

Original Article

Balancing nurturance, cost and time: complementary feeding in Accra, Ghana

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Abstract

This paper presents a picture of the general patterns of complementary feeding behaviours in urban Ghana. A focused ethnographic study protocol for assessing complementary feeding developed for the Global Alliance for Improved Nutrition was used to collect data from caregivers of children 6–24 months of age. We examined the multiple factors that influence the selection of foods for infants and young children in this urban setting, and found that economic factors, health beliefs and other nurturing-related values, access to food and issues of convenience all play important roles. We conclude that the interactions of nurturance, cost and time are vectors that affect feeding decisions.

Keywords: social determinants of infant feeding, focused ethnographic studies, infant feeding beliefs and practices, use of commercial infant cereals, women's time allocation, breastfeeding.

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Introduction

In the nutrition and public health community, there is now widespread understanding that complementary feeding is not only about 'what' is fed, but also about 'how', 'when', 'where' and 'why' (Peltó *et al.* 2003). In other words, that in addition to macro- and micronutrients, complementary feeding involves behaviour and the determinants of behaviour. Consequently, understanding complementary feeding behaviours and their determinants is critical for the design and development of interventions to prevent undernutrition and future obesity during the period from 6 to 24 months of age, and research to facilitate this understanding is essential.

Several different approaches are currently employed to conduct social research on complemen-

tary feeding. The various approaches, which use quantitative or qualitative research methodologies, or a combination of both, have their origins in different social science and public health disciplines. Although they often share common goals about the insights and information they hope to obtain, they draw on different methodologies and rest on different theoretical frameworks, and thus can be seen as providing 'complementary' contributions to understanding and evaluating infant and young child feeding.

One approach to the study of complementary feeding is focused ethnography. The concept of 'focused ethnographic studies' (FES) is derived from anthropology (Peltó & Gove 1992; Manderson 1998). In practice, the research protocols typically use a mixed-method approach to examine specific questions, which have been identified before a study is

undertaken. Thus, they are not only focused on a particular topical area of human behaviour and its determinants, but also on a specific set of questions; the answers to which are important for actions. Because the methodology rests on exploratory, qualitative techniques, FES provides insights that go beyond the immediate, pre-specified questions to reveal larger aspects of the topic of study, including the socio-cultural context.

In this paper, we present the results from a study based on a FES approach. The study was conducted in Accra, Ghana in 2010 (Pelto & Armar-Klemesu 2010a).

The specific question for the research in Accra, which was undertaken on behalf of the Global Alliance for Improved Nutrition (GAIN), was whether a fortified, non-instant cereal had the potential to be widely adopted in these (or similar Ghanaian) urban settings. In the course of examining this question, we also learned about what caregivers of infants and young children (IYC) are doing with respect to complementary feeding (what, how, when and where) and the reasons for their choices and decisions. In this paper, we are concerned with this wider picture and its implications, rather than the answers to GAIN's specific questions about the potential future for a fortified, non-instant cereal.

Materials and methods

The study design

The operational strategy of our FES was to collect information about essential aspects of IYC feeding behaviour as efficiently as possible by stratifying data collection according to sources of information. In

Accra, the first level of segmentation was by child age. In recent years, the acronym IYC has come to refer to children 6–24 months of age. However, as the biological and behavioural variability across the 18 months of IYC status is large, it is essential to break it down into smaller age categories. We subdivided the age range (6–24 months) into four divisions: 6–8 months; 9–12 months; 13–18 months; and 19–24 months. Respondents could then be recruited in relation to these four categories to ensure that all age groups were represented. The second segmentation was by economic status. In order to examine behaviour in families who had sufficient income to purchase complementary foods, we did not interview respondents from the very poorest households, but we sought to include a range of economic conditions, with an emphasis on households with lower socio-economic status (SES). We measured SES with an established method based on living standards measures (LSMs) derived from the Ghana Living Standards Survey indicators. The LSM method of SES categorization has wide application in market and social research, and has previously been used to assess market opportunities for processed cassava products in Ghana (Collinson *et al.* 2001, 2003).

To obtain information on caregiver perspectives, we conducted individual interviews, which typically involved two visits to a household. The interview protocol draws on several qualitative data collection methods, including cognitive mapping techniques, as well as standard demographic and nutrition methods. The protocol is organized into modules, each of which is designed to obtain information on a specific topic. The modules, which varied in length depending on the topic, are the equivalent of sections within a questionnaire.

Key messages

- Application of ethnographic techniques is an effective and efficient method for obtaining and interpreting data on complementary feeding.
- Mothers in Accra have strongly held views about the importance of foods for child health and growth.
- Beliefs and values about nutrition and child health compete with the constraints imposed by low economic resources and time demands.
- Finding a balance between food costs, demands on time and beliefs and values about how to promote their children's health pose a continuous challenge for mothers in urban Ghana.

All of the respondents, mothers of IYC, were interviewed with a core set of modules, which included socio-economic and demographic data and child feeding practices, as well as modules designed to obtain information on beliefs, attitudes and knowledge. Some modules were used only in subsets of respondents because we needed only a few informants to obtain an adequate picture. For example, a module designed to obtain information on types of foods that are fed to infants was applied only with the first respondents as the results quickly became redundant. With some respondents, we applied modules in addition to the core set in order to obtain insights about the wider context in which infant feeding beliefs and behaviours are imbedded.

Detailed information about the FES study design and the content of the individual modules is available in 'Assessing the Behavioral and Local Market Environment for a Commercial Complementary Food: a Focused Ethnographic Study Manual (First Edition) GAIN, 2010 (Peltó & Armar-Klemesu 2010b).

The study area and the sample

The study was conducted in the Greater Accra Metropolitan Area in eight different residential areas representing a wide range of conditions from dense urban neighbourhoods to peri-urban areas. Some of the areas have a long settlement history, while others are recently established. Some are populated with households who have been in Accra for many years. Others are comprised mainly of migrants from other parts of the country. Some are home to families that are relatively well off; others are composed mainly of families who are very poor. Together, they capture a wide cross section of Accra society.

Interviews were conducted in Twi or Ga, two main local languages, and, with permission, were audio recorded. Although respondents spoke in the local language, they also used English words from time to time over the course of the interview. This is a common occurrence in urban Ghana when local languages are being spoken. Two of the respondents were better able to express themselves in English, so their interviews were conducted in a mix of Ga or Twi and English.

Table 1. Socio-demographic characteristics of respondents

Characteristics	Number of respondents
Age of index child (months)	
6–8	7
9–12	11
13–18	7
19–24	5
Age of respondents (years)	
<20	1
20–29	10
30–39	19
Total household size	
2	2
3–4	9
5–6	13
7–8	3
>8	3
Number of children of respondent	
1	5
2–3	12
4–5	11
6	2
Number of children under six in household	
1	8
2	17
3	4
4	1
Living Standard Measures (LSM) status	
3–4	14
5–7	7
8–10	9

To recruit respondents for our study, we laid out a grid with the combination of age and LSMs categories. Field staff visited each of the eight communities and randomly selected a street on which to start approaching potential respondents. The first screening was for child age, after which, the LSM screening questions were asked. As recruiting progressed, and child age/LSM categories were filled, the number of women who were screened increased because of the need to meet the remaining respondent slots. Using this method, a total of 30 caregivers (mothers) were recruited for the study. Table 1 shows the socio-demographic and LSM characteristics of the sample.

Data analysis

The tapes from the interviews were transcribed and translated. These records, together with the interview-

Table 2. Daily food expenditures

LSM (high to low)	Household food expenditures mean and (SD)	Expenditures for IYC mean and (SD)
8–10	12.9 (7.0)	2.1 (1.2)
5–7	9.3 (5.8)	2.4 (1.3)
3–4	9.2 (2.9)	1.6 (0.6)

LSM, living standards measures; SD, standard deviation; IYC, infants and young children.

ers' notes taken during the discussions with respondents, provided the corpus of data for text analysis. Text analysis was conducted independently by both authors of the paper. When differences in interpretation occurred, these were discussed and reconciled. The small size of the database made it feasible to carry out the text analysis without using computer tools to facilitate coding. We worked directly with transcripts, creating files of statements on specific topics and issues. With small samples (30 or less depending on the module) and hand tabulation, simple descriptive analysis was possible without the assistance of a qualitative data analysis software program. Quantitative data from the modules were entered and analyzed in Excel.

Results and discussion

Characteristics of the sample

From Table 1, we see that the respondents represent a wide range in age, experience in child care (from new mothers to women with several children) and in household composition. The majority of the respondents have more than one child under the age of 6. There is also a wide range in SES. All of the households had electricity, but the majority of women are living in difficult conditions. Many of the women in our respondent sample keep the house without the advantages of running water, an indoor toilet, a refrigerator or a gas or kerosene cooking stove.

As shown in Table 2, many respondents estimated that they spend just under 10 cedis (\$7.00) a day on food for the household, while the estimates of the highest LSM respondents were about 13 cedis (\$9.00)

per day. Women did not have difficulty estimating the amount of money they spent on food for their infant or young child, and we see that there is very little variation across LSM groups, with an estimate of 1.6 cedis (\$1.12) in the lowest LSM categories and 2.1 cedis (\$1.50) in the highest groups. On average, 25% of household food expenditure is for foods for IYC.

Feeding practices

To generate a qualitative picture of feeding practices, we administered a classic 24-h recall, beginning with asking about the first item the child had eaten on waking and continuing through the day, for the day prior to the interview. Table 3 shows the results for the 30 children whose mothers we interviewed. A description of the cereal-based foods in this table can be found in Table 4.

The phrase 'complementary feeding', which is used with reference to feeding practices during the period from 6 to 24 months, is intended to remind us that foods given to IYC are intended to be 'complementary' to breast milk. All of the children in our sample were breastfed at birth. Twenty-two (73%) of the 30 children were still breastfed at the time of the interview. All seven children in the 6–8 months age group were breastfed, while nine (82%) and six (50%) of those in the 9–12 and 13–24 months groups, respectively, were breastfed. Mothers were generally not able to estimate the number of times they breastfed their child in a day, and most expressed the idea that they breastfed an uncountable number of times, even with the older children.

The number of times complementary foods were given to the child (feedings) was derived from the 24-h food record. We find that two of the seven infants in the 6–8 months age group were fed less than the recommended 'twice a day'. Eight of the 11 infants in the 9–12 months age group and all of the 12 in the 13–24 months age group were fed the recommended minimum of three times a day.

Cereal-based foods in the form of instant cereals and porridge, and as traditional family staples consumed with soup and stews, predominate. What is particularly striking in these food records is that 11 of the 30 IYC received Cerelac (Nestlé Ghana Ltd,

Table 3. IYC food intake records for the day prior to the interview (youngest to oldest)

Age (months)	BF	Feed 1	Feed 2	Feed 3	Feed 4
6	Yes	Hausa <i>koko</i>	Hausa <i>koko</i>		
6	Yes	<i>Koko</i>			
7	Yes	Banku + stew			
7	Yes	<i>Koko</i>	Rice and egg stew	Banku + egg stew	Cerelac®
7	Yes	Mashed kenkey	Mpotompoto		
7	Yes	Cerelac®	Mpotompoto		
7	Yes	<i>Koko</i> + soya	Banku + soya + okro stew	<i>Koko</i> + soya	
9	No	Hausa <i>koko</i>	Mpotompoto	Mashed yam + garden egg stew	
9	Yes	<i>Koko</i>	Cerelac	<i>Koko</i>	
9	Yes	<i>Koko</i>	<i>Koko</i>		
9	Yes	Cerelac®	Cerelac®	Cerelac®	
9	Yes	Cerelac®			
9	No	Tom brown	Rice + stew	Mashed kenkey + milk	Hausa <i>koko</i> + milk
10	Yes	Mashed kenkey			
10	Yes	Weanimix	Mpotompoto	Cerelac®	Banku + stew
10	Yes	<i>Koko</i>	Tuo zaafi + ayoyo soup	<i>Koko</i>	
11	Yes	Cerelac®	Rice + stew	Banku + okro soup	Cerelac®
12	Yes	Tea + bread	Instant wheat cereal	Cerelac®	Fried spiced plantain
13	Yes	Cerelac®	Rice and stew	Banku + okro soup	Cerelac®
15	Yes	Hausa <i>koko</i>	Cerelac®	Mashed kenkey	Mpotompoto
15	Yes	Milo + bread	Jollof rice	Indomie instant noodles	
16	Yes	Milo + bread	TZ + ayoyo	Mashed Kenkey	
16	Yes	Tea + bread + fried egg	Tea + bread + egg	Tea + bread + egg	Banku + palm soup
18	Yes	Rice porridge + bread	Rice and stew	Fufu + palm nut soup	
18	No	Milo	Cerelac®	Rice + stew	Cerelac®
18	Yes	Milo + fried egg + sausage	Cerelac®	Banku + okro soup	Jollof rice + vegetables
20	No	Milo	Weanimix + nido	Rice + palava sauce	Nutrolac
20	No	Tea	Rice + stew	Banku + okro soup	Kenkey + groundnut soup
21	No	Milo + bread	Banku + stew	Akple (banku) + okro	
22	No	Cold Milo	Banku + okro soup	Fried yam + sausage	Rice + stew + sausage
24	No	Bread	Hausa <i>koko</i>	Rice + stew	Jollof rice

IYC, infants and young children.

Accra, Ghana), a commercial, fortified, instant porridge that is sold, ready to mix with water or milk, in every community in our study. The number of times in a day that these 11 children ate Cerelac varies from once to three times a day. Traditional porridge, *koko* and *Hausa koko*, are also very common in the food records. What is surprisingly low is the number of times that weanimix or tom brown (generic or branded, commercial, non-instant, usually multigrain cereal) appears in the recalls.

Infants are more likely to be given porridge or instant cereal as the first meal of the day, whereas young children (a year and above) are typically consuming tea, or a chocolate drink (Milo Nestlé Ghana Ltd, Accra, Ghana), with or without bread, as the first

food in the morning. These are family breakfast foods, and, as can be seen in the table, the foods that follow later in the day are also family foods, which suggest that many children are no longer being given specially prepared complementary foods in the second year of life.

There is a notable absence of fresh fruit in the records. While this may reflect actual dietary intake, it is probable that respondents failed to report them, even with the typical prompting that characterizes data collection with a 24-h recall, because they do not regard fruit as food (see below). In fact, in another part of the interview, many of the women said that they felt that children should be given fruit, particularly fruit juices, because they are health promoting.

Table 4. IYC Foods given as porridge

Porridge	
Name	Description
Koko	Traditional fermented maize porridge; also referred to as white <i>koko</i> ; usually made at home
Hausa koko	Fermented millet porridge, usually purchased ready-to-eat from local (street) food vendors
A commercial instant cereal (Cerelac®)	Fortified instant cereal manufactured by a multi-national company; available in a variety of grains and flavors and in multiple package sizes, including single-serving packets; mixed with water or milk. It is made from.
Home-processed tom brown	'Tom brown' is a generic name for a variety of cereals prepared as porridge. Home processed is usually made from roasted maize flour.
Enriched tom brown/weanimix/prepared at home or purchased from health centres	Weanimix is used interchangeably with tom brown for cereals prepared from maize, soya beans and groundnuts roasted and milled together into composite flour; prepared as porridge.
Commercial, unfortified (branded) tom brown	Processed multi-grain cereals/legume composite flours; prepared as porridge.

We used an ethnographic technique known as 'free listing' to elicit an emic inventory of the foods that are considered appropriate for infants and children. The technical term *emic* is used in anthropology to refer to 'the insider's perspective', as contrasted with the perspective of the investigator. Sixteen specific foods were spontaneously described by respondents. The results of the free listing were not a definitive list of all the foods that children in urban Ghana receive, and many of the foods that appear on the 24-h recall were not mentioned. We interpret this result as evidence that the request for a spontaneous list of complementary foods elicits the foods that are most salient from the mothers' perspectives. Of the 16 foods that women mentioned, five were porridge. However, we also observed a pattern in which specific foods are linked to child age: Porridge received first mentions for 6- to 8-month-old infants, while free listing of foods for children in the 19–24 months typically elicited items that were collectively referred to as 'family foods', and porridge was mentioned only after probing or prompting. Table 4 shows all the IYC foods that are given as porridge. Those that were mentioned spontaneously in the free listing are indicated in boldface type.

An overview of mothers' concerns about health and nutrition

We begin our presentation of the results and discussion about beliefs, knowledge and values with an

overview of mothers' concerns about health and nutrition. To set these concerns within the larger context of child caregiving, we first asked our respondents to describe the kinds of problems and challenges that families with IYC face. Mansah, a young mother with one child 20 months of age, elaborated her views as follows:

You do not necessarily need money to take good care of your child. But you can manage to keep the child healthy so that everybody will commend you for taking good care of her . . . I do not take delight in seeing my child play on the bare floor like other children. This is because some germs may be picked up by the child. I also keep an eye on wherever she goes to prevent accidents. I also make sure that whoever is going to pick her up is well kept. I also ensure her diapers are regularly changed to prevent rashes. I also make sure she is bathed and wearing neat clothing. As for food, she eats well so I make sure she has food all the time. . . .Feeding, medication, hygiene are all part of the good care. I think they make the child grow well in a healthy environment. Some children are small for their ages because they did not get the kind of care that they should have. But a well cared for child grows well and is a delight to the mothers and others around her. With good care, a two year old child can look like a 4 or 5 year old child.

Some mothers responded to our opening question with a diverse set of health concerns and did not bring up food-related issues until we asked a probing

question. For example, Jenny, the mother of a 7-month-old, said:

Well, my concerns have to do with the health of the child. Sometimes they fall sick and you need to give them medications to make them well. Supposing you give the medications, and the baby is still not well, you send her to the hospital . . . As a mother you need to constantly check the baby's diapers to be sure the baby is not wet, or else the baby gets a lot of discomfort and may even develop heat rashes. So the personal hygiene of the child is also very important . . . You have to be vigilant to ensure that the child does not put dangerous things into her mouth. We must also ensure the child is bathed well and wears clean clothes.

Interviewer: What about food? Is food another thing that concerns you?

Jenny: Food is very important. When I wake up every morning, I have to see to it that the child has food to eat.

Another respondent, Maureen, also gave us a list of several different issues. When we said, 'You mentioned education, healthy eating, preventing him from getting hurt and money. Among these, which do you think is the most important in ensuring your child's health?', her reply was, 'Healthy eating'.

A few respondents immediately began talking about food and nutrition. Sarah, the mother of a 6-month-old and four other children, said,

I am mainly concerned about her feeding. I make sure she eats nutritious foods. If her appetite goes down, I take her to a pharmacist to prescribe some drugs for me. I also prevent them from playing under the scorching sun . . . if my child feeds well, she will always be healthy.

One respondent said, 'The major problem is feeding because each and every morning when one wakes up, she has to think about the kind of food to give to the child'. Another respondent, Mina, whose 17-month-old daughter is not easy to feed, began by saying, 'The difficulty I have identified so far is in feeding. She does not like food, so when it comes to eating, it's so difficult.

How important are health concerns as a factor that affects decisions about what to feed IYC?

To assess this question we asked the full sample of 30 respondents to consider five factors – healthiness;

Table 5. Ranking of factors that affect decisions about what to feed

Factor	Means (5 is most important)
Healthiness	4.9
Child acceptance of food	2.9
Cost	2.9
Convenience	2.2
Ease of acquisition	2.0
Influence of others	1.3

cost; child acceptance of foods; convenience; and ease of acquiring food – and to rank them in order of importance for their decisions about what to give their child. In a subsample, we included another factor – influence of others.

The results of this exercise, presented in Table 5, are striking. Clearly, health trumps everything else. Nearly all mothers chose healthiness as the most important factor they consider in making decisions about food for their children. Only three mothers assigned it to second place (after cost), and no one relegated it to a lower position. Anthropologists use the term 'cultural consensus' to describe a situation in which there is a very high level of agreement for a particular value or belief, and there is a technical procedure for calculating levels of cultural consensus (Weller 2004). In anthropological parlance, we can say that there is a 'strong cultural consensus' that the 'healthiness' of foods is paramount. Whether there is a cultural consensus about the relative healthiness of specific foods is the next issue we examine.

Are some foods healthier than others?

Underlying the health ranking is the implicit assumption that foods differ in their healthiness. Just how different are they from the perspective of Ghanaian mothers? To address this, we turn to the interview data on women's ratings of IYC foods for healthiness. To obtain these data, we initially cast a wide net, asking about all of the foods that were elicited during the Free Listing exercise, plus additional cereals and other family foods. We asked all of our respondents to rate food items with respect to healthiness, as well as other qualities on a scale of 1 to 5 (least to most

Table 6. Ratings of cereal foods ($n=30$)*

Cereal	Health	Child acceptance	Convenience	Cost	Ease of acquisition
Cerelac with milk	4.8	4.3	5.0	1.1	4.5
<i>Koko</i> + [†]	4.7	4.4	3.8	1.6	3.6
'Tom brown home plus' [†]	4.6	3.5	3.3	2.3	2.7
Millet porridge with milk	4.5	4.3	4.7	1.9	4.3
Cerelac with water	4.5	4.3	4.9	1.2	4.6
'Tom Brown' branded flour	4.5	4.3	4.2	2.5	3.8
'Tom Brown' maize flour, home prepared	2.1	3.1	3.2	4.3	3.3
Millet porridge	2.1	3.4	4.8	4.9	4.4
<i>Koko</i>	1.7	3.2	3.6	5	4

*All columns, the best (e.g. Best health, highest child acceptance, lowest cost) is 5 and the worst is 1. [†]The 'plus' indicates 'home fortification' with fish powder, ground roasted peanuts, soy flour and/or oil. 'Tom brown' is a generic name for porridge that are made from ingredients other than fermented maize (*koko*) or millet (Hausa *koko*). The term covers a range of mixtures from roasted maize flour to multi-ingredient weanimix.

Table 7. Ratings of non-cereal foods

Food	Healthiness	Acceptance	Convenience	Cost	Ease of acquisition
(Full sample $n = 30$)					
Mpotompoto	4.5	4.1	2.6	3.0	3.0
Mashed yam	2.4	3.0	2.8	3.6	3.1
Tuo zaafi	4.2	4.0	1.5	2.4	2.7
Banku/okra	4.2	4.1	1.4	2.1	2.5
Boiled yam/stew	4.4	3.6	1.8	2.3	2.6
Cassava-plantain fufu	3.3	2.9	1.1	1.9	2.5
Boiled rice/stew	3.4	3.9	2.1	2.1	3.1
(Subsample $n = 12$)					
Rice balls	1.6	2.4	3.0	4.1	4.0
Rice balls/peanut soup	4.1	3.3	1.3	1.7	2.3
Rice and beans/fish	3.1	2.5	1.8	2.4	2.3
Boiled plantain/stew	4.6	3.8	2.3	2.2	1.8
Fried plantain/stew	4.8	4.2	1.7	2.5	2.4
Jollof rice	3.8	4.0	2.0	1.8	2.3

desirable). Table 6 shows the ratings for cereal foods. Mothers' views of non-cereal IYC foods are shown in Table 7.

Mothers perceive clear differences among the cereal-based foods that are currently available in their environment. There appears to be a basic division into cereals that generally receive high ratings on health and cereals that are generally viewed negatively in relation to their health value. While traditional complementary foods, *koko* and millet porridge (Hausa *koko*), get the lowest ratings, the clear division between high health and low health cereals is not due simply to a rejection of traditional

foods in favour of commercially produced items. Traditional foods can receive high ratings on health, actually somewhat higher than commercial foods that are prepared without milk, provided they are augmented with additional ingredients or milk.

One conclusion from Table 6 is that mothers are well aware of the nutritional advantages of milk. Second, it appears that they have been exposed to nutrition messages about the value of adding fish powder, ground roasted peanuts, soy flour and/or oil to traditional *koko*, as 'home fortified *koko*' ('*koko* + ' in the table) ranks just below Cerelac[®] with milk (and above Cerelac[®] prepared without milk).

Ideas about the healthfulness of specific cereal foods, both traditional and commercial, show a high degree of cultural consensus. For example, 28 of 30 respondents gave Cerelac® with milk high ratings (5 or 4 on the scale of 1 to 5), 26 of 30 did the same for Cerelac® without milk. Similarly, *koko*, which has the lowest mean rating of all the cereals, was given a low rating (1 or 2) by 24 of the 30 respondents. There was somewhat less consensus about the negative quality of millet porridge, which rates just above *koko* on the low end of the scale. We conclude that the perceptions about individual cereal foods, like the perception about the importance of health as a factor in what one feeds one's children, are characterized by strong cultural consensus.

Table 7 shows the ratings of non-cereal foods that are commonly fed to IYC. Many of these are also family foods. The foods in the top half of the table were rated by all of the respondents. The foods in the lower half were rated by a subset of 12 respondents. With the exception of rice balls and mashed yam, the foods are generally given high ratings on healthiness. Women frequently commented that the meat and fish in the stews are excellent sources of nutrients. Typical phrases used to describe these foods include: 'They are all very nutritious'; 'They are full of energy and will make them healthy'; 'These will make them healthy and strong'; 'Generally the softness of these foods makes them convenient for the baby. They are also very nutritious'; 'They can easily eat these foods. They are highly nutritious'.

Why are some foods healthier than others?

Nutrition beliefs and knowledge

In the local language, the concept of *ahondene*, which translates best as nutritious, refers to a substance that gives strength. This, in turn, leads to *apomdene* (healthy or the state of being healthy). Regardless of their level of education or literacy, the respondents had no difficulty in rating the individual food items on a scale of healthiness. The task intuitively made sense to them. They readily make comparisons among food items with respect to their health value.

From the perspective of our respondents, a fundamental component of healthiness in foods is that they

are nutritious. Most of the women used one or more words that are best translated into English as 'nutritious'. Here is a sampling of the types of comments our respondents made as they rated the specific food items: 'These foods have no nutrients', 'They are all good and nutritious', 'Children like them and they are nutritious', 'They are highly nutritious', 'They are not as nutritious as the others', 'These will make them healthy'. Explaining the low rating she assigned for *koko* and millet porridge, a respondent said, 'The nutrients [in them] are not enough.'

Some women mentioned vitamins in connection with specific foods. For example, Jenny said: 'Fruits make the children strong and healthy. They also contain vitamins'. When the interviewer asked what vitamins do, she replied, 'They make us strong and healthy'. Later in the discussion, she commented that Cerelac® contains vitamins.

Maureen, who has a secondary school education and the highest LSM of the women in our study, offered this articulate view of nutrition during an exchange about healthy foods for her 15-month-old son:

Interviewer: How would you prepare Albert's food to ensure that it is very healthy? What would you consider?

Maureen: The nutritional value of the food.

Interviewer: What nutritional values would you consider?

Maureen: It should contain proteins, vitamins, carbohydrates, minerals, fats and water.

Interviewer: You mentioned vitamins. What do vitamins do for the body?

Maureen: It makes the child grow well.

The concept of vitamins is not part of the conceptual framework about nutritious foods for all of the women. Consider the following exchange with Estelle, the mother of a 7-month-old girl and two other children. After she used the word 'nutritious' in connection with a discussion about some complementary foods, the interviewer ask:

Interviewer: Have you heard of vitamins?

Estelle: No.

Interviewer: When you go for weighing [at the child welfare clinic], what 'drugs' do they give to Jessica?

Estelle: Polio treatment drug and a red drop called vitamin A.

Interviewer: Do you give your child fruits?

Estelle: Yes, especially orange. I squeeze the juice, dilute with water and give it to her by means of a spoon.

Interviewer: Why do you give her orange?

Estelle: It helps prevent constipation.

Another respondent, Ama, the mother of a 15-month-old and another child, gave us this interesting conceptualization of food, fruit and vitamins:

Interviewer: In talking about ensuring the health of your child, you did not mention fruits. Do you give your children fruits?

Ama: Yes, I do.

Interviewer: So why didn't you mention it?

Ama: We were talking about foods and not fruits. Fruits are not foods.

Interviewer: Why aren't fruits food?

Ama: Fruits do not give energy. But they protect the children against diseases and make them grow well. Fruits also give free bowels.

Interviewer: What do fruits contain?

Ama: They contain vitamins like E, A, C.

The concept of vitamins also occurred in spontaneous discussions about vitamin supplements in the context of discussing strategies for dealing with poor appetite (see below).

Another dimension of healthiness relates to food hygiene. This idea is reflected, for example, in the following statement: 'Even if my baby does not like the food, its healthiness is more important. Healthiness of food means it is commercially manufactured like Cerelac® and L (infant formula).' The cleanliness of food can be achieved through different means. For some women, as expressed in the quotation above, 'factory-made foods are clean'. Others feel that the only method to ensure the health (i.e. safety) of foods is to make it from scratch themselves. For example, in answer to the question 'What makes food healthy?', Patricia said: 'Food prepared at home because one cannot trust food prepared outside'. For women who hold such views, getting food from vendors on the street is to be avoided. However, others expressed the view that one can buy safe, ready-made convenience foods on the street if you are careful about whom you buy from.

In summary, mothers clearly believe that some foods are healthier than others. The education level of our respondents varied widely from no education to completion of high school. Some of the women are functionally illiterate, and none of them reported reading magazines or newspapers (one of the LSM indicators). Nonetheless, their beliefs about the differential health value of different foods reflect larger concepts about what constitutes healthy food and good nutrition, many of which are closely allied to contemporary nutrition and public health knowledge. Healthy foods are sanitary. Healthy foods are high in nutrients.

Child acceptance of foods

Acceptance comes first, because the child has to eat to be healthy.

Returning to the data in Table 6, we see that child acceptance was ranked equally with cost as a factor that affects women's decisions about what to give their children. Mothers carefully monitor their children's reactions to foods and are quick to make changes when a child shows signs of rejecting an item, offering substitutes for the rejected foods. In the discussions about individual food items, virtually all the interviews involved at least passing mention of children's reactions to particular foods. Moreover, how well or poorly children eat in general – their appetite – was a subject of concern that surfaced repeatedly throughout our interviews. In the course of the study, no respondent ever voiced a concern about lack of availability of appropriate, nutritious complementary foods. On the other hand, a common theme, closely related to child acceptance, was an abiding concern about problematic eating – e.g. rejection of foods, refusal to eat – on the part of children.

Child psychologists emphasize the idea that infant feeding is a two-way process in which infants play a strong role. Some nutritionists and other public health professionals forget this, but mothers do not. In the rating exercise, as well as in their comments throughout the interviews, they frequently reminded us that they are paying attention to how their children respond to the foods they offer.

Managing the logistics of food: cost, acquisition, preparation and convenience

Cost

People give all sorts of advice when it comes to caring for a child, but it is the money I have that will determine what I would buy. (Mary, mother of a 10-month-old and three other children)

During the course of the interviews, nearly all of the respondents voiced concerns about having enough money to take care of their children. The issue of poverty and food insecurity was a thread that was a subtext in the interviews. Two questions were particularly likely to elicit comments about economic resource constraints: (1) a general question on problems parents face in raising children; and (2) a question asking about where and how mothers acquire food. As the nature of the statements was similar regardless of the question that elicited them, we present illustrative examples below:

The major problem is money. Currently, I am jobless so I solely depend on the meager amount of money my husband provides. I have to do a lot of management to keep the family running.

It's mainly financial issues. I used to sell at the market, but since I gave birth, I have not been able to go, so I am much burdened financially.

Many a time we are faced with monetary problems.

Money does everything. If there is no money, I cannot give my child proper education and provide him with healthy food.

It is worrying because there are times that the food gets finished and it's like there is no money to buy some at that time.

Interviewer: What major problems do you face in her upbringing?

Respondent: Financial difficulties. I am paid monthly, so sometimes, I enquire money from my husband, and if he also doesn't have, I turn to my sister for assistance. So generally, money is the problem.

It is clear that having sufficient money to feed and care for their children is a primary concern in the lives of these Ghanaian women. However, as we see in the following sections, Mary's unidimensional character-

ization of the determinants of her decisions about infant feeding does not seem to reflect the views of most of the respondents. In addition to food costs and financial resources, cultural factors (knowledge, beliefs and values), child acceptance of foods and issues related to food acquisition and preparation are also important. We examine the latter in the next sections.

Acquiring foods: the matter of control over resources to purchase food

From one culture to another, women's roles in acquiring foods to feed the family vary widely. In some farming societies, men have the responsibility for growing the food and ensuring that storage facilities are full, while in others, women have a major responsibility for producing food (Goodman *et al.* 2000). In the former, women typically have little to say about what foods are available to them to prepare meals for their IYC and other family members, although kitchen gardens and/or obtaining meat and eggs from raising chickens or small animals are often exempted from male control (Chatterjee 1989).

Even in many urban communities, men fully control household access to purchased foods, either because they do all of the food shopping or because they control the amount of money a woman has available to make purchases. When women earn money independently of their husbands, they sometimes, but not always, are given control over their funds, and it is often the case that they use their earnings to improve the family diet, particularly the diet of infants and children. The extent to which women have control over household food purchasing varies widely. This generalization applies not only to differences between societies, but is also within them, and it is therefore important to investigate the situation in every community where one wants to understand food purchasing decisions.

To gain insight into food purchasing in Accra with respect to who controls the resources that are necessary to acquire food, we used two techniques: (1) we included 'influence of others' as a factor in the ranking exercise of 'factors that affect what you feed

your IYC', and (2) we examined this in an exercise in which respondents were asked specifically to compare Cerelac® and tom brown.

In the ranking exercise, 'influence of others' had the lowest rank (1.3) and most respondents relegated it to last place (See Table 6). Intriguingly, a number of the respondents were indignant about the suggestions that anyone would influence how they managed the feeding of their infants. They made forceful statements such as: 'I decide what is best for my child'; 'I don't listen to people. I do what is right'; 'I am not influenced by anyone in anyway'.

On the other hand, the responses in the comparison exercise with the two cereals were more nuanced and revealed a more complex picture of variation within the community. In this exercise, a third of the women chose the highest scale value (5) for the influence of others with respect to their decisions about buying tom brown or Cerelac®. Another group assigned middle levels to the influence of others, and only a minority said that it was not important. Significantly, the women who perceived a strong influence of others usually identified the husband as the influential person, or in one case, it was a sister whose influence was explicitly ascribed to the fact that she supported the family financially. The husband's role as the person who controls the finances was typically given as the explanation for his influence. For example, one respondent said: 'My husband has so much influence because he gives out the money for everything'. Apart from the influence that comes from financial control, some women indicated that they seek advice from their mothers. Also, some of the women referred to the advice they receive at the child welfare clinic as a source of influence.

Ease of access and distance as influential factors

Once it has to do with my child's health, I will do all that I can to keep the child healthy. Distance and time are irrelevant if only the child will eat the food. (Estelle, mother of a 7-month-old and two other children)

Compared with rural areas, urban centres tend to have a high density of places to obtain a wide range of foods. They also have a great range of choices in the

types of foods that are available – from ready-to-eat and ready-to-cook foods to basic ingredients. The effects of these characteristics are evident in the massive dietary changes of contemporary urban life. However, access to the diversity of foods one finds in urban areas is not uniform across cities and peri-urban area. A recent and growing literature on food availability in poor neighbourhoods is drawing attention to the fact that, at least in large cities in Europe and North America, constrained availability of some foods, especially fresh fruits and vegetables, is exerting a negative effect on household diets (Larson *et al.* 2009; Bodor *et al.* 2010). Poor transportation services and the fact that most poor families do not have cars add to the problem of access (Bostock 2001; Morland *et al.* 2002).

Given its potential impact on child feeding, it was important to explore issues of access to IYC and household food. To do so, we employed the following techniques: neighbourhood observations; asking about 'ease of access' as a dimension in the ratings of IYC foods; and including it in the relative ranking of factors that affect what one feeds to children. We asked direct questions about where our respondents purchased their IYC cereal-based foods and the ingredients for these foods, and we asked a subset of respondents to rank distance as a factor that affects what they feed their children. Additionally, as a check on the oral reports, we asked respondents to draw maps in which they located their residence in relation to the locations of food purchases. We begin here with the respondents' perceptions about 'ease of access' for IYC foods.

In Table 6, we see that the most expensive commercially produced infant cereal (Cerelac®) receives the highest rating for 'ease of acquisition' relative to all other foods. In fact, most respondents gave it the top rating of 5. This finding is explained by the fact that most of the small neighbourhood kiosks that dot the landscape offer single-portion packets of Cerelac® for sale. Millet porridge (Hausa *koko*) follows closely behind Cerelac® in the ease of access rating. This is explained by the fact that it is available, 'ready to eat' from the ubiquitous neighbourhood 'porridge sellers'. 'Hausa *koko*' is made not only for IYC, but it has a large market as the ultimate convenience food for a household.

The cereal that gets the lowest rating is home-fortified tom brown. In this case, the referent is to the various forms of home-prepared weanimix, which are augmented with, e.g. soya flour, ground peanuts and other ingredients that are added to boost its nutritional value. The significantly lower 'ease of acquisition' value of this cereal compared with Cerelac® (Chi square = 15.9; $P < 0.0001$) reflects the fact that the additional ingredients are not usually readily available in the urban and peri-urban neighbourhoods.

Compared with the cereals in Table 6, the non-cereal foods in Table 7 are given substantially lower values on ease of acquisition. The mean values in this table mask a range of variation among respondents on ease of access. For example, both *banku with okra* and *boiled yam with kontomire with fish*, with means of 2.5 and 2.6, respectively, have bimodal distributions in which about one-third of the respondents are selecting easy access (ratings of 5 or 4), while nearly two-thirds are selecting difficult access (ratings of 1 or 2). It is probable that the differences in the selection of values reflect differences of proximity to large markets and stores from one neighbourhood to another.

Distance is a component of 'ease of access'. For most people, having to travel a greater distance to obtain a service or goods reduces one's perception about how easy it is to acquire it. In a subset of 12 respondents, we included distance in the ranking of factors that affect what they feed. The majority of women selected intermediate values for the importance of distance, compared with issues of health and cost. Two respondents gave it a high rank and only two placed it last.

Comparing these rating with those of the two cereals provides another element to the interpretation of the meaning of 'distance' and 'ease of access'. In their ratings of Cerelac® and tom brown, three-fourths of these respondents gave Cerelac® the most favourable rating (5) on distance with a mean of 4.2, while the mean distance value for tom brown was 3.2. These ratings accord with the 'ease of access' rating and indicate that the distance one has to go to buy a food relates to perceptions about how easy it is to acquire it.

The maps women drew, in which they located the places where they buy different kinds of food, confirm the generalizations about distance. These showed that kiosks where respondents purchase Cerelac® and the vendors from whom they buy ready-made porridge are uniformly located a short, often very short, walking distance from their homes. On the other hand, most of the women indicated that purchases of ingredients for family foods require a trip by *trotro* (the local name for the jitney service, which is the major source of public transportation). Typically, women make the trip to large markets once a week. On the maps, some women indicated the location of smaller stores and convenience stores, usually at greater walking distance than the kiosks, where they also make some food purchases. The supplies for making weanimix, or the mix itself, are sometimes obtained at the child welfare clinics, which also involves travel (with the baby) by *trotro*. A few women reported that a relative (mother or sister) brings them the supplies they need to prepare weanimix.

Regardless of the challenges that women face in providing foods for their children, 'ease of access' to foods was ranked as the least important factor that influenced our respondents' choices about what they feed their children. Similarly, 'distance' was also generally downgraded as a compelling factor, and even convenience is not overtly touted as being of primary importance. Some women, such as Estelle (quoted above), felt these were not important influences.

On the other hand, the relationship of acquisition to child caregiving is actually quite complex, and women often articulated the competing pressures they experience, and which they have to manage. Here are some examples: 'If it is closer, I can get it in time and come back home to do other things. I need time for the children'; 'A short distance will give me ample time to go and return to do other things'; 'With weanimix, I have to board a bus to be able to purchase it. With Cerelac®, I just walk to the market to get it. I need time to be able to feed my child and take care of her'; 'Time is important to ensure that a child is healthy'; 'My child is like my eye. His health should be my priority. Time is important; distance: I need to get back home in time to cook and take care of my child'.

These poignant, often trenchant, statements capture critical aspects of food management from the perspective of acquisition.

Convenience

Another dimension of food management that is related to issues of ease of access and distance is 'convenience'. Convenience is a rather global concept, which may be defined differently by different people. For some, 'convenient' means you can eat it 'on the run'. Some people regard foods that are ready to eat and need no refrigeration as convenient. For others, a hallmark of convenience is food that requires no cooking. 'Convenient' can also mean readily purchased and requires no planning ahead. With our urban Ghanaian respondents, we did not try to 'unpack' their various meanings of convenience. Instead, we asked them to rate foods for 'convenience', based on whatever meaning they personally gave to the term. Tables 6 and 7 show the results for the convenience ratings.

Information on food preparation provides additional insights for interpreting the meaning of convenience. We asked respondents to describe their food preparation techniques and procedures for the foods they give their IYC. Here are some examples for *koko* and tom brown. One woman described her preparation of *koko* as follows: 'I bought and steeped the corn myself, then I milled and fermented it. I took a portion of the dough, mixed it with some water and cooked in boiling water while stirring.' Another said, 'I sieved the mixed corn dough, then I cooked it with *whintiaa*. Before that, I bought corn and soaked it for milling'. A typical report on the preparation of tom brown (weanimix) was supplied by Mary: 'I milled some roasted corn, soya beans and groundnuts to get the tom brown, then I mixed some with water and cooked in boiling water, stirring till cooked. After I added some milk and sugar.'

In contrast to the preparation methods for cereals that require cooking, the description of Cerelac® preparation was uniformly short and simple. Twenty-one of the 30 respondents included a description of the preparation of Cerelac® in their narratives. Virtually everyone said they emptied the content of a

packet into a bowl and added water; two women noted that they use 'hot water', 14 women said the water was 'warm', one woman described the water as 'cold' and four of the respondents did not specify the water temperature. It is not clear whether the water is heated to boiling and cooled or just warmed.

When it comes to convenience, only one food from the total of 22 foods in Tables 6 and 7 universally received the same rating, and the highest rating: Cerelac® with milk. Cerelac® prepared with water did almost as well, with a mean rating of 4.9. Next in line, with convenience means of 4.8 and 4.7, respectively, were millet porridge and millet porridge with milk. Notably, for the cereals, the lowest mean ratings on convenience were for home-prepared tom brown and home-fortified tom brown.

The explanation for the exceptionally high rating and total agreement on Cerelac® involves several factors. The packets can be obtained quickly and easily from neighbourhood kiosks. The product is sold in large tins, but also in small packets, and although the price per unit of weight is high, individual packets can be purchased with a small cash outlay. Another aspect of convenience is that it requires no cooking over fire. Although the majority of the women use warm or hot water, this is often water that has been stored in a thermos. Women do not have to heat up a charcoal brazier to prepare Cerelac®. It can literally be purchased and fed 'on demand'. Thus, it qualifies as a 'convenience food' par excellence. Millet porridge is also very convenient because it can be purchased ready-made from a *koko* seller, and sellers are also usually to be found very close to home.

The non-cereal foods routinely receive low ratings on convenience. Of all the items elicited from the initial free listing of complementary foods for IYC, the popular *tuozaafi* (maize/cassava flour cooked into very thick porridge-like paste) and *banku* (fermented maize and cassava dough cooked into thick paste/dumpling) with okra were given particularly low ratings on convenience. The descriptions women gave about their long and complex preparation techniques for these foods provide a clear explanation for these ratings. None of the food items in Table 7 are viewed as convenient. Even home-prepared tom brown, which had the lowest convenience mean of the por-

ridge, was marginally better than rice balls, the most convenient non-porridge infant food.

Conclusions

The purpose of this paper is to present a picture of the general patterns of complementary feeding behaviours in urban Ghana. The use of an ethnographic approach provides insights not only into what caregivers are giving, but also the factors that underlie their behaviours. Clearly, developing statistically supported assessments of these factors in order to accurately describe variability within the population, to obtain the statistical distributions of these variabilities and to examine their relative importance as determinants of behaviour requires other methods and other data.

In the study, we found that economic constraints are critical, and cost is a primary concern. This is not 'news from the front'. In fact, this is what everyone would expect. What is compelling is the finding that from the caregivers' perspective, the healthiness of the foods they give their children is also of primary importance. From their perspective, all foods are not equal and individual foods differ considerably with respect to their 'healthiness'. Providing foods that promote health is a central motivation. This creates difficult problems for caregivers because the cheapest foods are not seen as the healthiest ones. When mothers feed low-cost, traditional porridge, they feel that they are not giving their children the best foods for their health.

Beliefs about the healthiness of foods are part of a larger complex of motivation that can be described as 'nurturance'. The New Oxford American Dictionary defines nurturance as 'emotional and physical nourishment and care given to someone' and 'the ability to provide such care'. In this case, nurturance involves not simply the mothers' ideas about foods for health; it includes a complex of beliefs and practices aimed at furthering the health, well-being and development of children. The voices of the mothers we have included in this paper provide glimpses of this larger complex and its continuous importance for the women we talked with.

Balancing the two competing determinants – cost and nurturance – would be challenging enough, par-

ticularly when one considers the social constraints to decision-making that many women face, particularly in relation to other adults in the household, primarily male partners. But we found that a third sector of determinants also plays a central role in the caregiving/feeding equation – namely issues of time management. These can be summarized by the concept of 'convenience'. As discussed above, this is a complex notion that involves several different elements related to women's time management. The multiple demands on women's time, and the various ways in which they cope with these competing demands, has been a matter of increasing interest and concern in many sectors, ranging from social welfare and social action institutions to commercial activities and markets, as well as social and political analysts and investigators.

Convenience, as such, is not accorded a high place in the Ghanaian caregivers' explicit value systems. But its importance for their decisions about what to feed their IYC feeding is implicit in their behaviours, and in what they say about the challenges of time management. They have to make difficult choices in which saving time for activities other than acquiring and preparing food for their IYC is often important, so important that they are willing to forego other demands on their scarce financial resources.

Nurturance, cost and time are the three vectors of complementary feeding behaviour in urban Ghana. Are these three vectors uniquely applicable to urban Ghana, or are the dynamic interactions among them operating in other cultures and environments? We suggest that this is a fruitful area for research on complementary feeding behaviour and its determinants.

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Conflicts of interest

None.

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