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Infant feeding practices of low-income, African-American, adolescent mothers: an ecological, multigenerational perspective

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Abstract

The early introduction of non-milk foods among African-American infants has been well documented. Several studies report the addition of semi-solids as early as 1–2 weeks of age. This study investigated, through ethnographic, repeat indepth interviews with teen mothers and grandmothers of infants, the determinants of such feeding practices and the inter-generational factors involved in infant feeding decision-making. Nineteen adolescent mothers were recruited from Baltimore City WIC programs. The teen mothers were interviewed in their homes during four separate visits and the grandmothers at least twice. Ethnographic field guides focused on questions about what, why and how infants were fed and on the ‘ethnotheories’ of parenting and infant care in this population. All interviews were taped and transcripts were analyzed using text retrieval software. Results confirmed that it is the cultural norm to feed cereal in the bottle and to feed other semi-solid foods within the first month of life. Most grandmothers played the dominant role in deciding what the infant should eat and the timing of the introduction of solids. This pattern occurred both because grandmothers had extensive physical access to their grandchildren and because teen mothers were dependent upon grandmothers. The use of qualitative research methods, with an ecological, multi-generational focus, provides a rich description of the context within which infant feeding decisions are made. © 1999 Elsevier Science Ltd. All rights reserved.

Keywords: African-American; Adolescent mothers; Infant feeding practices; Complementary feeding; Ecological perspective

Introduction

Rates of adolescent pregnancy in the U.S. remain high and the negative consequences to the 500,000 chil-

dren born each year to teen mothers are well documented. Although there is debate on the magnitude of the effect (Furstenberg et al., 1990; Geronimus, 1991; Furstenberg, 1992; Geronimus and Korenman, 1993; Hoffman et al., 1993), most researchers conclude that children born to adolescent mothers suffer from more health and social problems and are more likely to repeat the cycle by becoming adolescent parents themselves (Fielding and Williams, 1991; Osofsky et al.,

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1991; Franklin, 1992; Carter et al., 1994; Hubbs-Tait et al., 1994; Rivara and Farrington, 1994; Hardy et al., 1997).

Parenting strategies employed by adolescent mothers may reduce, or exacerbate, the negative impact of early pregnancy on child outcomes. Still children themselves, adolescent mothers must take on the role of parenting before they have completed their own development. Since the majority of African-American adolescent mothers continue to reside with their own mothers (i.e. baby's maternal grandmother) (Billingsley, 1968; Stack, 1974; Miller and Moore, 1990; Wilson and Tolson, 1990), research has explored the maternal grandmother's role in the parenting provided to children born to teen mothers (Kellam et al., 1977; Burton, 1990; Pearson et al. 1990; Pope et al., 1993; Chase-Lansdale et al., 1994; Speiker and Bensley, 1994; Black and Nitz, 1996).

Although existing research has highlighted the importance of the maternal grandmother in adolescent parenting, very little research has explored the process by which adolescent mothers and grandmothers negotiate their roles and make parenting decisions. Ethnographic and qualitative research methods are particularly well-suited to such investigations because they "give us windows on family processes through which we can observe patterns of interaction and the ongoing negotiations of family roles and relationships" (Daly, 1992).

Infant feeding practices are an appropriate focus for a study of parenting because feeding is a daily activity involving children and their caretakers that serves as an important opportunity for social interaction (Ainsworth and Bell, 1974; Black et al., 1996). An observable activity, infant feeding has been used as a context within which to investigate other parenting behaviors, such as parent-child interaction and verbal responsiveness (Black and Nitz, 1996; Black et al., 1996). As such, studying how infant feeding decisions are made and implemented provides a useful mechanism for studying the parenting and decision-making processes of adolescent mothers who co-reside with the baby's maternal grandmother.

Infant feeding is also of public health interest because many of these households do not adhere to current American Academy of Pediatrics' recommendations that an infant be fed only breast milk or formula for the first 4–6 months, with a gradual introduction of solid foods or non-milk liquids after that age (Bronner and Paige, 1992; American Academy of Pediatrics, 1993; Skinner et al., 1997). These recommendations are based on the nutritional needs of the infant and the physical and physiologic capacities of the infant's developmental status (Marlin et al., 1980). The early introduction of solid foods may also be associated with higher rates of allergic reactions

and a greater likelihood of becoming overweight (Skinner et al., 1997). Several studies have documented the frequent, early introduction of solid foods within African-American households, often as early as 2–3 weeks of age (Beargie et al., 1971; Maslansky et al., 1974; Pao et al., 1980; Parraga et al., 1988; Brodwick et al., 1989; Bronner et al., in press). In Baltimore, Bronner et al. (in press) found that 32% of African-American WIC participants had introduced some solids by 7–10 days; this trend rose to 77% at 8 weeks and 93% by 16 weeks. Yet despite repeated documentation of the early introduction of non-milk liquids and solids to infant diets, the reasons *why* this is occurring are poorly understood.

An ecological perspective may be useful to understand the multiple influences on infant caregiving within a multigenerational context. Although ecological models vary in some respects (e.g. in terminology and areas of emphasis), all make the point that in order to fully understand human behavior one must understand the context within which that behavior occurs (Bronfenbrenner, 1979; Jerome et al., 1980; McLeroy et al., 1988). In this research, we draw on ecological models originating from developmental psychology and anthropology. Belsky (1984) has described a model that considers the parent's contribution, the child's characteristics, and contextual sources of stress and support as determinants of parenting. Harkness and Super (1994) have introduced the concept of a 'developmental niche', which includes the physical and social setting in which a child is placed, culturally regulated customs of child care, and the caregivers' individual beliefs about development. Parental belief systems about parenting and child development serve as 'ethnotheories' of parenting (Harkness and Super, 1996). The conceptual model guiding our research contains the following components:

1. The parent's contribution: adolescents are still developing themselves and a hallmark characteristic of the adolescent's developmental stage is egocentrism. Thus, parenting is a particularly challenging task for adolescents, since effective parenting requires them to "decenter and appraise accurately the perspective of others, to empathize with them, and to adopt a nurturant orientation" (Belsky, 1984). Their inability to separate their own needs from those of the child may explain why many adolescent mothers are less responsive and engage in less verbal interaction with their newborns (Culp et al., 1989). Furthermore, early parenthood may interfere with the adolescent's own developmental tasks of forging a self-identity, developing a career and forming intimate relationships (Erikson, 1980; Burton, 1990).
2. The child's characteristics: characteristics of the

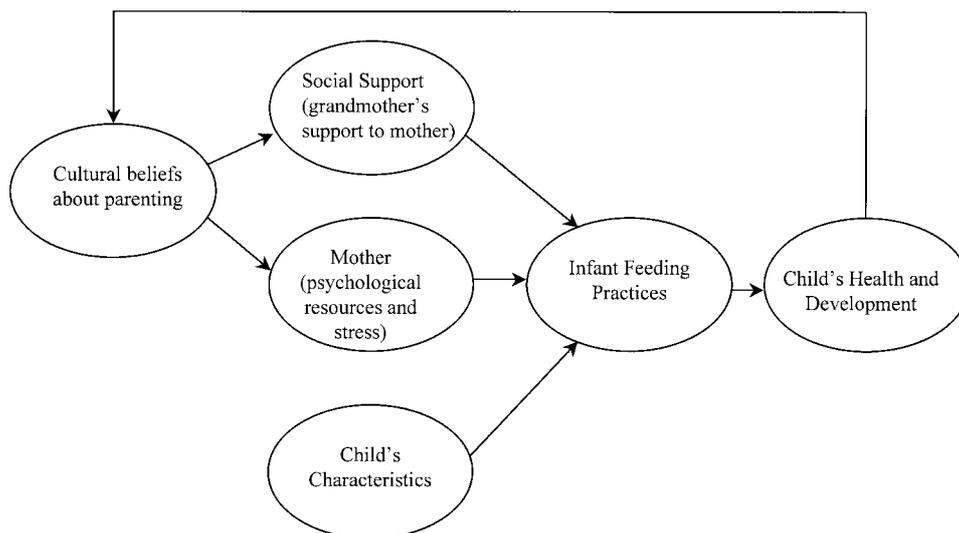


Fig. 1. A conceptual framework for studying infant feeding practices.

child are the physical and behavioral traits that the child displays and that elicit parent reactions. For example, a child's temperament has been shown to influence parenting style, with a difficult temperament in infancy most likely to undermine parental functioning (Harkness and Super, 1994). Parents who rate their infants as difficult interact with them less and are less responsive to their signals (Crnic et al., 1983a). Other child characteristics, such as the infant's appetite and body size, may also influence the parent's feeding practices (Piwoz et al., 1994; Bentley et al., 1995).

- Contextual sources of stress and support: both Belsky (1984) and Harkness and Super (1994, 1996) stress the importance of contextual factors on parenting, such as the nature of 'work' (i.e. regular activities occurring outside the home) and sources of social support. Work can be a large source of stress and greatly influence parenting behaviors by restricting the periods of time a parent and child are together, and by creating the need for alternative caregivers (Colletta and Gregg, 1981). For most adolescents, their 'work' consists of attending and graduating from high school. Since most adolescent mothers have not yet completed high school, they face the choice of dropping out of school or finding child care for several hours every day.

Social support can help buffer the stress of attending school while caring for a young child, and maternal grandmothers may be a primary source of social support for adolescent mothers. Grandmothers can provide social support by: (1) providing love and acceptance, (2) providing instrumental assistance, such as information and advice as

well as help with routine tasks such as child care and (3) setting social expectations, which guide what is and is not appropriate behavior (Harkness and Super, 1994). However, research on the effects of multi-generational caregiving is controversial. Some studies have shown that the social support provided by co-resident grandmothers can lower the adolescent's stress (Crnic et al., 1983b) and is associated with more effective maternal caregiving (Dornbusch et al., 1985; Unger and Wandersman, 1985), better social adaptation of the children, less deviant behavior and improved cognitive and health outcomes (Kellam et al., 1977; Pearson et al. 1990; Unger and Cooley, 1992; Pope et al., 1993). However, other studies have documented tensions between the mother and grandmother (Burton, 1990; Chase-Lansdale et al., 1994), and suggested that grandmother co-residence may result in less effective parenting skills of young mothers, reduced maternal warmth, and less optimal motor development in poorly growing children (Speiker and Bensley, 1994; Black and Nitz, 1996).

- Cultural beliefs and ethnotheories of parenting: ethnotheories are parents' understandings about the nature of children, the structure of development and the meaning of children's behavior (Harkness and Super, 1996). Sigel and Kim (1996) explain that parental beliefs are explicitly and implicitly part of the cultural 'common sense' that evolves in the course of growing in a particular culture. Harkness and Super (1994, 1996) also point out the importance of understanding 'intra-cultural variation' or individual differences within a common cultural framework. Thus, how parents in a particular culture or sub-cul-

ture interpret a child's behavior, their beliefs about what constitutes appropriate care, and the rationale for parenting behaviors constitute parental cultural beliefs about how to raise a child.

Parental ethnotheories relate to parental behavior by 'directing' the parent towards culturally acceptable modes of behavior (D'Andrade, 1992). For example, American parents often react to toddler tantrums by interpreting the toddler's behavior in a cultural context of stage and independence, and thereby view the behavior positively. By comparison, Kenyan parents are more likely to view tantrums as an intrinsic characteristic of the child at this age and less likely to label them as positive (Harkness and Super, 1996).

Ethnotheories of infant feeding have considered questions about what, when and why certain foods are either given to or withheld from the infant. For example, Zeitlin (1996) observed that Yoruba mothers give very small amounts of meat to their preschool age children because of a belief that consumption of larger amounts would "damage the child's moral character". The amount of caretaker control over a child's eating has also been shown to vary greatly, from forced-feeding practices found in Nigeria (Bentley et al., 1991; Oni et al., 1991) to the very low levels of eating encouragement practiced in Mali (Dettwyler, 1989) and Nicaragua (Engle et al., 1996) due to maternal beliefs that children will eat as much food as is good for them.

The conceptual model employed in this study assumes that the parent, child and context interact to influence parental behavior, and parental behaviors ultimately affect the health and developmental status of the child (Fig. 1). We assume also that the model is reciprocal, whereby the child's changing health and developmental status will influence parental beliefs and behavior.

This study examines infant feeding practices in low-income, African-American multi-generational households that include an adolescent mother, her baby and the baby's maternal grandmother. Qualitative research methodologies were used to investigate the processes by which parenting decisions are made within a multi-generational context. An ecological approach considers the parent's contribution, the child's characteristics, contextual sources of stress and support, and ethnotheories of parenting. Infant feeding practices were chosen as a focus of the study, which addressed the following

¹ Pregnancy rates are the sum of live births and legal induced abortions per 1000 women. Birth rates are the number of live births per 1,000 women.

Table 1

Ages of adolescent mothers and children. This table shows each individual's age at the time of the first interview

Child's age	Mother's age			Total
	13–15 years	16–17 years	18–20 years	
0–5 months	2	2	2	6
6–11 months	1	3	1	5
12–17 months	0	3	2	5
18–24 months	1	2	0	3
Total	4	10	5	19

research questions: How are infant feeding decisions made? When and why are solids being introduced?

Research design and methods

Study site and research population

The data were obtained as part of a formative research effort undertaken in preparation for a larger study evaluating the effectiveness of a parenting intervention among adolescent mothers in Baltimore, MD. Though rates of adolescent pregnancy have declined in recent years, Baltimore has high pregnancy and birth rates among 15- to 19-year-old adolescents, especially among African-Americans. In 1990, the pregnancy rate for black adolescents aged 15–19 years was 141.8 per 1000 women, while birth rates were 95.5 per 1000 women¹ (U.S. Centers for Disease Control, 1993). Baltimore is a moderately large city (population of 730,000) that has high rates of unemployment and poverty as well as the social problems that usually accompany such poverty. One-third of Baltimore households fall below the poverty level (incomes < US\$15,000) and more than one third of these households are female-headed families (County and City Data Book, 1994).

Study sample

Nineteen adolescent mothers were recruited from Baltimore WIC (Supplemental Services to Women, Infants, and Children) programs. To be eligible for the study, the mother had to be between 13 and 20 years of age, African-American, a first-time mother, co-resident with her own mother and low-income (defined as being eligible for WIC services). Households were also stratified on the ages of the mother and baby, as shown in Tables 1 and 2.

All of the households received some public assistance; six households were entirely dependent upon welfare, while in the remaining households some form of

Table 2
Demographic characteristics of study sample

	Number
Infant (<i>n</i> = 19)	
Age:	
< 6 months	6
6–11 months	5
12–17 months	5
18–24 months	3
Gender:	
male	15
female	4
Mother (<i>n</i> = 19)	
Age:	
13–15 years	4
16–17 years	10
18–20 years	5
Education-grade completed:	
8th	3
9th	2
10th	5
11th	5
12th	4
Still in school	15
Maternal grandmother (<i>n</i> = 19)	
Age:	
< 30 years	1
30–34 years	2
35–39 years	11
> 40 years	5
Education	
did not finish high school	8
finished high school	5
post-high school training	2
missing information	4
No. employed	12
No. providing child care to mother during school hours	9
Household (<i>n</i> = 19)	
Grandfather (step- or biological) present	4
AFDC primary source of income	6

public assistance (usually WIC) supplemented the grandmother's income. Twelve maternal grandmothers (of 19) held a full-time job, often in low paying occupations such as cleaning offices, home health aide, or factory work. The maternal grandmother was the primary source of income in all but 4 households; in 3 of these four households a father or step-father contributed to the family's financial resources, and in the fourth household the baby's great-grandmother served as the primary financial provider. Only one of the adolescent mothers was living with her own father, and three were living in a home that included a step-father. At least 7 of the 19 maternal grandfathers were drug addicts, had died of a drug overdose, and/or were serving long prison sentences. None of the adolescent mothers was married to the baby's father; at least 5 of the 19 fathers were reported (by the adolescent mother) to sell drugs as a source of income and 5 were either incarcerated at the time of the interviews or had been imprisoned in the recent past.

Design and methods

Qualitative research methods were used to obtain in-depth case studies of eligible households, and data were collected through a series of semi-structured interviews. Interviews are particularly useful for studying ethnotheories of parenting because they focus on parents' cognitions and beliefs (D'Andrade, 1992). Adolescent mothers and maternal grandmothers participated in separate, repeated interviews conducted in private (4 interviews for each mother, 2–3 for each grandmother).

Ethnographic field guides were prepared in advance and used during the interviews. Consistent with standard qualitative research practices (Bernard, 1994; Marshall and Rossman, 1995), the questions in the guides reflected current knowledge about infant feeding practices in this population obtained from the literature, as well as concepts arising from the conceptual model. Maximizing a strength of qualitative research methods, the guides were occasionally revised so that

Table 3
List of topics included in ethnographic field guides

Field guild	Topics
No. 1	feeding, temperament, health, sleeping and crying, how the parent played with and disciplined the child
No. 2	what mother did 'yesterday', what she and the baby ate yesterday, her experiences at school and with friends, and her career and personal goals
No. 3	the baby's father, his background, his degree of involvement with the baby, and the history of his romantic relationship with the mother, reaction to the pregnancy
No. 4	the mother's relationship with the maternal grandmother, the kind of parent the mother thought the grandmother was, how they shared responsibility for the child's care, areas of agreement and disagreement

new issues identified in early interviews could be followed up in later interviews. This meant that some questions that were asked in later interviews might not have been asked of all respondents in earlier interviews. Thus, the methodology followed an iterative and flexible approach that allowed new questions to be asked throughout the course of data collection. This strategy, however, prohibits the ability to quantify the results.

Initial questions about infant feeding asked *what* the baby was fed (e.g. What did your baby eat yesterday?), but were also intended to obtain information about *why* certain foods were fed and how decisions were made. For example, adolescents were asked the following type of question: describe a typical mealtime. When does your baby eat? Who decides when your baby will eat? How would you describe your baby's appetite? Who first gave the baby food other than milk? How did you feel about that? These questions were discussed within the context of other parenting and adolescent issues, and frequently a discussion of infant feeding practices occurred when a topic other than feeding was being discussed. For example, many mothers talked about the grandmother's beliefs about feeding in the fourth interview, which covered the relationship between the mother and grandmother. Table 3 is a brief summary of the major topics covered in each of the four adolescent field guides.

Two African-American females from Baltimore interviewed the adolescent mothers and maternal grandmothers. One interviewer had a masters' degree in education and the second interviewer was in the midst of completing a masters' degree in social work. Both interviewers were in their early 20s and had children of their own. As part of their training, the interviewers participated in a 3-day in-class seminar on qualitative methods, conducted several practice interviews with adolescent mothers and received extensive feedback on the interviews before data collection was initiated. Data quality was supervised throughout the entire period of data collection, and interviewers

received continuous feedback on the quality of the interviews.

All but two interviews were conducted in the informant's home. Each interview was tape recorded and transcribed, then stored in a computerized database. This process resulted in 114 transcribed interviews that are each 20–30 pages in length (Table 4).

Data analysis

Case summaries were prepared that listed basic demographic features of each household (e.g. who lived in house, employment status and sources of income, educational status) as well as a brief description of the relationships between the baby's mother and grandmother. All further analysis was done using the computer program NUD*IST, a program that facilitates the coding, searching and retrieval of data (QSR, 1993). Any text concerning infant feeding was extracted from the data, then further coded to obtain a more refined understanding of particular issues. Coding was done at several levels, starting with broad descriptive coding (e.g. FEEDING) and ending with more refined coding as analysis progressed.

A matrix-based approach to analysis was used in which coded text from all households was extracted, then interpreted by comparison both within and across households (Miles and Huberman, 1994). Matrices allow a systematic display of the full yet condensed data set and reduce the possibility of selectively reading the data because all searches are systematic and each informant's response (or lack of response) must be explained within the context of the other textual data. For example, a mother's and grandmother's re-

Table 4

19 adolescents mothers (4 interviews each)	76 interviews
18 maternal grandmothers(2–3) interviews each)	38 interviews
Total interviews	114 interviews

Household	GMA ROLE	APPETITE
<p># 05</p> <p>Mother, 16 years</p> <p>Baby, 2 months</p>	<p><u>Grandmother:</u> Baby started eating cereal with every bottle when he was about 3 weeks because <i>"we saw that he wouldn't stay still and everything....I told her [the mother] she gotta do something. He would be crying all the time so I told her to put some cereal in there and it keeps him full for a little while until like thirty or forty-five minutes."</i> When asked if she gives the cereal with every bottle, the grandmother said: <i>"Yeah. Yes I do. I can't help it. I mean I would rather give him that and keep his mouth closed."</i></p> <p><u>Mother:</u> Mother did <u>not</u> report that the baby was being fed cereal: <i>"They should still be drinking Enfamil or getting breast milk because they too young to have cereal and all that stuff. Around three months or two months they can have cereal."</i></p>	<p>Grandmother and mother both state that the baby's appetite is "greedy".</p> <p>The grandmother says the baby should only be drinking 4 ounces at a time, rather than 8 ounces.</p> <p><u>Grandmother:</u> <i>"That's how she was when she was carrying that baby. She ate and ate and ate."</i></p>
<p>#08</p> <p>Mother, 17 years</p> <p>Baby, 2 months</p>	<p><u>Grandmother:</u> <i>"When I make the bottles, I make like two bottles with cereal in it. She says, 'No, he's too fat, he don't need anything in it. I'm scared he's gonna be overweight.'"</i></p> <p><u>Mother:</u> She says she'll give 'baby food' at about six months <i>"because when I was in school they was telling us when the baby should eat food. What month to eat Cheerios, baby food and stuff like that. It basically starts like at six months."</i></p>	<p><u>Grandmother:</u> The baby has "a very good appetite, excellent...[compared to other kids he is] greedy, real greedy."</p> <p><u>Mother:</u> Baby is "greedy [because]...I will feed him. He'll drink six ounces and he'll set for a while. I say like ten minutes later, he is hungry again."</p>

Fig. 2. Sample matrix of textual data.

sponses to a question could be compared within a given household. Alternatively, a theme that appeared to be important in 1–2 households could be checked against other households to see its prevalence within the total sample. Fig. 2 shows a sample matrix and illustrates how the textual data were extracted, organized and compared to other textual data during analysis. All text was reviewed and summarized independently by two of the authors (Bentley and Gavin) and discrepancies in the findings were discussed and resolved.

Results

Twelve of the 19 households voluntarily reported that they added cereal to the baby's formula, usually at about 3 weeks of age². Other foods such as mashed potatoes and applesauce were frequently fed within the first 1–2 months of the baby's life.

Decision-making about infant feeding

Based upon the matrix analysis, in nearly all of the households the grandmothers appeared to play the dominant role in deciding what the baby should eat and the timing of the introduction of solid foods. This pattern occurred both because grandmothers had extensive physical access to their grandchildren and because of the mother's dependence upon the grandmother.

Grandmothers were heavily involved in helping the mothers with child care, often so that they could attend school. Fifteen of the adolescent mothers were either enrolled in school or were planning to return soon, three had graduated from high school and one had dropped out. In 9 of 15 of the households, maternal grandmothers provided direct care to their grandchildren, yet 5 of these grandmothers also held full-time jobs. They juggled their schedules and/or worked evenings so they were available to provide child care during the time their daughters were in school. One grandmother who held a full-time job paid for her grandchild's day care expenses so her daughter could continue school. In the remaining households, other family members such as aunts or great-grandmothers provided child care, or day care was obtained at the school or funded by social services. Maternal grandmothers were also frequently reported as a source of babysitting, when the mothers wanted to go out with friends after school or in the evenings, or do errands.

Although grandmothers have extensive physical access to the babies and ample opportunity to implement their preferred feeding practices, the grandmother's influence on infant feeding often occurred as a result of the dependent nature of the mother's relationship with the grandmother. Nearly all adolescent mothers stated that they would ask their own mother (that is, the baby's maternal grandmother) if they needed advice about infant feeding. This reliance on grandmothers is understandable given each mother's developmental stage, her status as a first-time parent and her economic and emotional dependence on the grandmother. Most mothers gave an almost identical reason for their reliance on the maternal grandmother's advice.

I'd ask my mother [if I had a question about infant feeding] because she had three kids of her own and we older now. And she got more experience.

I just ask my mother since she had three children. I might as well ask her.

...she (the baby's grandmother) knows more about it than I do. I would ask my mother or my grandmother [if I had a question about feeding the baby] because they older than me.

Similarly, the grandmothers often spoke as though they made most decisions. For example, they seldom mentioned discussing feeding with the mother and used the word 'I' rather than 'we' or 'she' when describing how decisions were made. For example, one grandmother says:

...but I be feeding him as long as he was crying. That's the way I feed him... when he was little I fed him on a schedule.

When asked how old the baby was when he was first given cereal, she says:

He was two months... I should've started when he was a month... because he always cry all the time and I used to think he wasn't getting full.

The grandmother's influence on infant feeding decisions occurred through one of three mechanisms: (1) the adolescent mother actively sought out the grandmother's advice; (2) the maternal grandmother took the initiative on infant feeding decisions and the adolescent acquiesced or (3) the maternal grandmother implemented her preferred feeding practices without the mother's knowledge. The most common was the first mechanism, in which the adolescent mother actively sought out, then quickly accepted and implemented the grandmother's advice on feeding:

² Respondents in the remaining 7 households were not asked if they added cereal to the baby's formula.

Sometimes I don't know what type of food to feed him and she'll let me know. Like with the potatoes. I ask her 'How you fix the potatoes? You know the quick way to fix it'. She be like, 'Just put it in the microwave for about three or four minutes. And it'll be done'.

When asked what made her decide to give the baby Enfamil, a mother responds:

My mother... I know she knows what's best.

When discussing what a baby 'should' eat, the interviewer asked the mother how she learned about feeding.

From my mother. I've learned everything from my mother.

When asked why the baby started on cereal at 3 weeks of age, the mother says: "my mother did us like that."

In the second mechanism the grandmother made and often implemented an infant feeding decision on her own, sometimes over the mother's objection.

When asked who first gave the baby cereal, a teen mother responds:

[My mother] did it. When I came home she was making his bottles and all of that. All that stuff. Washing them and sterilizing them... She asked me if I wanted to put him on cereal. I said 'yeah'... I didn't care. I didn't mind.

When asked who was involved in the decision to start feeding the baby cereal, a grandmother says:

I told her she gotta do something. He would be crying all the time so I told her to put some cereal in there and see what happens. So she put cereal in there and it keeps him full for a little while...

One mother reports that it was the grandmother's decision to start feeding the baby something other than milk. She describes how she felt about it:

It was all right. I'm saying, because I let her feed him because when I was feeding him, or when I try to feed him, he was doing all like this. Just messing it up. That's when I saw her doing it, feeding him and all this stuff. Two days later, that's when I started doing it.

When asked when she started feeding her baby food, another mother says:

Well, not me. My mother. Really when she started reaching out for food I think was at four months.

When asked how she felt about the grandmother giving the baby food at four months, the mother responds:

Oh I would tell her not to give it to her because I was scared, but she would just go for the food. So it was all right. It was all right with my mother and it was all right with me.

A third mechanism occurred when the grandmother knew the mother felt strongly about the baby not eating food other than milk. In this case (the only clear example that we uncovered in the analysis), the grandmother bypassed the mother and implemented her own preferred feeding practice without the mother's knowledge. The grandmother told the interviewer how she sneaks cereal into the baby's bottle:

I told Sarina³ I was gonna put him on cereal now, but she's scared. Maybe I'll sneak it in there, you know. (Laughter) When I make the bottles, I make like two bottles with cereal in it. She says, 'No, he's too fat, he don't need anything in it. I'm scared he's gonna be overweight'. I started giving it to him when he was maybe about 5 weeks.

When asked why she sneaks it, the grandmother says:

Because she's not ready to give it to him and I want him to have it... And when I gave him cereal one night, she said 'Ma, he slept all night'. I said, 'Oh, he did?' (Laughter).

Health professionals' advice to delay the introduction of solid foods often contradicted the grandmother's beliefs and theories about infant feeding. Frequently, the adolescent mothers would state that they were aware of the health profession's recommendations, but would nevertheless end up going along with the grandmother's desire to start cereal and other solid foods earlier either because they wanted to avoid a confrontation or "because she know better than me". For example, one mother of a 7-month-old baby stated that her baby started 'baby food' (i.e. jarred food and cereal) within a few weeks of the baby's birth and that by 2–3 months of age the baby had outgrown 'baby food' and was eating 'table food'. When asked who made these decisions, the mother said, "Well, not me, my mother". Later, the same mother recounts an encounter she had with health professionals about

³ Pseudonyms have been used throughout this paper to protect the informants' confidentiality.

infant feeding, when they told her not to feed the baby 'regular food' until about 9 months of age:

They give you papers and stuff and it says on there. And they be telling me just feed her baby food in the little jar things, but my baby don't like that stuff. But I be going to the hospital and telling them and they look at me like I'm stupid. Like, 'Oh no, you can't feed the child that.' That's what gets me because I don't like people to tell me what to do with my own child. I be telling them, 'Well my child eats mashed potatoes'. 'Oh, don't feed her mashed potatoes'. I be feeding her mashed potatoes. She eats whatever I give her. The doctors looked at me like I was crazy.

In another household, the mother reported that the baby's doctor had told her the baby was overweight and should go on a 'diet'. But the grandmother said:

The doc was wrong, cause he's always hungry. They wanted us to stop feeding him, just giving him milk, but I said that milk goes straight through.

In one household the mother reported that she was following the doctor's recommendations and would not introduce cereal until the baby was "probably about three months" and would start jarred baby food at about six months because "babies can't handle food that we eat. It won't settle in their stomach right". However, this is the same household in which the grandmother was adding cereal to the baby's formula without the mother's knowledge.

Reasons for the early introduction of solids

Ethnotheories of infant feeding, the caretaker's response to the child's characteristics, and a lack of differentiation between an adult's and a child's nutritional needs were important determinants of infant feeding practices.

Ethnotheories

Most babies were fed cereal mixed with formula within a few weeks of their birth and ethnotheories of infant feeding appear to be important determinants of this feeding decision. Specific beliefs were articulated most clearly by grandmothers, while adolescent mothers were less clear about the reasons for certain feeding behaviors. For example, when asked why they gave the baby certain foods, most mothers would respond with "I don't know" or "My mother told me to do so". This explains why most quotes below are from grandmothers.

Baby cereal (often called 'pablum' or 'powder') is often not considered to be a form of 'food' when it is

mixed in the bottle with the formula. For example, one grandmother stated:

She can't eat food yet. She has a digestive system that's not ready to eat food.

The grandmother did not seem to consider 'pablum' as 'food', since she later added:

[The baby should] just eat pablum. Put in a teaspoon of it in the milk.

Many grandmothers explained that they needed to add cereal to the baby's formula because of the perceived inadequacies of milk in satisfying the infant's hunger or nutrition needs. The addition of cereal to the milk, presumably because of the resultant thickening of the formula, is believed to stop the milk from 'running' quickly through the child's body before it can be absorbed. For example, three grandmothers explained:

That baby food and milk, you know milk go right through you. Milk ain't going to sit there, you need something to sit there for a while.

Because the milk is running through him. He'll drink like maybe 4 or 5 ounces, an hour later he's hungry again.

They wanted us to stop feeding him, just giving him milk, but I said that milk goes straight through.

The child's characteristics

Many children not only started eating cereal in their formula within 1–2 months of their birth, but they also were given solid foods such as applesauce or mashed potatoes very early, not infrequently within the first month of the baby's life. The child's characteristics that most influenced the feeding decision were body size, crying and sleeping patterns and appetite.

A baby's physical appearance can play an important role in the mother or grandmother's infant feeding practices. Caretakers in several households reported that their baby was smaller than they thought he should be and that they introduced non-milk foods so the child would grow better:

One baby started receiving applesauce at 3 weeks of age because "he was just skinny, real skinny".

One grandmother reports that her grandchild has been eating "regular food... since he was born".

She says that she made the decision to feed him regular food "cause he was too little".

The addition of cereal or other non-milk foods to the baby's diet was also a strategy used to manage other parenting concerns, prompted by the baby's behavior. For example, cereal and other solids were

frequently introduced to the infant's diet in an effort to stop the baby from crying or to lengthen the amount of time the baby slept.

Put that baby pablum in that bottle and stuff... everybody knows that little babies need more than just milk. And you want to keep them sleeping. I mean, you want to keep their stomach a little full, a little bit, so they won't be staying up all night and everything.

He cries a lot and sometimes the formula might not be enough for him.

When asked what a baby should eat, the grandmother says:

A baby should fill its stomach, I don't care what it is. My mother, my mother was going to give my babies mashed potatoes. And that's what we give him. Mashed potatoes. As long as it's mashed up real fine and stuff.

She continues: "...so he won't be crying, whining or stuff, you know. People say, 'Oh give him that baby food'. Baby food ain't no good".

The caretaker's interpretation of another child characteristic, the baby's *appetite* (often described as 'greedy'), was a particularly important influence on feeding practices. For example, many respondents expressed their belief in the need to mix cereal with the formula because of the baby's appetite.

One baby was given 'powder' in his milk in the first week of life. This was done because the baby was 'greedy': "So, first we started putting, I say when he was about almost a week, we started putting the powder in his milk". This was to help him gain weight and "cause it seemed like he wanted it".

Cause I don't think that milk was getting him full because he was greedy.

One mother recounts a story of why her baby was given baby food since the first month he was born: "Because my mother... I was like he isn't supposed to be eating that yet. She go, 'Be quiet, he hungry'".

In 10 of the 19 households, the word 'greedy' was spontaneously used to describe the child's appetite. 'Greedy' was often used to describe a hearty appetite and most respondents seemed to prefer a 'greedy' to a 'picky' eater.

He greedy. It's good because he real greedy. Because I give him like six ounces and he still be wanting some more so I just give him some more. He real greedy.

One grandmother said that the baby "will eat like a horse... [he] eats everything". She "loves it" that the baby is "not a picky eater, he eats most anything you give him. Sometimes you other babies don't want it, won't eat. Not our boy, he eats well".

Another mother described her baby as 'greedy', then explained:

I will feed him. He'll drink six ounces and he'll set for a while. I say like ten minutes later he is hungry again. I'll feed him again and he acts like he is still starving.

Several mothers and grandmothers reported adding cereal in the bottle in the first weeks and months of an infant's life because the baby was crying too much or not sleeping through the night. This was reported by more than half of the households who admitted to adding cereal to the bottle. The child's small size or lack of expected growth was also reported by several of the mothers and grandmothers.

The child's appetite and desire for 'real' food was also given as a reason for the early introduction of other non-milk foods, such as jarred baby food, mashed potatoes or macaroni.

One mother of a 7-month-old baby said:

She ate that baby food until she was like two months. She left that baby food. She wanted some real food... when my girl turned like one or two months I gave her a spoonful and she be like this. Like she didn't want it. But I used to have food and she used to come over to my food.

Another grandmother says her grandchild started on 'baby food' at around two months of age "because he seemed like he was greedy. He was hungry." The baby started 'regular food' at about six months of age "since we were wasting money on the baby food, we might as well give him the regular food". He was eating the baby food, but "sometimes he probably eat the whole jar. Sometimes he probably eat the half jar. So we just tried him on mashed potatoes, macaroni, stuff like that".

The importance placed upon the baby's eating 'real food' is shown by the existence of pre-mastication practices. Several mothers and grandmothers reported, without prompting, that they pre-chewed the baby's food:

When asked what her baby was fed yesterday, the mother of a 7-month-old baby says she gave the baby "some Kentucky Fried Chicken food... Yeah, she ate some of that, but I kind of like chewed it up..." Later, the mom says: "She eats like pancakes. I fed her that yesterday. I chop it up or chew it up myself because I'm afraid she might choke".

Both the grandmother and mother of an 8-month-old baby report chewing up the baby's food for him "because he don't have any teeth yet".

Differentiation between adult versus child needs

Most mothers and grandmothers stated that their child's nutritional needs were the same as their own. Although the children of some of the informants quoted below were more than one year of age at the time of the interview, most informants reported that they started mixing cereal with formula by 3 weeks and/or given other solid foods before 4 months of age:

...whatever I eat is in the breast any way. So whatever I eat, he is eating, too. (Baby, 2 months at time of interview.)

Well if she [see] all that food and she see me eat all that food, of course she gonna eat it too. (Baby, 7 months at time of interview but started on 'table foods' at 2 months of age.)

When asked how they decide what to feed the baby every day, one grandmother said:

We don't. We just going in there, if that's what I want, then he going to eat what I eat... morning, lunch and dinner. When he wake up in the morning, I'm usually eating sausage and eggs, I put him some on the side. Warm it up a little bit in the microwave and he go for it... And like lunchtime, it might be a sandwich or something, I just give him the meat and stuff. Eggs I eat... I don't know what he doesn't eat, cause he eat everything. (Baby, 10 months at time of interview, but has been eating "regular food... since he was born".)

When asked how her baby's food needs differ from her own, a mother responds:

They ain't different... he wants to eat everything I eat. Whatever I don't like, he don't like. Cause I know I don't like cantaloupe and he don't like it neither. What else. Well, other than that, he'll eat whatever we make him. (Baby, 24 months at time of interview, but was given "baby foods and stuff" "when he was about a month old".)

The mothers who did distinguish between their own and their baby's food needs tended to do so on the quantity, rather than the type, of food consumed.

Interviewer: How do your food needs differ from the baby's needs now?...

Mother: Well, I eat more. He been eating more since he was born. Cause he eat all the time. He eat

a lot... he got to eat like every three hours and I can eat whenever I get ready. And he drink nasty milk. (Baby, 2 months at time of interview)

"He needs more to eat than I do because I ain't hungry, but he be hungry all the time". She then explains that the baby needs to eat more "because he growing". (Baby, 8 months at time of interview but was given 'baby food' since 'the first month he was born'.)

A few caretakers were very clear that their baby needed different food from their own. Usually, they described themselves as wanting their children to eat a healthy diet when they are young, since they 'knew' that as an adult their child would eat the kind of 'unhealthy' diet they consumed.

Interviewer: Well, you said you think you eat a lot of junk food. Chicken nuggets. Murray's steak house. How do your food needs differ from what he eats?

Mother: I make sure he has all healthy food.

Interviewer: Why do you make sure he has it and you don't eat it?

Mother: Because I know I don't eat healthy... [a baby] should eat vegetables, a little meat... well, a lot of stuff high in vitamins, bread, vegetables, crackers. [Babies should eat] lots of vegetables... so they can be strong.

One grandmother says she feeds the baby cream of wheat in the morning "because it's nutritious. I came up on cream of wheat, he eats oatmeal too. Cream of wheat and oatmeal, all the things that I won't eat now". When asked why she feeds it to the baby if she won't eat it herself, she responds: "Because look at me, we have no illnesses. I'm not a sickly person. My children aren't, I fed it to my children. Some things will give them their fiber, their fruits, you want to give them what's good for them. Because when they get older they're not going to eat it just like me."

When asked how her baby's food needs differ from her own, one mother says: "See, I make sure she be healthy. Me, I really don't care. I'm already out of shape... She gonna eat breakfast. I give her eggs in the morning. And she eats cereal. And she eats lunch. She just ate her sweet potatoes before you came over... I still eat greens and stuff once in a while, like every other day. But I still, no matter what I eat during the day, I still gotta go to the sub shop."

Often, even the child's appetite and response to food were explained as paralleling the mother's behavior. Several grandmothers explained that the baby's appetite was like the mother's appetite.

One grandmother who had two grandchildren states

that the appetite of the children is like that of their mother:

[My daughter is] greedy, I mean, just like her baby. She eats all the time.... [My other daughter] she pick at hers like her daughter.

Discussion

Our study confirms results of earlier studies documenting the early introduction of solid foods to the infant diet in this population (Beargie et al., 1971; Pao et al., 1980; Parraga et al., 1988; Brodwick et al., 1989; Bronner et al., in press). It also provides insights into the process by which infant feeding decisions were made within 19 low-income, African-American households comprised of an adolescent mother, her baby and the baby's maternal grandmother. The use of qualitative methodologies used within a multigenerational context, combined with separate interviews for the mother and grandmother, has resulted in a rich description of the context within which infant feeding decisions are made and some of the reasons that non-milk liquids and solid foods are introduced prior to 4–6 months of age. Like most qualitative investigations, the study employs a purposive sampling design, and repeated in-depth interviews. The findings from this study describe the context within which decisions regarding feeding and parenting occur and can be used to generate hypotheses that can be tested in quantitative research.

However, the study has limitations that affect its interpretation and generalizability. First, the methodological design, which required a small sample size of households (Pope et al., 1993), limits generalizability. Although the demographic characteristics of the households resemble the overall characteristics of inner-city households in Baltimore (County and City Data Book, 1994), this sample is not a statistically representative one. In addition, the use of ethnographic guides permits a free-flowing and focused conversation, but inevitably results in some 'missing data' (not all questions are asked of everyone, or in exactly the same way, or there is differential probing of specific topics). An example is the careful probing that we did in later interviews after discovering that several grandmothers and mothers reported that their infant's appetite was 'greedy'. The earlier interviews did not probe 'greediness' in detail because we did not understand how important this term and its meaning are to the ethnotheories of infants. These limitations do advise caution in extrapolating the results to the African-American community of adolescent mothers and grandmothers, even in Baltimore. Another possible limitation is that 79% of our sample were infant

males. Although our data do not suggest any gender differences in the key findings, one other study has reported that mothers are more likely to want to have a 'big' male infant (Baughcum et al., 1998).

A key finding is that maternal grandmothers are often the primary decision-makers regarding infant feeding. The adolescent mothers in this study frequently adhered to the grandmother's advice on infant feeding practices even when their advice contradicted recommendations made by their health providers. Most adolescent mothers are financially and emotionally dependent upon the child's grandmother and hesitate to contradict her opinion regarding feeding decisions. They are also inexperienced and insecure about their own beliefs and logically turn to their mothers for all kinds of parenting help. Even when mothers express their disagreement, grandmothers often insist on their own decisions, or less frequently, implement their preferred feeding practices without the mother's knowledge. The dependence of adolescent mothers on grandmothers is not surprising, given the emotional development and dependence of adolescence. Accommodating to the grandmother's wishes may also be an adaptive coping strategy as adolescent mothers struggle with the enormous challenges of parenting in the midst of their own adolescent development.

Our findings that mothers and grandmothers were not in conflict regarding infant feeding are consistent with population-based studies showing that the family conflict that characterized early theories of adolescent-parent relationships was overplayed (Offer et al., 1981; Steinberg, 1990). Most adolescents respect their parents, look to them for advice and value their support and guidance (Steinberg, 1990). The young mothers in our sample often cited the grandmothers' experience with their infant feeding as a reason for relying on their judgements.

These findings can also be viewed in context of the implications of current public policy (Leadbeater, 1999). In 1996, the federal Personal Responsibility and Work Opportunity Reconciliation Act targeted adolescent mothers. One of the strategies of the act is to mandate residence with a parent or guardian. The young adolescent mothers in our sample, by study inclusion criteria all of whom lived with their own mothers, clearly rely on the financial and emotional support of their own mothers as they simultaneously learn how to parent and to achieve their own goals and objectives. Our data show that these three generation families do have their own strategies for sharing decision-making and child care. The long-term impact of the act's mandated residential requirements on adolescents' success in achieving independence, however, has been questioned (Leadbeater, 1999).

A recent study by Bronner et al. (in press) reported

that by 7–10 days of life, nearly one-third of infants enrolled in a WIC-based, Baltimore study were offered non-milk foods and about 14% received cereal in the bottle; by two months of age, over 40% of infants were being fed cereal in the bottle. The present study sheds some light on the reasons for this early introduction of solids in the same population. The data show that the early introduction of solid foods, particularly cereal being added to the bottle, is clearly related to the ethnotheories of infant feeding that were elaborated. For example, grandmothers (and much less frequently mothers) freely discussed the inadequacies of formula, the infant's characteristics (size and appetite), concerns about sleeping and crying and the lack of distinction made between an adult's and an infant's nutritional needs. These factors interact to encourage the early introduction of solid foods, often within the baby's first month of life. Consistent with the theory guiding the investigation, mothers and grandmothers look to infant behavior and/or growth as validation of their decisions (e.g. he slept through the night). In almost every case, the ethnotheory for a decision to give non-milk liquids or solids was rooted in the infant's characteristics or behavior, particularly their 'greedy' appetite or their crying and inability to sleep through the night when offered only formula. These data are consistent with a recent study of WIC mothers in Kentucky (Baughcum et al., 1998), which found that a 'big' baby who readily accepted early complementary foods was a healthy one that marked successful parenting. The relationship of these feeding practices on childhood and adult obesity are of major public health concern (Johnson and Birch, 1994; Baughcum et al., 1998).

The implications of these findings are that efforts to modify infant feeding practices must do more than increase the adolescent mother's knowledge about current recommendations. Efforts to improve the health and nutritional status of adolescent mothers and their children may benefit from an ecological perspective and a consideration of the many influences on infant feeding practices. For example, maternal grandmothers should perhaps be targeted for educational intervention (Bentley et al., 1999) and the broad complex of reasons for the early introduction of solids must be addressed. In addition to reassuring mothers and grandmothers about the nutritional qualities of breast-milk or formula and the risks of early introduction of solids, an effective intervention will incorporate developmental expectations of infant's feeding behavior, alternative ways of managing the baby's crying and sleeping, and clarify the difference between infant and an adult nutritional needs.

Interventions should also address maternal and grandmaternal ethnotheories about infant characteristics and behavior because they are invoked in de-

terminations regarding feeding. If health care providers attempt to understand the perspective of adolescent mothers and maternal grandmothers on feeding, they may be better prepared to intervene in a way that allows families to 'hear' and respond.

This study highlights the importance of an ecological perspective, and provides insights into infant feeding practices of African-American adolescent mothers. However, the implications of these findings can be extended more broadly. The results confirm that an ecological, multi-disciplinary perspective yields important insights into complexities that may elude research focused exclusively on individual behavior. Linking theory to research methods and study design has resulted in useful data that could not otherwise have been obtained. By considering parents' psychological resources, contextual sources of stress and support and child characteristics and ethnotheories of parenting, a better understanding of the multiple influences on feeding practices can be established. An ecological framework that includes a consideration of parental ethnotheories of childrearing is an approach that would be useful for investigating a wide variety of parenting behaviors in different populations.

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