important. In this study, having bilingual or Spanish-speaking care providers may have contributed to this impact. With shortage of providers in these areas, utilizing other means to deliver anticipatory guidance messages such as lay health advisors (*promotoras de salud*) should be explored.^{24,32-35} Kilanowski²² found that Latina farmworker mothers preferred visual support for diet and weight-related anticipatory guidance, such as comic book-style handouts, games, food replicas, and digital videos. Quandt et al.³³ suggest that efforts to improve child nutrition should attend to the overall nutritional strategy of the family, including the underlying contextual factors (beliefs, experiences), environmental factors (conditions of farmworker life), and resource limitations. In underserved areas with impoverished families, focus may be on immediate, acute issues (immunization completion, asthma), and safety topics (lead), and not on longer term issues. This study supports the efficacy and importance of anticipatory guidance and

prevention of obesity in farmworker families, and of continuity of care within a primary care setting. Engagement of lay health advisors may help address these issues in underserved areas.

The results of this analysis should be assessed in light of the study's limitations. Although a representative sample was recruited, participants were not randomly selected. The participant recruitment procedures do not allow the calculation of response rates. Participants were all resident of a single state at the time they were recruited. Generalizations should be made with caution. Caution should be taken in making causal inferences as the data used in this analysis are cross-sectional. Recall accuracy and bias, particularly for questions about issues generally believed to reflect good parenting, may affect the results. However, the questionnaire items used to construct measures of anticipatory guidance were adapted from an existing instrument,²⁷ and the consistent differences between mothers of children with obesity versus mothers of children with healthy weight and overweight indicates that recall bias could not account for the results.

Anticipatory guidance is one approach to addressing overweight and obesity among Latino farmworker children.^{19,21} Research on anticipatory guidance for Latino farmworker children is limited;²² however, this study shows that even in the face of limited well-child care, many of the mothers report receiving some anticipatory guidance messages from their health care providers. Mothers of children who do not receive regular well-child care and who have children with obesity are more likely to recall receiving anticipatory guidance, indicating that health care providers are addressing these issues when the opportunity arises. The results of this study support the provision of consistent anticipatory guidance in farmworker children; health departments, hospitals, community-care clinics and policy makers should focus on integrated systems that provide such preventive care, and support primary care physicians' intentions to deliver such care. Lay health advisors and other innovative care delivery mechanisms may provide an approach to expand the delivery of anticipatory guidance.

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References

1. Arcury TA, Quandt SA. Delivery of health services to migrant and seasonal farmworkers. *Annu Rev Public Health*. 2007; 28:345–363. [PubMed: 17291182]
2. Quandt, SA. Health of children and women in the farmworker community in the eastern United States. In: Arcury, TA.; Quandt, SA., editors. *Latino Farmworkers in the Eastern United States: Health, Safety, and Justice*. New York: Springer; 2009. p. 173-200.
3. Carroll, D.; Samardick, RM.; Bernard, S.; Gabbard, S.; Hernandez, T. A demographic and employment profile of United States farm workers. Washington, DC: U.S. Department of Labor, Office of the Assistant Secretary for Policy, Office of Programmatic Policy; 2005. Findings from the National Agricultural Workers Survey (NAWS) 2001–2002. Research Report No. 9
4. Vallejos, QM.; Quandt, SA.; Arcury, TA. The condition of farmworker housing in the eastern United States. In: Arcury, TA.; Quandt, SA., editors. *Latino Farmworkers in the Eastern United States: Health, Safety, and Justice*. New York: Springer; 2009. p. 37-69.

5. Arcury TA, Trejo G, Suerken CK, Grzywacz JG, Ip EH, Quandt SA. Housing and neighborhood characteristics and Latino Farmworker family well-being. *J Immigr Minor Health*. 2014 in press.
6. Seid M, Castañeda D, Mize R, Zivkovic M, Varni JW. Crossing the border for health care: access and primary care characteristics for young children of Latino farm workers along the U.S.-Mexico border. *Ambul Pediatr*. 2003; 3(3):121–130. [PubMed: 12708888]
7. Weathers A, Minkovitz C, O'Campo P, Diener-West M. Access to care for children of migratory agricultural workers: factors associated with unmet need for medical care. *Pediatrics*. 2004; 113(4):e276–282. [PubMed: 15060253]
8. Gentry K, Quandt SA, Davis SW, Grzywacz JG, Hiott AE, Arcury TA. Child healthcare in two farmworker populations. *J Community Health*. 2007; 32:419–431. [PubMed: 17940873]
9. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA*. 2014; 311(8):806–814. [PubMed: 24570244]
10. Kumanyika SK, Grier S. Targeting interventions for ethnic minority and low-income populations. *Future Child*. 2006; 16(1):187–207. [PubMed: 16532664]
11. Rosado JI, Johnson SB, McGinnity KA, Cuevas JP. Obesity among Latino children within a migrant farmworker community. *Am J Prev Med*. 2013; 44(3 Suppl 3):s274–281. [PubMed: 23415193]
12. Nichols M, Stein AD, Wold JL. Health status of children of migrant farm workers: Farm Worker Family Health Program, Moultrie, Georgia. *Am J Public Health*. 2014; 104(2):365–370. [PubMed: 24328649]
13. Hagan, JF.; Duncan, PM. Maximizing children's health: screening, anticipatory guidance, and counseling. In: Kleignman, RM.; Stanton, BF.; St Geme, JW.; Schor, NF.; Behrman, RE., editors. *Nelson Textbook of Pediatrics*. 19. New York: Elsevier; 2011. p. 13-25.
14. American Academy of Pediatrics [Internet]. Elk Grove Village: Bright Futures. Prevention and health promotion for infants, children, adolescents, and their families. [cited 2014 Dec 09]. Available from: <http://brightfutures.aap.org/materials.html> Accessed
15. Bass, J.; Strasburger, VC.; Cook, S.; Schwartz, RP.; Best, D.; Hassink, S., et al. *Performing Preventive Services: A bright futures handbook*. American Academy of Pediatrics; 2010. Anticipatory Guidance.
16. Davis MM, Gance-Cleveland B, Hassink S, Johnson R, Paradis G, Resnicow K. Recommendations for prevention of childhood obesity. *Pediatrics*. 2007; 120(Suppl 4):s229–s253. [PubMed: 18055653]
17. Spear BA, Barlow SE, Ervin C, et al. Recommendations for treatment of child and adolescent overweight and obesity. *Pediatrics*. 2007; 120:s254–s288. [PubMed: 18055654]
18. Barkin SL, Gesell SB, Po'e EK, Escarfuller J, Tempesti T. Culturally tailored, family-centered, behavioral obesity intervention for Latino-American preschool-aged children. *Pediatrics*. 2012; 130(3):445–456. [PubMed: 22869834]
19. Brotman LM, Dawson-McClure S, Huang K, et al. Early childhood family intervention and long-term obesity prevention among high-risk minority youth. *Pediatrics*. 2012; 129:1–8. [PubMed: 22184641]
20. Gerards SMPL, Sleddens EFC, Dagnelie PC, De Vries NK, Kremers SPJ. Interventions addressing general parenting to prevent or treat childhood obesity. *Int J Pediatr Obes*. 2011; 6(2):e28–e45. [PubMed: 21657977]
21. Barkin SL, Finch SA, Ip EH, et al. Is office-based counseling about media use, timeouts, and firearm storage effective? Results from a cluster-randomized, controlled trial. *Pediatrics*. 2008; 122(1):e15–25. [PubMed: 18595960]
22. Kilanowski JF. Anticipatory guidance preferences of Latina migrant farmworker mothers. *J Pediatr Health Care*. 2013; 27(3):164–171. [PubMed: 23611456]
23. Arcury TA, Quandt SA. Participant recruitment for qualitative research: a site-based approach to community research in complex societies. *Hum Organ*. 1999; 58:128–133.
24. Quandt SA, Grzywacz JG, Talton JW, et al. Evaluating the effectiveness of a lay health promoter-led, community-based participatory pesticide safety intervention with farmworker families. *Health Promot Pract*. 2013; 14(3):425–432. [PubMed: 23075501]

25. Parrado EA, McQuiston C, Flippen CA. Participatory survey research integrating community collaboration and quantitative methods for the study of gender and HIV risks among Hispanic migrants. *Sociol Methods Res.* 2005; 34(2):204–239.
26. Kuczmariski RJ, Ogden CL, Grummer-Strawn LM. CDC growth charts: United States. *Adv Data.* 2000; 314:1–27. [PubMed: 11183293]
27. Shaikh U, Nettiksimmons J, Bell RA, Tancredi D, Romano PS. Accuracy of parental report and electronic health record documentation as measures of diet and physical activity counseling. *Acad Pediatr.* 2012a; 12(2):81–87. [PubMed: 22209035]
28. Arcury TA, Trejo G, Suerken CK, Grzywacz JG, Ip EH, Quandt SA. Work and health among Latina mothers in farmworker families. *J Occup Environ Med.* 2015 in press.
29. Skinner AC, Skelton JA. Prevalence and trends in obesity and severe obesity among children in the United States, 1999–2012. *JAMA Pediatr.* 2014; 168(6):561–566. [PubMed: 24710576]
30. Shaikh U, Nettiksimmons J, Joseph JG, Tancredi DJ, Romano PS. Clinical practice and variation in care for childhood obesity at seven clinics in California. *Qual Prim Care.* 2012b; 20(5):335–344. [PubMed: 23114001]
31. Moyce S, Bell JF, Fields B, de Leon Siantz ML. Insurance coverage and anticipatory guidance: are Hispanic children at a disadvantage? *J Pediatr.* 2014; 165(4):866–869. [PubMed: 25091259]
32. Ayala GX, Ibarra L, Horton L, et al. Evidence supporting a promotora-delivered entertainment education intervention for improving mothers' dietary intake: the *entre familia: reflejos de salud* study. *J Health Commun.* 2014; 6:1–12.
33. Balcazar HG, Byrd TL, Ortiz M, Tondapu SR, Chavez M. A randomized community intervention to improve hypertension control among Mexican Americans: using the promotoras de salud community outreach model. *J Health Care Poor Underserved.* 20(4):1079–1094. 200. [PubMed: 20168020]
34. Quandt SA, Grzywacz JG, Trejo G, Arcury TA. Nutritional strategies of Latino farmworker families with preschool children: identifying leverage points for obesity prevention. *Soc Sci Med.* 2014; 123:72–81. [PubMed: 25462607]
35. Trejo G, Arcury TA, Grzywacz JG, Tapia J, Quandt SA. Barriers and facilitators for promotoras' success in delivering pesticide safety education to Latino farmworker families: *La Familia Sana.* *J Agromedicine.* 2013; 18(2):75–86. [PubMed: 23540298]

Table 1

Mother and Child Personal Characteristics, Farmworker Families, North Carolina (n=221)

Mother and Child Personal Characteristics	n	%
Mother Characteristics		
Age		
18 to 25 years	63	28.5
26 to 35 years	123	55.7
36 to 45 years	35	15.8
Education		
0 to 6 years	93	42.1
7 to 9 years	69	31.2
10 or more years	59	26.7
Marital Status		
Married	201	91.0
Not married	20	9.0
Employment		
Employed	109	49.3
Not employed	112	50.7
Years in the US		
Less than 5	20	9.1
5 to 9	96	43.6
10 or more	104	47.3
Any Adult in Household with Documents		
Anyone documented	32	14.5
No one documented	189	85.5
Number of Residential Moves in Past 3 Months		
None	201	91.0
Any	20	9.0
Child Characteristics		
Gender		
Male	105	47.5
Female	116	52.5
Age		
4 years	119	53.8
5 years	102	46.2
Weight Status		
Underweight	7	3.2
Healthy weight	109	49.3
Overweight	42	19.0
Obese	63	28.5

Table 2

Characteristics of Usual Practice Caring for Child, and Health Care Utilization, Farmworker Families, North Carolina (n=221)

Usual Practice and Health Care Utilization Characteristics	n	%
Usual Practice		
Practice Type*		
Private Practice	105	49.5
Federally Qualified Health Center	70	33.0
County Health Department	37	17.5
Location of Practice*		
North Carolina	198	93.4
Other State (Florida, Kansas, Texas)	10	4.7
Mexico	4	1.9
Interpreter Available at Practice		
Never, sometimes, often, frequently (never = 22/10%)	26	11.8
Almost always	19	8.7
Always or providers speaks my language	174	79.5
Health Care Utilization		
Duration with Usual Practice*		
Less than 6 months	44	20.0
6 to less than 12 month	24	10.9
1 to less than 2 years	28	12.7
2 or more years	124	56.4
Last Child Health Care Visit		
In past month	47	21.3
1 to 3 months ago	51	23.1
3 to less than 6 months ago	71	32.1
6 or more months ago (12 or more months = 8/3.6)	52	23.5
Frequency of Well-Child Care		
In last 12 months	63	28.5
Less than once per year, never get well-child care, only take child when sick	158	71.5

* Missing data

Table 3

Child Anticipatory Guidance Reported by Mothers in Farmworkers Families, North Carolina (n=221)

Doctor spoke about	n	%
Child's Weight	214	98.2
Child's weight is fine for age	114	52.3
Feeding Child	93	42.1
Fruits and Vegetables	102	46.6
Outside Food	71	32.4
Breakfast	67	30.6
Family Meals Together	36	16.4
Soda and Sweetened Beverages	90	41.3
Time Watching Television and Videos	54	24.7
Playing Video Games or Using Computer	28	12.8
Physical Activity or Exercise	66	30.1

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Table 4
 Factors Associated with Child Anticipatory Guidance Reported by Mothers in Farmworkers Families, North Carolina (n=221)

	Doctor spoke about																				
	Child Weight		Feeding Child		Fruits & Vegetables		Outside Food		Breakfast		Family Meals		Soda & Sweetened Beverages		TV & Video Time		Video Game & Computer		Physical Activity		
N	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
Child Weight																					
Healthy	109	106	97.3	38	34.9	41	37.6	25	22.9	26	23.9	13	11.9	34	31.2	20	18.4	12	11.0	23	21.1
Overweight	42	40	97.6	13	31.0	15	35.7	12	28.6	10	23.8	7	16.7	15	36.6	5	11.9	5	11.9	8	19.1
Obese	62	62	100.0	37	59.7	41	66.1	31	50.0	28	45.2	15	24.2	37	59.7	26	41.9	10	16.3	32	51.6
p-value		0.4272		0.0021		0.0006		0.0011		0.0086		0.1146		0.0011		0.0003		0.6175		<0.0001	
Duration with Usual Practice																					
Less than 6 Months	44	43	97.7	18	40.9	25	56.8	23	52.3	18	40.9	13	29.6	20	45.5	13	29.6	9	20.5	15	34.1
6 Months to Less 1 Year	24	23	95.8	9	37.5	13	54.2	6	25.0	7	29.2	5	20.8	11	45.8	7	29.2	4	16.7	7	29.2
1 Year to Less than 2 Years	28	27	96.4	13	46.4	13	46.4	10	35.7	11	39.3	7	25.0	12	42.9	10	35.7	7	25.0	12	42.9
2 Years or More	123	121	99.2	53	43.1	51	41.5	32	26.2	31	25.2	11	8.9	47	38.5	24	19.5	8	6.5	32	26.0
p-value		0.5853		0.9221		0.2954		0.0119		0.1787		0.0062		0.8176		0.2192		0.0132		0.3232	
Well-Child Visit in Past 12 Months																					
No	156	153	98.1	80	51.3	81	51.9	58	37.1	54	34.6	27	17.3	76	49.0	44	28.2	21	13.5	57	36.5
Yes	63	61	98.4	13	20.6	21	33.3	13	20.6	13	20.6	9	14.3	14	22.2	10	15.9	7	11.1	9	14.3
p-value		0.8777		<0.0001		0.0125		0.0179		0.0421		0.5849		0.0003		0.0553		0.6373		0.0012	

Table 5
 Bivariate Analysis of Factors Associated with Total Food and Total Activity Guidance Reported by Mothers in Farmworkers Families, North Carolina (n=221)

	<u>Total Food Guidance</u>			<u>Total Activity Guidance</u>		
	n	Mean	SD	n	Mean	SD
Child Weight						
Healthy	109	1.62	2.24	108	0.28	0.64
Overweight	41	1.76	2.44	42	0.26	0.59
Obese	63	3.00	2.44	62	0.90	1.02
p-value		.0008			<.0001	
Duration with Usual Practice						
Less than 6 Months	44	2.66	2.52	44	0.36	0.75
6 Months to Less 1 Year	24	2.13	2.36	24	0.54	0.88
1 Year to Less than 2 Years	28	2.36	2.67	28	0.71	0.98
2 Years or More	123	1.83	2.29	122	0.43	0.79
p-value		.2343			.3060	
Well-Child Visit in Past 12 Months						
No	156	2.41	2.44	155	0.57	0.90
Yes	63	1.32	2.14	63	0.22	0.52
p-value		.0021			.0046	

Table 6
 Multivariate Analysis of Factors Associated with Total Food and Total Activity Guidance Reported by Mothers in Farmworkers Families, North Carolina (n=221)

	Total Food Guidance			Total Activity Guidance		
	B	SE	p	B	SE	p
Child Weight (reference: healthy weight)						
Overweight	0.37	0.43	0.386	0.04	0.14	0.783
Obese	1.25	0.37	0.001	0.58	0.12	<0.001
Duration with Usual Practice Less than 1 year	0.97	0.35	0.006	0.07	0.12	0.582
Well-Child Visit in Past 12 Months	-0.85	0.36	0.018	-0.20	0.12	0.106
Mother's Age (reference: 18 to 25 years)						
26 to 35 years	-1.12	0.38	0.003	-0.17	0.13	0.196
36 to 45 years	-0.36	0.50	0.474	-0.08	0.17	0.651
Mother's Education (reference: 10 or more years)						
0 to 6 years	0.77	0.41	0.061	0.12	0.14	0.380
7 to 9 years	0.94	0.41	0.024	0.27	0.14	0.054
Interpreter Available or Provider Speaks Language	0.85	0.50	0.093	0.35	0.17	0.038