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Low-Income Women's Feeding Practices and Perceptions of Dietary Guidance: A Qualitative Study

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Abstract *Objectives* Describe themes characterizing feeding behaviors of low-income women participating in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and identify the attitudes, beliefs, and sources of information that inform these practices. *Methods* Formative research was conducted including focus groups and semi-structured individual phone interviews with a total of 68 low-income women participating in WIC. Qualitative data were recorded, transcribed, imported into NVivo 8.0, and analyzed for common themes. *Results* Mothers reported feeding behaviors inconsistent with guidance from WIC and the American Academy of Pediatrics. Three main themes were identified. First, mothers reported receiving conflicting messaging/advice from medical professionals, WIC nutritionists, and family members, which was confusing. Mothers also reported dissatisfaction with the "one size fits most" approach. Lastly, mothers reported relying on their "instincts" and that "all babies are different" when deciding and rationalizing what feeding guidance to follow. *Conclusions* Future interventions targeting this high-risk population should consider developing personalized (individualized) messaging, tailored to the needs of each mother–child dyad. Focused efforts are needed to build partnerships between WIC providers and other health care providers to provide more consistent messages about responsive feeding to prevent early obesity.

Keywords Parent feeding practices · Nutrition education and guidance · Low-income families · Infants · Toddlers · Children

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Significance

What is already known on the subject? Feeding changes dramatically as infants transition from exclusive milk feeding to a diet similar to the mothers'. Well child visits with medical providers and WIC provide guidance and preventive care in two distinct settings-community and health care.

What this study adds? WIC women receive conflicting advice from their pediatrician and WIC nutritionists that is not personalized to each mother-infant dyad. Developing a system for providing coordinated personalized care between WIC and pediatricians could be an effective way to decrease conflict in messaging and reinforce educational messages to impact child health outcomes.

Introduction

One in ten infants and toddlers are obese (Ogden et al. 2010a) and obesity rates are higher for children from lower-income families (Ogden et al. 2010b).

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Approximately half of all infants born in the United States are enrolled in The Special Supplemental Nutrition Program for Women, Infants and Children (WIC) (Jacknowitz and Tiehen 2010), a federally funded program committed to improving the health of low-income women, infants and children (Coker et al. 2009). Formula feeding rates tend to be higher for WIC participants than for those eligible for but not enrolled in WIC (Ryan and Zhou 2006), despite WIC guidance supporting breastfeeding. The high prevalence of formula feeding for women participating in WIC is concerning because formula feeding is a risk factor for early introduction of solid foods (Bronner et al. 1999), obesity and rapid weight gain (Baker et al. 2004). Many low-income women are not using responsive feeding practices (Baughcum et al. 1998; Gross et al. 2010), characterized by the caregiver's prompt, contingent and developmentally appropriate responses to the child's hunger and satiety cues and the use of structure and limit setting (DiSantis et al. 2011). This is a problem as responsive feeding practices have been associated with child weight status (DiSantis et al. 2011). However, barriers to adopting this approach have not been identified.

Infants grow and develop rapidly and have changing nutrient needs, and during the first year infants transition from milk to solids and table foods. Low-income women receive guidance about what and how to feed their infants from many sources, including family members and medical professionals, particularly pediatricians and WIC staff. Their perceptions of health care professionals are mixed, with some viewing pediatricians and WIC staff as credible and trustworthy sources of feeding information, and others viewing them as impersonal and unable to relate to their patients (Heinig et al. 2006, 2009b; Horodynski et al. 2007). More experienced female family members and friends are frequently cited as credible sources of feeding information (Heinig et al. 2009b; Horodynski et al. 2007; Olson et al. 2010).

The aim of the present study was to investigate WIC participants' infant feeding beliefs, attitudes, and behaviors, as well as the sources of information and rationale for their decisions. This information is intended to inform the development of an early intervention focused on promoting responsive feeding to prevent childhood obesity.

Methods

Participants

Participants were low-income, urban and rural mothers of infants recruited in Pennsylvania from five Special Supplemental Nutrition Program Women, Infants, and Children (WIC) clinics, a nutrition assistance program administered by the U.S. Department of Agriculture (USDA). The majority (93 %) of participants were recruited on-site by research staff in the WIC clinics. WIC staff also distributed flyers, instructing women to contact the research team if interested in participating in a focus group. Screening was conducted in person for women recruited at WIC clinics and via phone for those women recruited by flyers. Eligibility criteria included that women needed to: be enrolled in the Pennsylvania WIC program, be 18 years or older, have a child less than 2 years old, have introduced formula to their child before 1 month, and speak English. 138 participants provided informed consent. The Pennsylvania State University Institutional Review Board approved all study procedures.

Once participant consent was obtained, women were assigned to a focus group date based on their child's age at the time of enrollment (either birth-12 months or 12–24 months) to ensure that the questions were developmentally appropriate. A total of 48 of the women who gave consent (35 %) attended and participated in a focus group. An additional 20 women agreed to participate and completed the phone interview; overall the sample included 68 women (49 % of consented women).

Interview Guide

A semi-structured focus group guide was developed based on prior research related to responsive feeding practices (Baughcum et al. 1998; Gross et al. 2010; Heinig et al. 2009b; Chamberlin et al. 2002; Becerra-Jones et al. 2003; United State Department of Agriculture et al. 2012; Ruffin et al. 2011). The research was designed, executed, and analyzed by an interdisciplinary research team including researchers trained in human development, nutritional sciences, dietetics, psychology, and public health. The scripts were reviewed and modified by community partners including pediatricians and WIC nutritionists. Table 1 shows the focus group guide used with mothers of children birth to 12 months of age.

Topics included knowledge and beliefs about infant feeding recommendations, utility of feeding advice, conflict among information sources, how to soothe/calm a distressed infant, sleeping behaviors, and childcare. A slightly altered focus group guide was used for mothers of children ages 12–24 months, with questions adapted to reflect the transition from infancy to toddlerhood. Three additional questions were asked: (1) If you stopped formula feeding your infant, how old was your infant when you stopped? What did you feed them instead of formula? (2) Does your baby eat the same foods that you eat? What kinds of foods do you prepare (or purchase) for yourself that you also serve to your infant? (3) How do you feel about your current WIC package?

Table 1 Focus group guide for mothers of children birth to 12 months old

1. What advice did you receive about formula feeding your baby?
2. When and why did you start to feed your baby solid foods (i.e., anything other than formula or breastmilk)? What advice did you receive about feeding solid foods and getting your baby to eat new foods?
3. What advice did you receive about what how much (i.e., portion) formula and solid foods to serve your baby?
4. What advice did you receive about how to tell if your baby is hungry or full? How do you know when your baby is hungry and full?
5. What advice did you receive about how to calm your baby when crying, fussing or upset?
6. What advice did you receive about how to get your baby to sleep through the night?
Note: for all questions, mothers were asked the following probes:
Who did you receive this information from? What was the most useful advice? Least useful advice?
Did you find that advice useful (what was it)?
Did you try something different than what was recommended?
Did you ever receive conflicting advice? From whom? How did you decide what advice to follow?

Demographics

Following the focus groups, participants completed a survey to collect demographic data on: age, height, pre-pregnancy weight, relationship status, race/ethnicity, education, work hours, household composition, and income. Maternal pre-pregnancy self-reported weight and height were used to calculate body mass index (BMI; weight in kilograms divided by height, in meters, squared).

Procedures

Focus groups were conducted at WIC clinics and at public locations such as local libraries. A trained moderator with experience conducting focus groups read the questions and asked participant(s) to discuss the responses. If there was little or no discussion, the moderator prompted with additional questions to facilitate discussion. A research assistant also attended all focus groups and was responsible for setup, audio recording and note taking. Three additional staff members were present at each focus group to provide childcare. All focus groups were audio recorded and lasted between 60 and 90 min; phone interviews were also audio recorded and lasted 20–45 min. Focus groups ranged from 2 to 7 participants (*mean* = 4). Women received a $20 gift card to a local grocery store for their participation. We conducted 11 focus groups and 20 phone interviews. Saturation was achieved following the phone interviews (Bowen 2008).

Analysis

Descriptive statistics were calculated for demographic variables using SAS version 9.4 (SAS Institute Inc., Cary, NC). Focus groups and phone interviews were transcribed verbatim and the electronic transcripts were imported into NVivo 8.0 (QSR International PTY Ltd.). The qualitative data analysis was inductive and followed the constant comparative method (Charmaz 2006), and the identification of themes was informed by findings in other studies (Baughcum et al. 1998; Gross et al. 2010; Heinig et al. 2009b; Chamberlin et al. 2002; Becerra-Jones et al. 2003; Ruffin et al. 2011) and by the current conceptualization of responsive feeding in the literature (DiSantis et al. 2011; Engle and Pelto 2011). Transcripts were analyzed using thematic analysis as described by Braun and Clarke (2006), which involves six phases: familiarization with the data, generation of initial codes, searching for themes, reviewing themes, naming themes, and producing a final report (Braun and Clarke 2006). Two authors and one research assistant read through and took notes on the transcribed focus groups and phone interviews to familiarize themselves with the data and to generate ideas about potential codes of interest. Two researchers independently read each transcript, identified themes, and designated text that supported each theme. The coders then met to achieve consensus about themes by discussing and resolving any disagreements. The two researchers who did not code transcripts verified that the themes were supported. Upon completion of the coding, coded transcripts were imported into NVivo 8.0 (QSR International PTY Ltd.). Codes were grouped into relevant categories to aid in the identification of themes. Once identified, themes were further explored by re-examination of the coded extracts from the focus groups and phone interviews. Themes were further refined and named; the authors agreed upon a final set of themes.

Results

As shown in Table 2, women were age 25.6 years, were mostly overweight or obese (71 %), predominantly white (75 %), roughly half had a high school education (48 %), were unemployed (51 %), and were not married (42 %).

When asked about the quantity of information received, the majority (83 and 88 %) of women report receiving

Table 2 Focus group and phone interview participant demographics (n = 65)

Age (years), mean ± SD (range)	25.6 ± 6.1; (19–43)
BMI, mean ± SD	31.02 ± 6.52
Overweight or obese, n (%)	46 (71)
Mom race, n (%)	
Asian	1 (2)
African American	13 (21)
White	46 (75)
Mixed	1 (2)
Mom education, n (%)	
8th grade or less	1 (2)
Some high school	9 (15)
High school graduate	30 (48)
Some college/tech school	16 (26)
Completed college	5 (8)
Other	1 (2)
Marital status, n (%)	
Not married	27 (42)
Married	19 (30)
Not married, living with partner	12 (19)
Divorced	3 (5)
Common law	1 (2)
Other	2 (3)
Employment status, n (%)	
Maternity leave: no benefits	2 (3)
Working full-time	13 (21)
Working part-time	12 (19)
Unemployed	32 (51)
Other	4 (6)

M mean, *SD* standard deviation, *BMI* body mass index

enough information about how to feed and care for their child from medical professionals and WIC nutritionists, respectively. Over 75 % of women also rated the quality of information from both sources as good" or better.

Three Major Themes

As shown in Table 3, three major themes emerged that explained why women participating in WIC sometimes use feeding behaviors not recommended by the American Academy of Pediatrics and American Academy of Family Physicians: Conflicting Messages, Maternal Instinct, and Every Baby is Different.

Conflicting Messages

The first theme to emerge was that women reported receiving conflicting messages about feeding, and this was often a rationale for not following feeding guidance. The majority of women reported at least one example of conflicting messages about feeding from medical professionals, WIC nutritionists, and family members. Inconsistent messages were often related to the addition of cereal to the child's bottle and the introduction of solid foods.

Women commonly reported adding cereal to their child's bottle despite the fact that WIC nutritionists consistently advised against this practice. Women indicated that they believed that cereal would promote increased satiety at night, and would help to increase sleep duration and prevent night waking due to hunger, an idea that was often supported by family members, and in some cases by the pediatrician.

> …My mom told me that back in the day when I was growing up if a baby cried and can't sleep give them some cereal and it helps their stomachs fill up so they can go to sleep. – Mother of 16 month old child

Another common reason for the addition of cereal to the bottle was to prevent reflux and reduce the chance of the child spitting up, which was also supported by some pediatricians.

> So the doctor said I should put a teaspoon of cereal in her bottle to thicken it up a little bit. That maybe it was too watery. That is why she was spitting up. – Mother of 6 month old child

The majority of women chose to introduce solids between 3 and 6 months, with several choosing to introduce solids before the recommended 4–6 months. Common reasons for the introduction of solids before 4–6 months, included women who perceived that their infant was developmentally ready for solid foods, that their infant "wanted" solid foods, and that their infant was always hungry and needed more than formula. Women said that clinicians and WIC nutritionists were the primary sources of information for the timing of solid food introduction. Women reported that WIC consistently recommended introducing solids at 6 months of age, whereas clinicians were far more flexible on the timing, encouraging parents to introduce as early as 4 months.

> Well WIC tells you to hold off and my pediatrician was like go for it. Just do it. She will be fine. You will see what she cannot eat and what she can eat and WIC…I accidentally told WIC. Well I got into trouble because I was feeding her too soon. – Mother of 18 month old child

For this reason, women often perceived that the pediatrician was more supportive of their views on infant feeding than the WIC staff.

Overall, women reported that physicians tended to be more lenient about guidance related to putting cereal in the

Table 3 Sample of addition quotes within each of the three identified themes (conflicting messages, maternal instinct, and every baby is different)

Theme 1. Conflicting messages
"Well the doctors had me putting cereal in the bottle because he had acid reflux really bad. So whenever I would go to WIC they would tell me not to do it. A lot of family members told me that I should not be doing it. When my pediatrician is telling me to do it so…It helped." – Mother of 3 month old child
"I mean WIC tells you to hold off on feeding. My pediatrician told me to start at four months. I ground up fettuccini Alfredo and she ate that at four months." – Mother of 18 month old child
"Well WIC told me I was not giving her enough formula when my doctor was telling me to cut her back not he formula and give her more food. They were telling me the opposite." – Mother of 24 month old child
Theme 2. Maternal instinct
"My mom just told me to do how you feel. You are the mother and you know what is best for your child." – Mother of 18 month old child
"I don't know. Kind of like mother's intuition. Maybe that is what it is. Like you just go off of how your child is acting and how they are reacting when you are feeding them and just go from there." – Mother of 9 month old child
"Yes, I mean you can only take others opinions and then go from there with what you want to do with it. I mean they are your child and you are with them all day long. So you know what is best for your child and how you want to raise them up." – Mother of 18 month old child
Every baby is different
"It is like WIC has it all set out. You're suppose to follow that plan. You can't really follow their plan. You've got to go by what your baby wants." – Mother of 11 month old child
"I think it depends on the weight and size of the baby of how much to feed them. All babies wont' eat the same." – Mother of 10 month old child

bottle and timing of solid food introduction. In contrast, WIC nutritionists were more rigid, adhering to current infant feeding recommendations. Most women felt that WIC nutritionists followed a one-size-fits-all approach, and this was disagreeable to some.

Maternal Instinct: Mother Knows Best

The second theme to emerge was "Maternal Instinct," which was expressed as the notion that mothering behavior is instinctual, resulting from a bond between mother and baby. Maternal instinct was a major guiding factor in women's decision making. For example, when faced with a decision that involved feeding or caring for their child, women described "going with their gut," doing what they felt was right, or just simply knowing what to do.

> My husband would be like how do you know she is hungry? I am like I am telling you, make that bottle she is going to eat it. He said you are nuts. I made the bottle and she was hungry. I knew. – Mother of 18 month old child

Some women described this as an instinct that develops as a result of motherhood.

> It comes to you. When you are laying in the hospital, when they lay that child with you the first time, it is just there. – Mother of 5 month old child

Women also reported they used maternal instinct to decipher their child's cries and to determine portion sizes. Some women indicated they were able to determine if their child was hungry, fussy, or gassy by simply listening to the way their child cried. Women also reported they used their instincts to determine portion sizes. When asked how she knew what portions to give, one woman stated,

> Ah, I really don't. I just do the mom thing and go by instinct, but that is really how I do a lot of things. I just go by my intuition, you know? – Mother of 8 month old child

Every Baby is Different

The third theme to emerge was the notion that every baby is different. Women recognized that babies develop differently and have different needs, which led some women to criticize one-size-fits-all approaches to infant feeding information. Women often used the idea that every baby is different as their reason to explain why they did not follow portion size recommendations from health care professionals or WIC staff, and expressed that their child was an exception to the rule and needed the extra food.

> I am not going to tell him no. Today he had like four of them [juice] already. I don't mean to be disrespectful, but maybe he is different from other children, he needs the juice. - Mother of 22 month old child

Some women also expressed frustration with the WIC staff they perceived as making blanket recommendations on child care and failed to account for the specific needs of their children.

> Like I think there was a generalized baby [in WIC]…Like you cannot generalize anything. Everybody is different. You can't say oh it is a baby and they should eat this much. – Mother of 10 month old child

Some women felt they were judged for their decisions about how to care for their own child. This was particularly evident for the topic of breastfeeding. An eligibility criterion for this study was that women had introduced formula to their infant by age 1 month. Many of these women felt nutrition education providers, including pediatricians and WIC nutritionists, tended to promote the "breast is best" slogan, even after the decision to formula-feed had been made. This left many women feeling judged and irritated, and ultimately resulted in women devaluing the services provided.

> With my first (baby) it really irritated me. I am like okay I made my choice [to formula feed]. Leave me alone. It bothered me whenever I came in here because it was like you are making the wrong decision. Do this. This is what we want you to do. – Mother of 18 month old child

Women in this study also reported that medical providers were likely to provide information on breastfeeding, but that very little information was provided about formula feeding. In some instances, women reported that they felt they would have received more assistance if they had chosen to breastfeed.

Discussion

Women in this study were candid about using feeding behaviors that do not align with recommendations from the American Academy of Pediatrics (AAP) and American Academy of Family Physicians (AAFP) as well as practices promoted by WIC. Specifically, women reported using feeding behaviors that have been linked to rapid growth, such as addition of cereal to the bottle, early introduction to solid foods, and larger than age-appropriate portions of formula and solid foods (Huh et al. 2011). From these discussions, three themes were identified that may explain why it is common for women participating in WIC to use feeding behaviors inconsistent with guidance from the AAP and AAFP: (1) they received conflicting information from medical professionals, WIC nutritionists, family members and friends; (2) they believe they should listen to their maternal instinct; and (3) they believe that "every baby is different" and therefore "one-size-fits-all" recommendations did not work for them and their baby.

Motherhood can often be an overwhelming experience, resulting in reliance on others for guidance about feeding and caring for their children (Plutzer and Keirse 2012). Thus, public health professionals, including WIC staff, have an opportunity to impact parenting by providing mothers with sound, evidence-based information. However, in the current study, many women reported that they received conflicting advice from WIC staff and other medical professionals. Specifically as expressed by these women, among this low-income, high risk population, mixed messages from public health professionals led to confusion about how to best care for their child, promoted maternal use of non-responsive behaviors out-of-line with current recommendations, and is in line with other qualitative findings (Heinig et al. 2006; Olson et al. 2010; Sheppard et al. 2004). This underscores the need for coordinated, consistent messaging, in line with current anticipatory guidance for high-risk populations (e.g., WIC participants) in settings where they receive nutrition messages and parenting guidance from trusted providers (e.g., WIC and pediatricians).

When women received conflicting advice from public health professionals, they reported they most frequently implemented the pediatrician's advice. This may be because the pediatrician's advice tended to be more flexible and individualized than the guidance provided by WIC nutritionists, who gave "canned" messages and had a "one size fits all" approach. Individualized messages may help women feel like they are receiving unique advice that is relevant to them and their baby. One potential approach would be to implement a screening tool that is completed at the beginning of a visit that would identify risk, and also allow women who participate in WIC to identify topics that they would prefer to discuss during their appointment. A similar approach has been used in Massachusetts WIC clinics. The *Touching Hearts, Touching Minds* initiative uses emotion-based messaging to help empower women to practice the healthy eating and physical activity curriculum (Colchamiro et al. 2010). Other curriculum that uses education about infant development to empower women has also had positive effects on feeding and child health outcomes (Heinig et al. 2009a). Similarly, motivational interviewing is an individualized patient-centered approach that has been well received in some WIC clinics (North Dakota Department of Health WIC Program 2003).

Findings from this study indicate that advice offered by family members is often inconsistent with current infant AAP and AAFP feeding recommendations. Given that family members and friends are viewed as credible sources of information by low-income women (Heinig et al. 2009b), it may be necessary to include the family and friends in educational settings and in interventions, to impact their beliefs, and hopefully ultimately the parenting

behaviors of the mothers. Further, although education provides the appropriate skill set for a behavior to occur, specific parenting and feeding skills are necessary to build new mothers' self-efficacy (Bandura 1994).

Another common theme to emerge in the current study was that "maternal instinct" played a large role in decision making around feeding and caring for their child. This suggests women might also need specific skills in addition to information, such as a parenting tool kit that equips women with the skills needed to be confident in their decision making about caring for their child. WIC supports this by providing mothers with guidance on how to identify and respond sensitively and appropriately to infant hunger and satiety cues (i.e., responsive to child's needs). Because pediatricians, family physicians, and lactation consultants tend to be viewed as trusted experts, reinforcement of these messages by these health care providers may lead to more responsive parent feeding practices.

Another common theme to emerge was the idea that every baby is different, indicating that women are aware of their child's temperament, including differences among infants in reactivity and regulation (Anzman-Frasca et al. 2012; Anzman-Frasca et al. 2013). A growing body of evidence suggests that child temperament may increase or decrease susceptibility to our obesogenic environment, beginning as early as infancy (Anzman-Frasca et al. 2012; Anzman-Frasca et al. 2013). For example, research on infant temperament and feeding reveals that infants higher in temperamental negativity tend to spend more time fussing and crying and are more difficult to soothe. This tends to evoke particular responses from caregivers that include non-responsive feeding practices such as the use of feeding to soothe, which impacts the child's ability to self-regulate, thereby directly influencing energy intake and obesity risk (Anzman-Frasca et al. 2013; Stifter et al. 2011). Women in the current study tended to use "all babies are different" as a reason for not following specific evidence-based recommendations from pediatricians and WIC professionals. These findings suggest that just teaching mothers that "all children are different" and that they need to respond sensitively and responsively to their child will not be enough to foster responsive parenting. Rather, the message needs to go one step further; these observations suggest that women need additional guidance on what it means to be responsive to their baby. Future interventions should highlight awareness of temperamental differences, and should teach women how to react to child negativity by providing alternatives to the practice of using food to soothe child distress.

This study has several limitations. The sample of low-income WIC mothers that elected to participate in this study were predominantly white, and their behaviors and beliefs may not be generalizable to other women from diverse incomes, and different racial and ethnic groups. Furthermore, this study was exploratory and was limited by the specific questions that were asked. The research findings do raise new questions, suggesting the need to confirm and further understand the findings of our study, especially the interactions between WIC mothers and healthcare providers.

In conclusion, women participating in WIC reported receiving conflicting advice from physicians and WIC nutritionists, which resulted in confusion and created a serious barrier to the adoption of responsive feeding practices that promote healthy child growth. Future parent feeding interventions that target this high-risk population should explore individualized, tailored messages based on the needs of each mother-baby dyad to communicate responsive infant feeding information. Further, efforts are needed to build partnerships between WIC providers and all medical professionals (e.g. nurse practitioners, physician assistants, dietitians) to provide more consistent obesity prevention care and messaging. Developing a system for coordinated care and communications between WIC and physicians could be an effective and efficient way to decrease conflict in messaging, increase dose (i.e., intervention intensity), and reinforce educational messages to optimize the effectiveness of early-life intervention on parenting behavior designed to impact child health outcomes. Future work should determine how to best deliver consistent personalized messages to coordinate care across multiple settings. One potential avenue is the use of innovative approaches, like health information technology tools and strategies, to coordinate care between providers which could reduce confusion and inefficiencies in information, and optimize preventive counseling time and effectiveness.

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