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Original Article

Mothers' Views on Food Security and Complementary Feeding: A Qualitative Study in Urban Iran

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A B S T R A C T

Background and Objectives: Food insecurity may be associated with poor nutrition, which in turn can increase the risk of adverse nutrition and health outcomes among infants and toddlers. This study was undertaken in 2008 to gain an insight of mothers' views on complementary feeding practices and food security.

Materials and Methods: In this qualitative study, data were collected through 10 Focus Group Discussions (FGDs) with groups of mothers who had under two-year-old children in the urban areas of Damavand (7 FGDs; n=51) and Varamin (3 FGDs; n=29). Each FGD was held in the presence of a moderator, two note takers, and an observer. All notes were collected, and the emerging themes were reported.

Results: In the study, nine general themes were identified:

1) The mothers viewed adequate food as a food, which is useful for health in both quality and quantity;
2) Households have limited access to adequate food because they cannot afford it;
3) In hard situations, household's strategies are: changing the type and amount of food, and buying cheaper foods;
4) In case of poverty, mothers abstain from eating to save food for their children;
5) The mothers viewed complementary feeding as soft, simple and light foods, which are especially made for children;
6) The best time for introducing complementary feeding was 6 months of age;
7) There were no complementary local foods in the region;
8) For under one-year-old children, a different type of food was separately prepared;
9) Home-made complementary food was preferred over the readymade type.

Conclusions: Despite mothers' sufficient knowledge about the advantages of complementary feeding, the majority of them had not good performance. This qualitative study provides a foundation and valuable information for future studies on the nutritional health of children in food insecure households.

Keywords: Household food security, Belief, Infant feeding, Mothers, Infants, Qualitative research, Iran

Introduction

Food security is defined as "access by all people at all times to enough food for an active and healthy life" (1), and reversely, *food insecurity* refers to "limited access to safe food and limited ability to acquire food in socially acceptable ways" (2) that affect on multiple dimensions of well-being (3-6). Household food insecurity is an important index to understand the nutritional status of families in countries undergoing the nutrition transition (7).

In Iran, urbanization, demographic changes and main changes in diet patterns have accelerated the nutrition transition. There is a considerable imbalance in food consumption with low nutrient density characterizing diets at all income levels, over-consumption evident among more than a third of households and food insecurity among 20% of the population (8).

Food insecurity may be associated with poor nutrition. It has been shown that the nutritional behaviors and coping strategies of food insecure households increase the risk of adverse nutrition and health outcomes among infants and toddlers (9 -11).

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It is established that a proper diet is vital for early childhood growth and development. Complementary feeding, the stage at which foods other than breast milk or formula starts, completes the nutrients the infants get regarding energy, fat and protein (12-14). The period of complementary feeding, starting at ages 4 to 6, is one of the most critical times for preventing malnutrition. Growth faltering is most evident during this period, particularly during the first phase of complementary feeding (6-12-months) when food of low nutrient density begins to replace breast milk or formula (15, 16).

Complementary foods must provide at least 30% of the needs of children according to the Recommended Dietary Allowances (RDA) (17). The process of complementary feeding (i.e. gradual introduction of food to the child's diet) is highly considered in many studies (18). Based on the World Health Organization (WHO) and UNICEF guidelines, complementary feeding using appropriate available local foods for infants and children is a priority (19). One of the causes of attention to the common local food is its wide availability and low cost (20).

More recent reports on childhood malnutrition in Iran show that it still exists as a health problem (21-24). The most up-to-date national report on childhood malnutrition shows that 7.7, 15.5 and 4.3% of under 2 children are underweight, stunted and wasted, respectively (25). Obesity prevalence reported 5% for under 5-year-olds (26).

Qualitative approach is capable of gaining more comprehensive and in-depth information (27-29). Focus groups, as a form of group interviewing, have been widely used in health promotion and nutrition research combined with other qualitative and quantitative methods. Focus groups are usually used for exploring motivations, and generation of hypotheses and ideas about new theories (28). In addition, it was widely argued that qualitative measures of food security are necessary, as a proper indicator, and should be included in every effort to describe food security (30). The qualitative measures incorporate as essential elements the perceptions of food insecurity by the most affected people, those who have directly experienced these conditions. They are more direct measures of food insecurity than other proxy measures (30).

An understanding of mother's experience of food insecurity is necessary for better assessment of the effect of food insecurity on children's health and well-being (31).

Because of limited information about mothers' views on complementary feeding and food security, as well as the priority and importance of these two topics in the population of Damavand and Varamin and the relatively high prevalence of malnutrition of infants in these two regions (25, 32), this study was done by qualitative method to explore mothers' perception about complementary feeding and household food insecurity in depth.

Materials and Methods

This qualitative study was performed in 2008 on mothers having under 2 years old children in the urban areas of Damavand and Varamin, located in the Northern and Southern Tehran, respectively. Focus group discussion (FGD) with semi-structure interview schedule was used in this study. Eighty mothers were invited by the health staff based on the households' reports in the health centers. FGDs were set in the health centers or related hospitals in the morning shifts in the absence of health staff.

This study was approved by the National Nutrition and Food Technology Research Institute's Ethics Committee. Each participant signed a letter of informed consent. The participants were informed on the aims of the study. They knew that their voices were recorded. They were also assured that their names and wordings would not be revealed to anybody.

Discussion questionnaire guide was designed based on the research objective. Research team (all were nutritionists) consisted of one moderator, two note takers, and one researcher. The person selected as the moderator was flexible, open-minded, good listener, and able to establish a report with the participants and make them talk easily. The note takers were swift and accurate in writing. The researcher watched what happened but had no active part in it. Team members had already trained in techniques of data collection and detailed documentation. Each FGD was held with 6 to 10 participants, and each session lasted 45 to 60 minutes. FGDs were taped by a digital recorder, and simultaneously transcribed verbatim. During the discussions, member checking was done to get assured of true and complete understanding of the participants' ideas. Immediately after each session, team members completed their transcriptions by rereading and filling the blanks according to the tape recorder and transcribed discussions. At the end of each FGD some gifts were presented to the participants. Data collection continued until reaching saturation, which means no new idea or comment from the FGDs was gained. The study process and analysis has been recorded completely.

In order to investigate the validity of the study, it was tried to ensure the accountability, conformability and dependability by simultaneously investigating in the region using triangulation methods. Dependability criteria were completed with concurrently conducting FGDs and in-depth interviews with key informants. For completing conformability, the methods of the study were regularly discussed with consultants and experts in qualitative studies.

For data analysis, a transcript-based analysis (33) was used, which involved reading through the transcripts and field notes, looking for emerging themes. During the analysis, the notes including non-verbal cues and some

meaningful motions of the participants like head nodding, surprise, pauses, laughter, anger, discomfort and so on were used to help to clarify and complete the record transcribing. Then coding categories were developed, and data were coded and sorted into coded categories. Diagrams were constructed to represent patterns and relationships in the data. Coding proceeded towards the development of categories, themes or major constructs. The codes were words, expressions, other chunks of data. We used colored pencils to identify closely linked material. Data analysis and interpretation process are shown in Fig. 1.

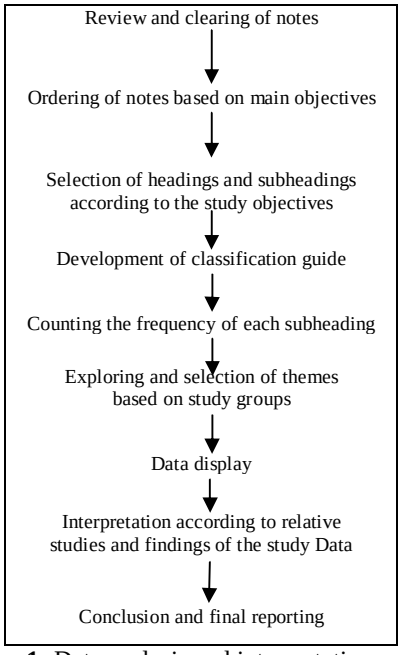

Figure 1: Data analysis and interpretation process

Results

There were 80 mothers who participated in the FGDs. Ten FGD sessions were arranged with groups of mothers who had less than 2 years old children in the urban areas of Damavand and Varamin. Characteristics of the study participants are presented in Table 1.

Most of the mothers (91.8%) were housewives with a mean age of 28.5±6.0 years. 44% had primary education. The total of 9 general themes on the mothers' perception about food security (4 themes) and complementary feeding practices (5 themes) were obtained.

Table1. Characteristics of the study participants

	FGD (Damavand) N=51	FGD (Varamin) N=29	FGD (Total) N=80
Number of session	7	3	10
Mother age, year (mean±SD)	28.1±5.8	29.2±6.4	28.5±6.0
Child age, months (mean±SD)	13.1±7.4	15.1±5.7	14.3±6.4
Family size '3-4', (%)	49.7	51.5	50.5
Mother education, (%)	-	-	-
Ilitrate/elementary	36.2	51.8	44.0
Secondry school	28.9	26.6	27.8
deploma/above	34.9	21.6	28.2
Mother occupation, *housewife*,(%)	- 92.7	- 91.0	91.8

Four themes on the mothers' perception about food security are shown in Table 2.

Theme 1: Adequate food is a food, which is useful for health in both quality and quantity.

In reply to the question "*What is mothers' view about adequate food?*", the majority of the participants mentioned: *"a food that is useful for health" and "a food, which has meat"*. A few of the participants stated vegetables, pasta and different kinds of stews as examples of *adequate food*.

In reply to the question *"How much should be eaten (as adequate food)?*", some of the participants answered *meat twelve times a month, rice three times a week*, and *bread every day*. In reply to the question: *"Regarding the adequate food, which one is more important; quality or quantity?"*, the majority of the participants said both were important. *"We eat a lot."* was said by one participant.

Table 2. Key findings from the Focus Group Discussion (FGD) mothers on food security

	Category	Theme
1	Adequate food ,in terms of dietary quality, and quantity	According to the mothers' statements, adequate food is a food, which is useful for health in both quantity and quality.
2	Access to adequate food	The mothers considered that households have limited access to adequate food because they could not afford it.
3	Households' strategies in case of hard situation	The FGD mothers reported that household's strategies are: changing the type and amount of food and buying cheaper foods.
4	Households' strategies in case of poverty	The participants expressed that the mothers abstain from eating to save food for their children. Other coping behaviors are: missing of a whole meal or reducing the size of meal.

Theme 2: Households have limited access to adequate food because they could not afford it.

Focus group mothers mentioned that households always worry not having enough adequate food to eat.

In reply to the question: *"Do households have access to adequate foods?"*, most of the participants mentioned that they were not able to eat adequate and preferred foods such as meat and vegetables more than twice a week because they could not afford them. A few made negative reply. Other replies were as follows: *"Less than once or twice a week"* and *"It depends on the situation"*. A few of the participants by referring to other expenses implicitly made a negative reply; for example, one participant said: *"Nobody can eat red meat once a week"*.

A few confessed that in some occasions, say when they have guest or in celebrations.

Theme 3: In case of exposure to hard situations, household's strategies are: changing the type and amount of food, and buying cheaper foods.

In response to the questions: *"What are the households' strategies in hard situations such as diseases, family's bad situation, loss of job, problems with housing, and lack of resources and enough money for food?*, most of them answered that at first, they would change type of food, then its amount, and at the end, they would buy cheaper foods.

A few said that the head of household would work harder. These statements were mentioned other participants: *"eat only bread", "eat rice", "eat bread and potatoes ", "borrow money", " cook something easy (cheap)", "buy (foods) in installment", "buy potatoes which is cheaper", "eat bread and milk", and "eat egg and potatoes"*.

Theme 4: In case of poverty, mothers abstain from eating to save food for their children. Other coping behaviors are: missing of a whole meal or reducing the size of each meal.

In reply to the question: *"Do households omit main meals in case of poverty?"*, some made a positive and some made a negative reply. The majority of the participants expressed that, in case of exposure to poverty, mostly the mothers would abstain from eating to save food for their children. Many of the participants mentioned that, in poverty, they would also miss of a whole meal or reduce the size of meal.

A few mentioned, in that case, both father and mother would abstain from eating to save food for their children.

Five general themes associated with complementary feeding were obtained, which are shown in Table 3.

Table 3. Key findings from the FGD mothers on complementary feeding

	Category	Theme
1	Definition of complementary feeding in mothers' view	The mothers considered complementary feeding as a simple, light, soft and dilute diet, which is prepared specifically for the infant.
2	The age to begin complementary feeding and the justifications	The mothers reported age of 6 months as the age to begin complementary feeding. Inadequate breast milk and baby's hunger was the reason to begin complementary feeding.
3	The foods given to the infant as the local diets	According to the mothers' statements, there are no specific or local diets in this region.
4	Preparing individual meals for children under one year	Separate meal was prepared for children under one year.

Theme 1: The mothers considered complementary feeding as a simple, light, soft and dilute diet, which is prepared specifically for the infant.

The mothers participating in the group discussions considered complementary feeding as a simple, light, soft and dilute diet, which is prepared specifically for the infant. A few described complementary feeding as *"the food recommended on the vaccination card"* and *"the things all give to the babies"*. Many mothers mentioned porridge, and a few pointed to eggs, almond porridge, mashed potatoes and pumpkin as the complementary foods. A few also named biscuit and milk. Any of the followings were mentioned by one of the mothers as a complementary food: *"rice milk, dates, banana, lentils, banana milk, soft rice with meat, butter, rice water, fruit puree and starch"*. A small number of rural women noted Cerelac as a complementary food. A few described complementary foods as a kind of meal called *"snack"* to which the child's stomach must get used to in the future.

Theme 2: The mothers reported age of 6 months as the age to begin complementary feeding.

Most of the mothers reported age of 6 months as the age to begin complementary feeding. They expressed *"inadequate breast milk and baby's hunger"* as the reason to begin complementary feeding. A few had begun complementary feeding before the age of six months. In response to the question: *"Why do you give the infant complementary food"*, most of the mothers did not express

any opinion in this regard, and only some stated that the mother's breast milk does not meet the baby's requirements, thus the baby remains hungry. Some reported preventing baby's hunger, getting full enough, baby's growth, and increased baby's requirements to more food and vitamins as the reason to begin complementary feeding. A few mentioned that the babies are weak, their stomach must get familiar to food and they need to have strong bones. Any of the followings were stated by one of the mothers: *"breast milk is a kind of beverage"*, *"breast milk helps to satisfy thirst"*, *"in order to get strength"*, and *"recommendations for complementary feeding by health house and physician"*. Half of the mothers reported porridge as the first complementary feeding. A few of them pointed out almond porridge, rice water and Cerelac. Also a few considered "Biscuit Madar" as the first complementary food. Soup, fruit juice and egg were each mentioned by different mothers as a complementary food. More than half of the mothers pointed to soup as *"a complementary food"*. Some of them pointed to natural fruit juice, porridge, almond porridge, boiled potatoes, meat and muscle extract, broth, eggs and soft rice with meat and chicken. A few mentioned rice milk, pottage, lentils, beans and bananas. Cooked carrots, vegetable juices, rice water, industrial juices, family meal, food stew, yogurt, pasteurized milk diluted with water were each mentioned by one of the mothers as other complementary foods. Most of the mothers mentioned the following in response to the question: *"Why you give complementary food to the child"*: "baby's hunger" and "inadequate breast milk".

Theme 3: There are no specific or local diets in this region.

According to the mothers' statements, there were no specific or local diets in these regions, and the mothers followed usual recipes and used available foods to cook complementary meals for their baby.

Theme 4: Separate meal is prepared for the under one-year-old children.

About half of the mothers prepared separate meal for their child. Most of the mothers did not express any comment about *"For how many meals they would prepare a complementary food?"*. A few mothers would prepare the complementary food for 2 meals a day. A less few would prepare it for 2-3 meals. Preparing 3 meals for 2 days was each mentioned by one mother. Most of the mothers did not respond to the question: *"How you would keep the child's complementary food*?" A few mothers would keep the baby's food in the refrigerator. One expressed that she would dispose of the remaining food.

Theme 5: The mothers preferred homemade complementary food rather than processed food as the former is healthier and safer.

Almost all of the mothers preferred homemade complementary food rather than processed food. Only one of the mothers would prefer processed food to homemade one, and justified her opinion as there are nutrients and vitamins in the processed food. On the other hand, more than half of the mothers stated that homemade food is healthier, better, cleaner, and safer. A few stated: *"They know what is in the homemade food; as this type of food is fresh, and made of natural materials*". A few considered homemade complementary food full of nutrients (such as protein, etc.) and long standing vitamins. A few mothers expressed their reason for not using processed complementary food as: *"Processed food contains preservatives and additives; it may be expired or stale"*. A few also stated that processed food contains a lot of sugar. *"It is not nutritious"*, *"The baby will puff up"* and *"Processed food is like formula"* were each expressed by different mothers as a reason for not using processed complementary food.

Discussion

To our knowledge, this is the first qualitative study of the exploration of mothers' views about food security and complementary feeding in Iran.

The findings of the present study showed that although mothers were aware of the benefits of complementary feeding, appropriate age to introduce complementary feeding, and its quality and quantity (34), they did not practice it correctly.

Focus group mothers reported that in case of exposure to hard situations such as diseases, family's bad situation, loss of job, problems with housing, and lack of resources and enough money for food, the households would change the type and amount of food, and buy cheaper foods. According to the findings of the present study, in case of poverty, mothers abstain from eating to save food for their children; they would also miss of a whole meal or reduce the size of each meal. They mentioned that these situations effect on their food choice, preferences and practices to provide an adequate and healthy complementary food for their infants. These findings are in line with previous studies that showed the importance of the role of mothers' behavior and strategies to provide adequate food for their children (35).

In addition, in consistent with a qualitative study conducted by Lindsay on low-income mothers in Argentina, the results indicated that mothers' child feeding beliefs are influenced by the financial concerns and issues of the households' food insecurity (36). Research with food-insecure household revealed the parents' strategies used to manage the food access of household's members (37).

According to the mothers' perception, they all provided an acceptable definition of child complementary feeding.

In other words, mothers participating in the study had sufficient knowledge in this regard (34). In the mothers' view, complementary feeding was a simple, light, soft and dilute diet such as dilute soup, porridge and almond porridge, which is prepared specifically for the infant. Kruger and Gericke expressed that the soft puree were given to the children due to their soft tissue, filling properties, nutritional value and availability (13). However, Williams & Pinnington found that the participants had little information about complementary feeding of children (38).

In the present study, the age of initiating complementary feeding was six months, as recommended. But this finding is different with that of other recent studies. In a study conducted by Katiyar in India, complementary feeding in the majority of the urban children started before 6 months of age and continued for 2 years (39). Sellen in Tanzania, during group discussions with the mothers, stated that the patterns of weaning and starting complementary feeding were influenced by seasonal variation so that some of the mothers stopped breastfeeding and began complementary food at the end of the monsoon rains (4). Kruger also in group interviews with mothers of children under two years-old declared that the appropriate age for introduction of complementary foods to children is 3 months old. Most of the participants were giving solid foods to their children between 2 to 3 months of age; they had little information about the appropriate age of introducing solid food to children (13). The qualitative study by Castle in Mali, Africa showed that only difference between the two groups of mothers with healthy children and children with malnutrition was in their manner of feeding their children. Although many of the mothers of healthy children did not give complementary food to their children until nine to 10 months of age, the mothers of children with malnutrition were more likely to give their children an early complementary food (41). In the study by Saka in Turkey, prior to the age of 6 months was stated to be appropriate for initiation of complementary food (42).

Based on the participants' statements, there was no region-specific or local complementary food in this region. However, based on the WHO and UNICEF guidelines, complementary feeding using appropriate available local foods for infants and children is a priority (19). Among the causes of attention to the common local food at any region are its wide availability and low cost, as well as the mother's indigenous culture to use it (20).

According to the findings of the present study, the mothers prepared separate meals for their children. But in Kruger's study, the children's food was prepared in separate dishes because of religious and cultural reasons such as different methods of cooking and the time needed for eating as compared to adults. Furthermore, they believed that eating from one dish would have negative impacts on the child. Attention to cultural beliefs about food selection and cooking methods of complementary food was quite clear and evident (13).

In the present study, the mothers preferred homemade complementary food rather than processed food as the former is healthier and safer. In Kruger's study, in order to observe the health, the mothers prepared and gave soft puree to their children because of their soft tissue, filling properties, nutritional value and availability at home but they did not have a good performance to prepare those appropriately(13). However, based on the study by Igbedioh in Nigeria, the mothers used processed complementary food due to its high quality, reasonable price and availability, as well as the recommendation of hospital (43).

This study has some limitations. First, although caregivers such as grandmothers and fathers would play a key role and they should have been approached, the study was not designed to explore the fathers' views but grandmothers participated in our study as caregivers, and the results of their views have been presented in our previous paper (44). Second, mothers from different demographic backgrounds participated in the discussion groups. Despite the potential effect of the subjects from a range of demographic backgrounds, we were not aiming at exploring the effect of socio-demographic factors. Third, we wanted the health staff to invite all mothers who had under two-year-old children based on the households' reports in the health centers. As we did not consider any exclusion criteria for recruitment of the mothers, we supposed they could be as representative of the mothers in the area. However, we do not know if all of the invited mothers accepted to take part in the study.

Conclusion

The findings of this study showed that mothers were aware of the benefits of complementary feeding, and consider it as their duty and try to perform it as it is possible for them in these regions.

Revision of the current guidelines for nutritional programs in order to correct the existing deficiencies in children's complementary feeding and policy making for implementation of supporting programs for mothers' empowerment in food insecure households are recommended, in this population.

This qualitative study provides a foundation for the further exploration of the relation between household food insecurity and child's well-being. It further gives valuable information for future studies on the nutritional health of children in food insecure households.

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