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An exploration of how Mexican American WIC mothers obtain information about behaviors associated with childhood obesity risk

Rachel E. Davis, Ph.D.,

Assistant Professor, Department of Health Promotion, Education, and Behavior, Arnold School of Public Health, University of South Carolina, Discovery I, 915 Greene Street, Room 529, Columbia, SC 29208, Phone: (803) 777-6177

Suzanne M. Cole, Ph.D.,

Lecturer III and Research Investigator, Department of Nutritional Sciences, School of Public Health, University of Michigan, SPH I, 1415 Washington Heights, Ann Arbor, MI 48109-2029, Phone: (734) 763-6793

Shannon J. McKenney-Shubert, M.P.H.*,

The Community Health and Social Services Center, Inc., 5635 West Fort Street, Detroit, MI 48209, Phone: (734) 771-9539

Sonya J. Jones, Ph.D., and

Associate Professor, Department of Health Promotion, Education, and Behavior, Arnold School of Public Health, University of South Carolina, Discovery I, 915 Greene Street, Room 529, Columbia, SC 29208, Phone: (803) 777-3892

Karen E. Peterson, D.Sc.

Professor and Chair, Department of Nutritional Sciences, School of Public Health, SPH I 1867, 1415 Washington Heights, Research Professor, Center for Human Growth and Development, University of Michigan, Ann Arbor, MI 48109-2029, Phone: (734) 647-1923

Abstract

Objective—To explore how a sample of Mexican American mothers with preschool-aged children recruited from a Midwestern WIC clinic obtain information about 4 behaviors associated with childhood obesity risk: eating, physical activity, screen time and sleep.

Methods—One-on-1, structured interviews, in which participants were asked how they communicated with family, learned to take care of their first infant and obtained information about the 4 targeted behaviors for their preschool-aged child.

Setting—An urban WIC clinic in the Midwest.

Correspondence to: Rachel E. Davis.

* Affiliation when study was conducted

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Participants—Forty Mexican-descent WIC mothers with children ages 3–4.

Phenomenon of Interest—Exposure to information about the 4 targeted behaviors among Mexican-descent mothers participating in WIC.

Analysis—Quantitative and qualitative data were used to characterize and compare across participants.

Results—Participants primarily obtained information from their child’s maternal grandmother during their first child’s infancy and from health professionals for their preschool-aged child. Participants typically obtained information through interpersonal communication, television and magazines. Participants were most interested in healthy eating information and least interested in screen time information. Some participants did not seek information.

Conclusions—Participants engaged in different patterns of information seeking across their child’s development and the 4 behaviors, suggesting that future research should be behaviorally specific. Findings from this study suggest several hypotheses to test in future research.

Keywords

pediatric obesity; parents; Hispanic Americans; information seeking behavior

INTRODUCTION

The prevalence of childhood obesity is substantially higher among preschool-aged Mexican American children than non-Latino white children (33% vs. 21%).¹ This ethnic disparity persists through adulthood,² and, as the Mexican American population increases,³ is likely to affect a growing proportion of Americans. Children and foreign-born individuals are more likely to be living in poverty,⁴ which affects an estimated 25% of the Mexican American population⁵ and confers additional risk for childhood obesity.⁶ Recent statistics indicate that almost half of children participating in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) program are identified as Latino.⁷

The causes of childhood obesity are complex and multi-factorial,^{6,8} but, among the myriad factors that influence obesity risk, parenting has a prominent role. During the preschool years, parents have primary control over the environments that influence children’s development of health behaviors.^{9,10} Parents determine the quality and quantity of foods provided,⁹ regulate access to physical activity and screen time,¹¹ model healthy behaviors,^{9,11} provide verbal encouragement¹¹ and establish routines that contribute to children’s health.^{9,11,12} Thus, it is imperative to involve parents in obesity prevention interventions for preschool-aged children.¹³

Understanding parents’ information-seeking behaviors may be critical to developing effective obesity prevention interventions for low-income, Mexican American children. Numerous health promotion theories suggest that knowledge, attitudes, and beliefs have a strong influence on health behaviors.¹⁴ It is therefore important to understand how Mexican American parents are exposed to the information that shapes their own knowledge, attitudes and beliefs as they relate to regulating children’s obesity risk. Information about how parents learn to take care of their children, what information they seek, where they look for

information and which sources of information they trust can then be used to inform decisions about the sources, content, channels and timing of childhood obesity prevention messages.

Research suggests that several obstacles may make it difficult for low-income, immigrant Mexican American parents to access health information. For example, Latinos use the Internet at lower rates than non-Latino whites,¹⁵ and Latinos who are lower income, foreign-born, Spanish speaking or have less than a high school education are less likely to go online.¹⁵ When they do go online, foreign-born, Spanish-speaking Latinos with limited formal education are more likely to be using a mobile device,¹⁵ which can make it more difficult to read, print or save health information. Latinos are also more likely to suspend smartphone service.¹⁶ Public libraries often provide free Internet access; however, foreign-born Latinos report more difficulty in getting to a library than U.S.-born Latinos or non-Latino whites.¹⁷ These factors may explain why Latinos are less likely than non-Latino whites to seek health information,¹⁸ particularly if they speak Spanish.¹⁹ When they do obtain health information, Latinos who are foreign-born may prefer getting information from non-print sources.¹⁷ Spanish-speaking Latinos may be more likely to report that health information is hard to understand¹⁹ and less likely to trust information from the Internet or the media.²⁰ These observations may be linked to education levels, which are positively associated with health information seeking^{18, 21} and tend to be lower for Mexican Americans.²² Lower-income Latinos, in particular, may be more likely to obtain health information from the media, family or friends than from the Internet^{18, 23} or health professionals,²³ and less trusting of information received.²¹

Latino populations are diverse, both in terms of sociodemographic characteristics²² and public health needs; hence, it is important to understand how Mexican Americans and other Latino ethnic subgroups encounter health information. At least 1 study suggests that information seeking behaviors vary among Latino ethnic subgroups;²⁴ however, prior research has generally combined Latino ethnic groups. Prior research has also focused on information seeking about cancer or generic health topics, which may differ from information seeking behaviors intended to learn more about childhood obesity risk. Information seeking may further vary across specific obesity-related behaviors. Most extant studies of information seeking among Latinos have utilized survey data to quantitatively examine information-seeking behaviors^{18–21, 23–26} but have not included qualitative data to explore more nuanced aspects of information seeking. For example, there is little information about whether Latino parents actively seek or are passively exposed to different types of health information and how these 2 types of exposures affect interest or trust in information obtained. Together, these gaps in the extant literature suggest a need for a deeper understanding of how Mexican Americans, who represent the largest Latino ethnic subgroup,³ encounter specific types of information about childhood obesity prevention. The goal of this mixed-methods study was to develop an understanding of how a sample of low-income, Mexican American mothers of preschool-aged children enrolled in a WIC program in Detroit, Michigan typically obtained information about 4 child behaviors that have been associated with childhood obesity risk: eating, physical activity, screen time and sleep.¹⁰ This study explored how mothers typically communicated with family members, how they learned to take care of their first child as an infant, how they obtained information

for their preschool-aged child about the 4 behaviors, whether such information was solicited (actively sought) or unsolicited (passively obtained) and which information sources they trusted.

METHODS

Participants

Bilingual study staff enrolled 40 Mexican American mothers of preschoolers from the waiting room of a WIC clinic in a low-income, predominantly Mexican community in Detroit. The sample size and purposive homogeneous sampling,²⁷ were selected to meet the needs of the parent study.²⁸ As WIC clients, all participants were low income (pre-tax income 185% of U.S. Poverty Income Guidelines). Thirty-nine participants completed both interviews in Spanish. Eligible participants had at least 1 child aged 3–4 years, were 18 years or older, had either a father or both paternal grandparents and a mother or both maternal grandparents born in Mexico, spoke English or Spanish, and reported child beverage intake exceeding age-appropriate nutrition recommendations, which was a requirement for the parent study.²⁸ National survey data suggests that almost half of preschool-aged children in WIC consume one or more sugar-sweetened beverages each day.^{29, 30} Each participant who completed the study received a \$25 gift certificate to a local grocery store. This study was approved and monitored by WIC staff and a university Institutional Review Board.

Data Collection

Participants completed 2 face-to-face interviews in a private room in the WIC clinic with bilingual study staff who were not affiliated with the clinic. During the first interview, a 30-minute survey was administered to collect the following demographic and health-related data about each participant and her child: maternal education, marital status, employment status and ethnicity; number of children in the home; child age; and child sex. Health literacy was measured using 3 items querying how often participants had difficulty understanding written health information ($\alpha=0.66$).³¹ Participants were categorized as having adequate, marginal, or inadequate health literacy.³² Acculturation was assessed using the 12-item Brief Acculturation Rating Scale for Mexican Americans-II,^{33, 34} which assesses 2 orthogonal subscales, Anglo ($\alpha=0.81$) and Mexican ($\alpha=0.59$), to classify respondents into 4 cultural orientation categories: strong Mexican orientation; strong Anglo orientation; weak Mexican and Anglo orientations; and strong Mexican and Anglo orientations. (Note: All alphas were computed using data from the current study.)

Each participant completed a second interview approximately 1 week after her first interview. The second interview lasted approximately 90 minutes, was audio-recorded and collected qualitative data using a structured interview guide created by the study team (Table 1). The authors were particularly interested in characterizing participants' communication with family residing in Detroit and Mexico. Family was expected to be an influential information source, but, because participants were recruited from a largely low-income immigrant population, it was unknown whether participants had regular communication with family in Mexico. Participants were also asked how they learned to take care of their first

child as an infant to understand major informational influences while participants were forming early parenting habits, as well as how they currently obtained both solicited and unsolicited information about the 4 targeted behaviors for their preschool-aged child. The interview guide was pretested among the research staff and reviewed by two nutrition counselors in the WIC clinic.

Data Analysis

The eligibility screening and survey data were entered into a database and imported into SAS version 9.3 (SAS for Windows, version 9.3, SAS Institute, Inc., Cary, NC, 2002–2008), which was used to compute all descriptive statistics. All second interview recordings were translated into English when necessary, transcribed and de-identified. The transcripts were imported into NVivo version 10 (NVivo qualitative data analysis software, version 10, QSR International Pty Ltd, 2012), which was used to view, organize and affix codes to the data. Consistent with content analysis procedures,²⁷ the first author read the transcripts line by line, coded participants' responses to specific questions and key topics throughout the transcripts, compared responses across participants, and, where applicable, computed frequencies of reported attitudes or behaviors. The coded transcripts were independently reviewed by 1 of the co-authors (SMC). These authors discussed all data, codes and interpretations of the data. Discrepancies were resolved via consensus. Participants were coded as soliciting information if they appeared to actively look for information on the Internet or in the media or ask other people questions. Participants who said that they did not seek information but, in other comments, described looking for information were coded as participants who solicited information.

RESULTS

Participants

Thirty-nine of 40 participants were born in Mexico (Table 2). The majority of participants had a strong orientation to Mexican culture, which, although highly variable across study populations, is a higher percentage than has been found in some studies with Latinos.³⁴ All participants reported access to a cell phone or smartphone.

Typical communication with family

Most participants had immigrated to Detroit from Mexico, and they generally reported regular communication with family members in both locations. Thus, family members provided a regular communication source. Half of the children's maternal grandmothers lived in Mexico, 25% lived in the Detroit area, and 17.5% lived elsewhere. Most participants who were in contact with the child's maternal grandmother stayed in touch by phone (including texts), while a minority communicated in person or by other means, such as Skype. Roughly 3/4 of participants who communicated with their child's maternal grandmother did so at least once a week, while approximately 1/3 communicated daily. About half of the 31 participants who reported having a mother-in-law communicated with their child's paternal grandmother at least once a week.

Most participants lived with at least 1 other adult family member and, when not at home, almost all participants communicated with these individuals via phone calls or texts. The majority of participants also had family in Detroit who did not live in their home. Almost all participants kept in touch with family in Mexico, sometimes daily. Almost all of these participants used the phone to communicate with family in Mexico, while approximately 1/4 used Internet-based programs such as Skype or Facebook in addition to or in lieu of the phone.

How mothers learned to take care of their first infant

Roughly 3/4 of participants said they learned how to take care of their first child as an infant from their own mother (the child's maternal grandmother), who was the most frequently mentioned information source during early motherhood. One participant described this experience as follows:

'It was challenging. My mom used to take care of her. To me, (my daughter) was like a doll. I remember clearly that she would cry and I didn't know what to do. My mom would take her from me, and she would hold her and put her to sleep. My mom would come, and the baby would stop crying.'

Less than 1/3 of participants mentioned other family members (particularly sisters, aunts and sisters-in-law) as information sources, while a few participants received advice from friends. Less than 1/5 of participants said they obtained information about infant care from doctors. A minority of participants received information from print sources and the media. Approximately 1/3 of participants said that they did not receive information about caring for their infant. Many of these participants said they learned to be mothers by taking care of younger relatives or by watching family members take care of their children. Others participants said they learned 'on their own' from intuition and trial and error.

How participants obtained information about taking care of their preschool-aged child

Over 4/5 of participants solicited information about healthy eating for their preschool-aged child beyond what they received through WIC (Table 3). Participants who solicited information from the Internet tended to look for articles and forums by doctors, other health professionals and parents, as they considered these sources to be the most trustworthy. Participants tended to solicit information in person from their child's doctor while receiving solicited and unsolicited information from the child's maternal grandmother, family members and friends. Most participants who did not solicit information said they already had the information they needed, which was generally based on prior experience with older children or maternal instinct.

Almost 3/4 of participants solicited information about physical activity. Information from the child's doctor and the Internet generally appeared to be solicited, whereas information obtained through television was generally unsolicited. Participants who did not solicit physical activity information reported that they already knew 'that more physical activity is better,' got the information they needed by observing their child's energy levels, 'never thought about' physical activity or did not 'have a place to get answers from.' Some

participants said their child did not exercise but described their child's involvement in active play.

Less than half of the participants solicited screen time information. Participants who did not solicit information said they did not have questions, felt that screen time was not a problem for their child, seemed confident in their knowledge or based their decisions on maternal intuition. Almost 3/4 of participants solicited information about their child's sleep.

Participants who did not solicit this information said that their child did not have problems with sleep or that they already had the information they needed. Participants were not asked how much sleep preschool-aged children need, but a number of participants volunteered this information. Most of these participants felt that 8 hours per day was sufficient, some were concerned because their child slept more than 8 hours per day and others said their child did not nap and expressed uncertainty about the timing and necessity of naps.

DISCUSSION

Consistent with prior information-seeking research with other Latino populations,^{18, 20, 23–25, 35} this study found that a sample of low-income, Mexican American mothers recruited from WIC obtained information about childhood obesity prevention primarily through interpersonal communication, non-print media and graphics-heavy print sources, even though the majority of participants reported adequate levels of health literacy. Another key finding from this study is that mothers engaged in different patterns of information seeking across the 4 targeted child behaviors. These differences included the extent to which mothers solicited information, as well as the types of sources from which mothers obtained information. Across the behaviors, mothers were most likely to solicit healthy eating information and least likely to solicit screen time information. Prior to this study, research on information seeking behaviors related to physical activity, screen time, and sleep among Latino populations has been largely unexplored.^{35–37} This study also highlights potentially influential differences between active versus passive exposure to health information. In general, mothers in this study appeared to be proactively seeking information they encountered from their child's doctor or the Internet, passively obtaining information they encountered through television, and receiving a mixture of solicited and unsolicited information from friends and family. The implications of these findings are discussed below.

A substantial proportion of mothers in this study did not appear to solicit information about the queried behaviors (18–53% for each behavior). Prior studies of general health information seeking have similarly found that 33%²¹ to 56%¹⁸ of Latinos report not seeking health information. Mothers in this study who did not solicit information reported that they already had the information they needed (all 4 behaviors), they did not think about the behavior (physical activity), their child did not engage in that behavior (physical activity) or their child did not have problems with that behavior (sleep and screen time). Participants in this study were receiving nutritional counseling through WIC, which was required in order to receive food assistance. It is unknown whether or not mothers desired the information they obtained through WIC. As a consequence, this unassessed source of information may have artificially diminished reporting of solicited information about the queried behaviors.

Findings from this study also indicate that a child's maternal grandmother served as a key information source for this sample of Mexican American WIC participants but that mothers' attitudes about this information source change significantly as their children grow older. Most participants solicited information about how to take care of their first infant from their child's maternal grandmother, and, consistent with previous studies,^{38–41} no other information source was as predominant during early motherhood. These findings suggest that it may be important to involve maternal grandmothers in obesity prevention programs for first-time, low-income, Mexican American mothers. By the time the focal child in this study was preschool-aged, however, mothers in this study were less likely to solicit information from the maternal grandmother and more likely to seek information from health professionals. One reason for these changes may be that mothers had acquired knowledge that revealed inaccuracies in information obtained from non-professional sources. This would explain why some participants in this study viewed information from maternal grandmothers as untrustworthy and/or outdated. These findings are consistent with prior research in which Latinos have reported high trust in information from health professionals^{21, 35, 36, 42} and mixed findings on trust in information from family and friends.^{21, 36, 38, 42} Together, these findings imply that health professionals may play a critical role in providing trustworthy health information for many Latino populations.

This study has several limitations. Most notably, these data were collected using a nonprobability-based, purposive homogeneous sample of participants meeting specific eligibility requirements in a specific WIC clinic in a specific urban community in the Midwest. Participants reported a child beverage intake exceeding age-appropriate nutrition recommendations. Also, as WIC recipients, all participants were receiving nutrition counseling and may therefore have had reduced interest in obtaining additional information about childhood obesity prevention from other sources. For all of these reasons, findings from this study may not be generalizable to other populations. The internal consistency reliability for the Mexican acculturation subscale in this study ($\alpha=0.59$) is lower than alphas that been observed in previous research ($\alpha=0.84–0.93$).³⁴ It is unclear why a lower alpha was obtained. Participants' predominant use of Spanish during the interviews and self-identification as Mexican or Mexican American (rather than American) suggests that some participants may have been classified as having weaker Mexican cultural orientations than would have been observed with a more reliable measure of acculturation. These data were collected during interviews being conducted as part of another study,²⁸ which limited the depth to which participants' comments about information seeking could be explored. Although the qualitative interview guide was pretested and reviewed by study staff and WIC supervisors, the guide was not pretested with women from the target study population. In addition, the data reported here were generated via self-report and were not validated using other methods. As such, these data more accurately represent participants' perceptions of their behaviors than verified communication patterns. For these reasons, findings from this research require confirmation with larger, probability-based samples.

Implications for research and practice

Latinos, and Mexican Americans in particular, are the fastest growing ethnic groups in the U.S.³ These demographic trends, combined with the relatively high rates of childhood

obesity among preschool-aged Mexican American children, indicate that Mexican American parents are a critical audience for the communication of childhood obesity prevention information. Findings from this study suggest that research with larger, probability-based samples is needed to determine whether or not information seeking behaviors vary within particular Latino audiences for specific health topics and why some topics, such as screen time, appeared to be of less interest among this sample of Mexican American mothers in WIC. Findings from this study suggest that future research should query levels of exposure to different information sources and the extent to which Mexican American parents prefer, actively seek information from, attend to and trust particular information sources. The age of the child should also be assessed, as this study found that low-income, Mexican American mothers' use and trust of different information sources varied according to their child's stage of development.

Findings from this study suggest that researchers and practitioners working to promote childhood obesity prevention messages among Mexican American mothers of preschool-aged children participating in WIC may be most likely to attract mothers' attention by providing information about healthy eating and least likely to attract attention when promoting messages about screen time. Interventions to promote healthy child screen time or sleep behaviors among this population may want to combine these topics with healthy eating to enhance message attention and engagement. A significant proportion of mothers from this population may be unlikely to be interested in obtaining child health information, which further underscores the need to invest effort into attracting and maintaining mothers' engagement in childhood obesity prevention programming. Whether information is solicited or unsolicited has implications for the design of health communication materials. For instance, websites can be designed to meet the needs of mothers seeking answers to specific, anticipated questions,⁴³ whereas information delivered via television may need to first make childhood obesity-related topics salient before successfully engaging potential audiences. Findings from this study also suggest that childhood obesity prevention programs targeting Mexican American WIC mothers should feature health professionals as primary information sources, as this population of mothers may be most likely to seek, trust and engage with information presented by health professionals. Changes in healthcare systems may also be needed to allow doctors, in particular, to have more time to keep up to date on pediatric obesity prevention guidelines and to be able to spend sufficient time to appropriately convey this information to parents.

Like studies with other populations,^{38, 44–46} findings from this study also emphasize the influential roles of maternal grandmothers as sources of information when first-time mothers are establishing their parenting practices. Obesity prevention interventions targeting first-time, WIC-eligible, Mexican American mothers should consider these influences, either by involving maternal grandmothers to ensure that their knowledge is consistent with current pediatric obesity prevention guidelines or by assisting new mothers to navigate conflicting social pressures and advice.

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References

1. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999–2010. *JAMA*. 2012; 307:E1–E8.
2. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA*. 2014; 311:806–814. [PubMed: 24570244]
3. Ennis, SR., Rios-Vargas, M., Albert, NG. 2010 Census Briefs. Washington, DC: U.S. Census Bureau; 2011. The Hispanic population: 2010; p. 1-16.
4. DeNavas-Walt, C., Proctor, BD. Current Population Reports. Washington DC: U.S. Census Bureau; 2014. Income and poverty in the United States: 2013; p. 1-72.
5. Macartney, S., Bishaw, A., Fontenot, K. American Community Survey Briefs. Washington, DC: U.S. Census Bureau; 2103. Poverty rates for selected detailed race and Hispanic groups by state and place: 2007–2011; p. 1-20.
6. Kumanyika S, Grier S. Targeting interventions for ethnic minority and low-income populations. *Future Child*. 2006; 16:187–207. [PubMed: 16532664]
7. Thorn, B., Tadler, C., Huret, N., Trippe, C., Ayo, E., Mendelson, M., Patlan, KL., Schwartz, G., Tran, V. WIC participant and program characteristics 2014. U.S. Department of Agriculture, Food and Nutrition Service; Alexandria, VA: 2015. Insight Policy Research under Contract No. AG-3198-C-11-0010
8. Barlow SE. Expert Committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: Summary report. *Pediatrics*. 2007; 120:S164–S192. [PubMed: 18055651]
9. Birch LL, Davison KK. Family environmental factors influencing the developing behavioral controls of food intake and childhood overweight. *Pediatr Clin North Am*. 2001; 48:893–907.
10. Kuhl ES, Clifford LM, Stark LJ. Obesity in preschoolers: Behavioral correlates and directions for treatment. *Obesity*. 2012; 20:3–29. [PubMed: 21760634]
11. Golan M, Crow S. Parents are key players in the prevention and treatment of weight-related problems. *Nutr Rev*. 2004; 62:39–50. [PubMed: 14995056]
12. Fiese BH, Tomcho TJ, Douglas M, Josephs K, Poltrock S, Baker T. A review of 50 years of research on naturally occurring family routines and rituals: Cause for celebration? *J Fam Psychol*. 2002; 16:381–390. [PubMed: 12561283]
13. Hoelscher DM, Kirk S, Ritchie L, Cunningham-Sabo L. Position of the Academy of Nutrition and Dietetics: Interventions for the prevention and treatment of pediatric overweight and obesity. *J Acad Nutr Diet*. 2013; 113:1375–94. [PubMed: 24054714]
14. Glanz, K., Rimer, BK., Viswanath, K. Health Behavior and Health Education: Theory, Research, and Practice. 4. San Francisco, CA: Jossey-Bass; 2008.
15. Lopez, MH., Gonzalez-Barrera, A., Patten, E. Closing the digital divide: Latinos and technology adoption. Washington, DC: Pew Hispanic Center; 2013. p. 1-46.
16. Smith, A. US smartphone use in 2015. Washington, DC: Pew Research Center; 2015. p. 1-38.
17. Brown, A., Lopez, MH. Public libraries and Hispanics: Immigrant Hispanics use libraries less, but those who do appreciate them the most. Washington, DC: Pew Research Center; 2015. p. 1-38.
18. Rooks RN, Wiltshire JC, Elder K, BeLue R, Gary LC. Health information seeking and use outside of the medical encounter: Is it associated with race and ethnicity? *Soc Sci Med*. 2012; 74:176–184. [PubMed: 22154611]
19. Vanderpool RC, Kornfield J, Rutten LF, Squiers L. Cancer information-seeking experiences: The implications of Hispanic ethnicity and Spanish language. *J Cancer Educ*. 2009; 24:141–147. [PubMed: 19431032]

20. Clayman ML, Manganello JA, Viswanath K, Hesse BW, Arora NK. Providing health messages to Hispanics/Latinos: Understanding the importance of language, trust in health information sources, and media use. *J Health Commun.* 2010; 15:252–263. [PubMed: 21154097]
21. Richardson A, Allen JA, Xiao H, Vallone D. Effects of race/ethnicity and socioeconomic status on health information-seeking, confidence, and trust. *J Health Care Poor Underserved.* 2012; 23(4): 1477–1493. [PubMed: 23698662]
22. Ramirez, RR. Census 2000 Special Reports. Washington, DC: U.S. Census Bureau; 2004. We the people: Hispanics in the United States; p. 1-18.
23. Cheong PH. Health communication resources for uninsured and insured Hispanics. *Health Commun.* 2007; 21:153–163. [PubMed: 17523861]
24. Livingston, G., Minushkin, S., Cohn, D. Hispanics and health care in the United States: Access, information and knowledge. Washington, DC: Pew Research Center; 2008.
25. Geana MV, Kimminau KS, Greiner KA. Sources of health information in a multiethnic, underserved, urban community: Does ethnicity matter? *J Health Commun.* 2011; 16:583–594. [PubMed: 21391043]
26. Roncancio AM, Berenson AB, Rahman M. Health locus of control, acculturation, and health-related Internet use among Latinas. *J Health Commun.* 2012; 17:631–640. [PubMed: 22211397]
27. Patton, MQ. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice.* 4. Thousand Oaks, CA: Sage Publications, Inc; 2015.
28. Davis RE, Dal Cin S, Cole SM, Reyes LI, McKenney-Shubert SJ, Fleischer NL, Densen LC, Peterson KE. A tale of two stories: An exploration of identification, message recall, and narrative preferences among low-income, Mexican American women. *Health Commun.* In press.
29. Watowicz RP, Taylor CA. A comparison of beverage intakes in U.S. children based on WIC participation and eligibility. *J Nut Educ Behav.* 2014; 46:S59–S64.
30. Davis JN, Whaley SE, Goran MI. Effects of breastfeeding and low sugar-sweetened beverage intake on obesity prevalence in Hispanic toddlers. *Am J Clin Nutr.* 2012; 95:3–8. [PubMed: 22170357]
31. Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. *Fam Med.* 2004; 36:588–594. [PubMed: 15343421]
32. Koonce TY, Giuse NB, Kusnoor SV, Hurley S, Ye F. A personalized approach to deliver health care information to diabetic patients in community care clinics. *J Med Libr Assoc.* 2015; 103:123–130. [PubMed: 26213503]
33. Cuellar I, Arnold B, Maldonado R. Acculturation rating scale for Mexican Americans-II: A revision of the original ARSMA scale. *Hisp J Behav Sci.* 1995; 17:275–304.
34. Bauman S. The reliability and validity of the Brief Acculturation Rating Scale for Mexican Americans-II for children and adolescents. *Hisp J Behav Sci.* 2005; 27:426–441.
35. Beck AL, Takayama J, Badiner N, Halpern-Felsher B. Latino parents' beliefs about television viewing by infants and toddlers. *J Health Care Poor Underserved.* 2015; 26:463–474. [PubMed: 25913344]
36. Woo Baidal JA, Criss S, Goldman RE, Perkins M, Cunningham C, Taveras EM. Reducing Hispanic children's obesity risk factors in the first 1000 days of life: A qualitative analysis [published online March 22, 2015]. *J Obes.* 2015; doi: 10.1155/2015/945918
37. Owens JA, Jones C. Parental knowledge of healthy sleep in young children: Results of a primary care clinic survey. *J Dev Behav Pediatr.* 2011; 32:447–453. [PubMed: 21546852]
38. Heinig MJ, Ishii KD, Banuelos JL, Campbell E, O'Loughlin C, Vera Becerra LE. Sources and acceptance of infant-feeding advice among low-income women. *J Hum Lact.* 2009; 25:163–72. [PubMed: 19136396]
39. Lopez del Valle LM, Riedy CA, Weinstein P. Rural Puerto Rican women's views on children's oral health: A qualitative community-based study. *J Dent Child.* 2005; 72:61–6.
40. Johnson SL, Clark L, Goree K, O'Connor M, Zimmer LM. Healthcare providers' perceptions of the factors contributing to infant obesity in a low-income Mexican American community. *J Spec Pediatr Nurs.* 2008; 13:180–190. [PubMed: 18638048]
41. Calzada EJ, Tamis-LeMonda CA, Yoshikawa H. Familismo in Mexican and Dominican families from low-income, urban communities. *J Fam Issues.* 2013; 34:1696–1724.

42. Mendelson C. Creating healthy environments: Household-based health behaviors of contemporary Mexican American women. *J Community Health Nurs.* 2003; 20:147–159. [PubMed: 12925312]
43. Redish, J. *Letting Go of the Words: Writing Web Content That Works.* Boston, MA: Elsevier, Inc; 2007.
44. Bentley M, Gavin L, Black MM, Teti L. Infant feeding practices of low-income, African-American, adolescent mothers: An ecological, multigenerational perspective. *Soc Sci Med.* 1999; 49:1085–1100. [PubMed: 10475672]
45. Bernie K. The factors influencing young mothers' infant feeding decisions: the views of healthcare professionals and voluntary workers on the role of the baby's maternal grandmother. *Breastfeed Med.* 2014; 9:161–165. [PubMed: 24359315]
46. Lee A, Brann L. Influence of cultural beliefs on infant feeding, postpartum and childcare practices among Chinese-American mothers in New York City. *J Community Health.* 2015; 40:476–483. [PubMed: 25331609]

Table 1

Sample interview guide questions used in second interviews with Mexican American mothers of preschool-aged children participating in WIC (n=40)

Modes of communication	
•	Do you have a cell phone?
•	Does your phone have Internet access?
Typical communication with family in Detroit	
•	Who lives in your home with you?
•	When you or they are not at home, such as when one of you is at work or running errands, how do you communicate?
•	Do you have any (other) family living in the Detroit area? (Who?)
•	How do you usually communicate with family members who live in the area?
Typical communication with family in Mexico	
•	Do you have family living in Mexico? (Who?)
•	How do you usually stay in touch with family members in Mexico? (By phone? Email? A computer program like Skype?)
•	How often do you communicate with family members in Mexico?
Typical communication with the child's grandmothers	
•	How often, if at all, do you see or communicate with your mother?
•	How do you usually communicate with your mother?
•	What about your mother-in-law: How often, if at all do you see or communicate with your mother-in-law? (How do you usually communicate with your mother-in-law?)
How participants learned to take care of their first infant	
•	Think back to when your first child was just an infant. Tell me about how you first learned to take care of your child.
•	Did you receive any advice on child rearing from other people? (Who? Anyone else?)
•	Did you seek advice on child rearing from the Internet, the radio, books, or other sources? (What sorts of places did you look?)
How participants obtained information about feeding their preschool-aged child¹	
•	What about when you have questions now about what foods and drinks to give to (child)?
•	Aside from coming to the WIC clinic, how do you go about finding answers to your questions?
•	Do you seek advice about how to feed (child) from other people? (Who? Anyone else?)
•	Are there people in your life who give you advice about how to feed (child), even though you don't ask for their advice? (Who? Anyone else? Do you follow their advice?)
•	Do you seek advice about how to feed (child) from the Internet, the radio, books, or other sources? (What sorts of places did you look? What kinds of things do you look for?)

¹ = Similar questions were used to inquire about information seeking behaviors related to child physical activity, screen time, and sleep

Table 2Characteristics of study participants (n=40)¹

Married or living with a partner (%)	82.5
Mean age in years – participants (SD = standard deviation)	32.1 (5.5)
Mean age in years – child (SD)	3.6 (.5)
Child gender – male (%)	60.0
Educational status (%):	
Less than high school	40.0
High school diploma or GED	50.0
Some college or college graduate	10.0
Health literacy (%):²	
Adequate (score of 0–4)	62.5
Marginal (score of 5–6)	22.5
Inadequate (score of 7–12)	15.0
Work status (%):	
Homemaker	75.0
Worked part-time or full-time for pay	20.0
Unable to work or disabled	5.0
Mean number of children under the age of 18 living in the home (SD)	2.8 (1.6)
Mean number of years lived in the U.S. (SD)	11.8 (5.0)
Participant ancestry (%):	
Mother and father born in Mexico	100.0
Maternal grandparents born in Mexico	100.0
Paternal grandparents born in Mexico	100.0
Acculturation (%):³	
Strong Mexican orientation	82.5
Strong Anglo orientation	5.0
Weak Mexican and Anglo orientation	2.5
Strong Mexican and Anglo orientation	10.0
Language use (%):	
“Almost always” speaks Spanish	92.5
“Almost always” speaks English	7.5
Had access to a cell phone or smartphone (%)	100.0
Had access to the Internet through a phone (%)	82.5
Status of the child’s maternal grandmother (%):	
Living in the Detroit area	25.0
Living elsewhere in the U.S.	17.5
Living in Mexico	50.0
Not in communication/maternal grandmother deceased	7.5

¹Participants consisted of 40 Mexican American mothers of preschool-aged children recruited from a WIC clinic in Detroit.

²Health literacy was assessed using a 3-item health literacy scale.²⁹

³Acculturation was assessed using the 12-item Brief Acculturation Rating Scale for Mexican Americans-II.^{31, 32}

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How participants obtained information about taking care of their preschool-aged child 1, 2

Table 3

Information source	Frequency with which participants obtained information (solicited or unsolicited) from each source (%)				Sample comments from participants
	Healthy eating	Physical activity	Screen time	Sleep	
Child's doctor	25.0	35.0	12.5	40.0	"The pediatrician, he's someone who I also ask about foods, and he tells me." "With her doctor, I ask him how many hours (of sleep), more or less, someone her age should have."
Child's maternal grandmother	27.5	5.0	5.0	5.0	Interviewer: "And do you follow ... (your mom's) advice?" Participant: "Not too often (<i>laughs</i>). The thing is that she wants (child) to eat portions that she used to give to us, so it seems like too much from what I've read and understand that children should eat, so ... not much (<i>laughs</i>)." "Sometimes I ask my mom, but not much, because it's different now, it's very different from how we grew up, how we were taught, to how it is here now ... we didn't consume so much soda or things like that, we ate humbly but healthier ..."
Child's father	5.0	2.5	2.0	0	"Sometimes I do it (healthy eating) out of maternal instinct and sometimes (child's) dad also helps me."
Other family members	25.0	7.5	20.0	10.0	"... my sisters are sometimes the ones who tell me that it's not good for (the children) to watch much TV and that it's better to have them do other activities ..."
Friends, including co-workers	30.0	7.5	17.5	20.0	"I just ask at work, like when they don't want to sleep, and they tell me, 'What you need to do is not let him sleep in the evenings.'" "I do ask acquaintances, but all of their kids watch a lot of TV compared to (child)." "Sometimes when I'm amongst friends, we chat about what's healthy for the kids."
Child's teachers	0	5.0	2.5	2.5	"When (child) was in Head Start, they used to give me a sheet with every day of the week, and it said 'you can try this (physical activity) on this day or you can try this on this other day' and sometimes I would take those options, though not always."
Parenting program (other than WIC)	0	2.5	0	2.5	"Sometimes I worried because (child) didn't stop having her nap until she turned four ... she used to sleep so much, in the afternoon ... and then at night again. From talking to a psychologist in the program, she told us that that isn't unhealthy, that they needed to get plenty of sleep and that it was fine, that there was no problem with her sleep."
Internet	32.5	10.0	10.0	7.5	"The Internet (<i>laughs</i>) ... I look for information, there are times when it's examples from other people, but I usually try for it to be from a doctor, a nutritionist, or that." "I usually always go to the Internet."
Television	17.5	20.0	15.0	7.5	"Mmm, I found out about that on TV on a program called <i>Despierta America</i> . They were talking about how important it is that (children) sleep for 8 hours." "... (on) TV they talk a lot about not letting kids watch so much TV, with the doctors and nutritionists, from all of that, so you use that information to do a lot of things."
Magazines or brochures	22.5	2.5	2.5	2.5	"In magazines I try to look for different ways to introduce vegetables, or how to make them so my kids can eat them. Like making a happy face out of vegetables or ways that it's appetizing to them, because it's an uphill battle to get (child) to eat vegetables, especially anything that looks green."

Information source	Frequency with which participants obtained information (solicited or unsolicited) from each source (%)				Sample comments from participants
	Healthy eating	Physical activity	Screen time	Sleep	
					There are times when I read a little. I don't like reading much, but sometime those magazines from <i>Life and Health</i> , I somewhat read them and sometimes I see things and put them into practice."
Books	10.0	2.5	5.0	2.5	"Sometimes from books. I look for books at the library that talk about it (sleep)."
Radio	2.5	0	0	2.5	"Sometimes when I listen to things on the radio, I try to put it into practice."
Newspapers	2.5	0	0	0	"Well, I look in the newspapers ..."
Food labels	2.5	N/A	N/A	N/A	"I usually try to read the labels about the ingredients."
Did not solicit information beyond WIC or passive exposure	17.5	30.0	52.5	30.0	"I don't really (look for information) about the drinks ... And regarding the food, same. Out of instinct, I try to give him what I eat or what I think is healthy for him and if I see that he likes it. Then I go forward with it." "I don't have questions. I know that more physical activity is better, so no, that doesn't concern me." "I think that for TV it's not necessary for someone to tell you, or that you have to look for it somewhere, because we know that it's important for (children) to watch TV the least possible." "I care about her sleep. To me, it's very important that she gets enough sleep so she's always in a good mood. And whom do I ask? No one, I know that she needs to rest." "I had never thought about that." (physical activity)

¹Participants consisted of 40 Mexican American mothers of preschool-aged children recruited from a WIC clinic in Detroit.

²Frequencies do not add up to 100%, as the counts represent all information sources that each participant mentioned.