Understanding the Experience of Household Food Insecurity in Rural Bangladesh Leads to a Measure Different from That Used in Other Countries

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ABSTRACT This research aimed to gain in-depth understanding of the experience of household food insecurity in rural Bangladesh and to develop a direct measure of it from this understanding. Using naturalistic, emergent inquiry, in-depth interviews were conducted with 21 rural women living in diverse situations using a semistructured interview guide. Two analytic strategies classified households on food insecurity and elicited themes that were the basis for classification. Survey questions were developed to capture themes, and were revised after review, field testing, and ranking and pile-sorting exercises. Four gradations of severity of food insecurity resulted, based on nine themes: meals, cooking, rice, fish, perishable foods, snacks, festival food, other expenditures and management strategies. The emergent conceptualization of food insecurity differs from that found from naturalistic research in other countries. The developed food insecurity measure has 11 questions. This research affirms the value of gaining in-depth understanding of household food insecurity. In many situations, this approach, rather than translating questions developed elsewhere, may best lead to suitable experience-based measures of food insecurity. J. Nutr. 133: 4158–4162, 2003.

KEY WORDS: ● food insecurity ● monitoring ● evaluation ● assessment ● coping strategies

For evaluation, planning and targeting, organizations need tools for assessing household food insecurity that go beyond measuring food availability to include access to food and perceptions of food insecurity (1). One approach to developing such tools was previously used successfully to develop the United States (U.S.) Food Security Survey Module (2). This approach constructs a direct measure of food insecurity based on people's experience gained through in-depth, qualitative investigation in a locality in which the measure is to be used (1).

Experience-based measures resulting from this approach are intended to complement rather than replace commonly used indirect indicators of food insecurity because these often describe reasons for food insecurity and increase the use and value of regularly collected statistics. Because food insecurity may affect dietary intake and ultimately nutritional status and physical well-being, measures of dietary intake of individuals or households and growth status are often used as indirect indicators of food insecurity. Because food insecurity is also related to available economic and social resources, income or total expenditure are also used as indirect indicators. Food-related management or "coping" strategies both result from and affect the experience of food insecurity, but the presence or absence of particular management strategies is often not indicative of food insecurity. These indirect indicators do not directly assess important aspects of the experience of food insecurity and are determined by factors or influence factors other than food insecurity (1). Direct experience-based measures can add information to that provided by these other measures.

The aims of this research were as follows: 1) to provide in-depth understanding of the experience of household food insecurity in rural Bangladesh; 2) to develop a direct measure of household food insecurity that included components on access to food and perceptions of food insecurity, based on in-depth understanding of the experience of food insecurity, to be used in a large, longitudinal, intervention study with rural pregnant women; and 3) to contribute to knowledge on how to develop such measures in an efficient manner by identifying expedient methods for interviewing and analysis. The third aim intended to provide information about research methodology to facilitate and encourage similar research in other countries. Also, the in-depth qualitative study of food insecurity in this study contributes to our distinguishing which aspects of food insecurity are universal and which are specific across locations and cultures (1).

SUBJECTS AND METHODS

Semistructured, in-depth interviews were conducted with 21 rural women living in diverse situations from throughout the country using
naturalistic, emergent inquiry. Women in urban and semirural areas were not interviewed. Three initial interviews served as a pilot, to assist the interviewer in becoming familiar with the use of the interview guide with the respondents, and to develop a better understanding of how to probe effectively to elicit information from respondents. Women were selected to represent a broad range of experience of food insecurity as well as marginal food security, and were recruited with the assistance of BRAC (a large, nongovernmental organization in Bangladesh) community workers. Of the 18 interviews analyzed, four women were from Mymensingh (north), four from Tangail (west), four from Sonargaon (south-east), and six from Bogra (north-west). Fourteen women were between 18 and 35 y of age, and four were between 50 and 55 y. The number of children ranged from 1 to 8, with a mode of 1 and a median of 3. All were Muslim. Only five households owned some land. Husbands’ occupations were in agriculture, transportation, traditional medicine, business and vending.

An interview guide was developed from previous qualitative research on food insecurity (1,3,4) and discussions with researchers familiar with food situations in Bangladesh. The interview guide covered the following: household characteristics, eating and cooking patterns, ideas about good and adequate food, management and coping strategies, and concerns and local views about food. Interviews were conducted in Bangla by one of the authors native to Bangladesh. Interviews were tape-recorded, transcribed and translated into English by the interviewer, and were conducted between October 1999 and February 2000.

Two analytic strategies that were developed by the interviewer and two other authors after each reviewed several interview transcripts were used with the last 18 interviews. First, the interviewer coded textual segments of transcripts by adding short words to the text to mark meaningful segments, using a word processor. To enable consistent coding across the interview transcripts, a list of codes was generated and maintained throughout analysis. Codes were then used to identify segments on a common theme, and coded segments were compared across interviews by the interviewer (5,6). Second, households were classified into four gradations of food insecurity status. To achieve this, a summary of each interview was created, highlighting the essential features of the household’s experience of food insecurity. For many households, both past and present food insecurity status were graded for severity. Classification was done independently by two authors, using all of the interview information available for each household. In nearly all cases, the two authors agreed in their assessments. In a few cases, they easily reconciled discrepancies through discussion about how to interpret the interview information.

Through the processes of identifying segments of text and grading of severity, themes (with indications of severity for each) that were the basis for differentiating households for the experience of food insecurity were elucidated. Two authors conducted this part of the analysis; each reviewed which themes were most salient in differentiating the food insecurity status of the households, and how variability in the experience of food insecurity corresponding to each theme was used to distinguish severity.

An initial set of survey questions was then developed to capture the themes. The response set for each question was developed making use of the understanding of the indicators of severity. Questions and response sets were revised after review by BRAC colleagues. This initial set of questions did not specify a time frame for the respondents to consider when answering.

Because the questions were to be used in a food and micronutrient supplementation study in pregnant women, they were reviewed and adapted for relevance to this particular study setting, including the removal of some questions. The time frame was modified to inquire about food insecurity in the last 30 d. The adapted questions were then field-tested in the intended study area with 28 women. This area is typical of rural Bangladesh. From this testing, questions were modified to make them more understandable for respondents.

In conjunction with this field testing, ranking and pile-sorting exercises (8) were performed to initiate discussion with separate groups of men and women in four different villages about food insecurity. These exercises were used to determine relevance and to examine whether the questions in the field-tested set comprehensively covered the intended domain of food insecurity; however, these exercises did not involve the questions directly. Group discussion was conducted for the exercises. Although pile sorting usually involves individuals, we followed similar procedures in groups to carry out a rapid assessment of comprehensiveness of the questions developed to date and to complement them if necessary. Participants were selected because they were knowledgeable about the issue and were willing to talk. There were 7 participants for three of the group discussions and 11 for the other one. Each group was asked to rank the households in their village according to food insecurity status using their knowledge; they did not have knowledge of the questions. When the ranking was complete, they sorted the households into broader piles based on their similarities and dissimilarities by their food insecurity status. They then explained the criteria for putting households into a certain pile and for keeping them separate from other piles. Subsequently, two questions related to frequency of purchase of perishable food items eaten with the rice and the ability to pay back loans received to improve food security were added. This exercise also confirmed that the rest of the questions were important for measuring food insecurity.

RESULTS

Four grades of the severity of food insecurity among the households resulted: food secure and occasionally, moderately and extremely food insecure. This gradation was based on nine themes: meals, cooking, rice, fish, perishable foods, snacks, festival food, other expenditures and management strategies (Table 1). Two additional themes on ownership of assets and animals (i.e., cattle and poultry) were considered, but found not to be useful in distinguishing households. Table 1 also shows indicators of severity for each theme.

The initial set of questions to measure food insecurity that was derived from the themes and indicators of severity was comprised of 12 questions, with two additional questions to provide further information about management strategies. After further testing, the revised, final set of questions comprised 11 questions (see Appendix). These 11 questions covered the themes of meals (Q-7, Q-8), cooking (Q-3), rice (Q-1), fish (Q-10), perishable foods (Q-2, Q-11), snacks (Q-9), and management strategies (Q-4, Q-5, Q-6). The themes of other expenditures and festival food were not covered by these questions. The last five questions included the phrase “when you did not lack appetite” to separate the cause of poor appetite possibly resulting from pregnancy from the resource constraints that cause food insecurity.

DISCUSSION

Although other qualitative approaches to studying household food insecurity have been used (1), this study developed an in-depth understanding of the experience of household food insecurity in a developing country through a full set of extensive, naturalistic interviews. A previous study in Indonesia had a limited set of qualitative information available (9). Other in-depth studies of the experience of food insecurity are being conducted in Burkina Faso (10) and Bangladesh (11).

The conceptualization of household food insecurity that emerged from this study differs from that found from the previous research in Java (9), Quebec (12) and New York (3,4). In Java, three themes were identified that described the experience of household food insecurity: 1) decreased quantity and quality of food intake, 2) compromised diet in terms of preferences for food, quality of food, and foods that are not culturally normative and 3) changes (not necessarily a decrease) in food stores (9). General household (selling posses-
TABLE 1
Themes for the experience of household food security in Bangladesh that emerged from the in-depth interviews, with gradations according to severity

<table>
<thead>
<tr>
<th>Theme</th>
<th>Extremely food insecure</th>
<th>Moderately food insecure</th>
<th>Occasionally food insecure</th>
<th>Food secure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meals</td>
<td>Can only afford 1–2 meals a day. Substitute 1 rice meal with bread or muri (puffed rice).</td>
<td>Cannot always have 3 meals. Skip breakfast if nothing left from previous dinner (most common) or lunch.</td>
<td>Usually manage 3 meals a day.</td>
<td>Always manage 3 meals a day.</td>
</tr>
<tr>
<td>Cooking</td>
<td>Cook usually once a day or less. Sometimes cannot cook for days.</td>
<td>Usually cook once, sometimes twice, a day.</td>
<td>Cook 2–3 times a day (maybe even once at times), but can always manage 3 meals.</td>
<td>Always cook 2–3 times a day. If 2 times, mostly buy snacks from the market for breakfast.</td>
</tr>
<tr>
<td>Rice</td>
<td>Must buy rice everyday (not produced at home), insufficient money for good amount of rice to store.</td>
<td>Need to buy everything. Rice is bought regularly, maybe once or twice a week.</td>
<td>Need to buy rice quite regularly. Not much stored rice at home; not enough for whole year.</td>
<td>Usually produce own rice; almost always have good supply (usually for at least a month).</td>
</tr>
<tr>
<td>Fish</td>
<td>Can hardly manage fish.</td>
<td>Cannot afford fish everyday. Maybe can afford it once or twice a week. Mostly eat small- or medium-sized fish.</td>
<td>Can afford fish almost everyday, if not for both the meals.</td>
<td>Can afford fish everyday for both the meals.</td>
</tr>
<tr>
<td>Perishable foods</td>
<td>Cannot ever afford these. Usually have shak, lota-pata and bhorta (i.e., leafy vegetables and mashed vegetables), but usually gather them and buy them only occasionally when they have the money.</td>
<td>Can buy fish, meat and fruit less frequently than once a week.</td>
<td>Can buy these items only once a week, but can always buy cheaper perishable food items.</td>
<td>Buy all types of perishable food items including fish, meat and fruits always, and can even store them (using refrigerator) if they wish.</td>
</tr>
<tr>
<td>Snacks</td>
<td>Cannot usually afford snacks from the store.</td>
<td>Sometimes buy snacks for children.</td>
<td>Buy snacks regularly, mostly for the children.</td>
<td>Buy snacks regularly from the store. Also buy fruits like apples, oranges, grapes.</td>
</tr>
<tr>
<td>Festival food</td>
<td>Try to cook something good, maybe not all items others cook on occasions. Cannot cook these things other than on festivals.</td>
<td>Can cook “festival” items like polao, meat, shemai (traditional dessert) only on occasions such as Eid, weddings or circumcisions.</td>
<td>Cook good food like polao, shemai, and so forth on occasions, when there are guests, and also when they feel like it.</td>
<td></td>
</tr>
<tr>
<td>Other expenditure</td>
<td>Spend money on food only; even then cannot manage food properly.</td>
<td>Spend mostly on food. Can sometimes send children to school, but not for long.</td>
<td>Spend money on other things like children’s education (books school uniform, private tutoring).</td>
<td>Tend to spend on children’s education. Can even spend on luxury items like TV.</td>
</tr>
<tr>
<td>Management strategies</td>
<td>Manage at least 1 meal by borrowing from neighbors or relatives.</td>
<td>During crises, borrow from others. Cook less (items, others. frequency, others. and amount). Substitute fish with vegetables, daal, or mashed vegetables (bharta) when unable to manage fish. Set aside food for children even when not enough for selves.</td>
<td>Occasionally borrow from others. At times, substitute rice with bread.</td>
<td>Generally do not need to borrow for food. Help others with small amount of cash or food items, like rice.</td>
</tr>
</tbody>
</table>

isions and borrowing money and food) and food-specific (storing and substituting food) management processes were identified.

Five core characteristics of household food insecurity were identified from interviews with 98 people from low income households in rural and urban areas of Québec (12). Three characteristics related to a present and future lack of food: shortage of food, unsuitability of food and diet and preoccupation with access to enough food. Two related to alienation: lack of control over the food situation and need to hide this. Three dimensions of the dynamic nature of the experience of food insecurity also emerged: a general sequencing of events, a parent-child vector protecting children and variation over time. Earlier, four components of food insecurity were identi-
New York. The dimension of adults buffering children was present in some of the interviews in Bangladesh (as in Québec and New York), but was not found in the limited interviews in Java. Although psychologic and social aspects of the experience of food insecurity emerged as important in Québec and New York, these did not emerge as important in Bangladesh or Java. For Bangladesh, it may be that the women interviewed did not express the psychologic and social aspects of their experience or that these aspects are not a distinct part of their experience.

One factor differentiating household food insecurity in Bangladesh, Java, Québec and New York is the typical degree of deprivation and severity. Rural women in Bangladesh even in the best circumstances are somewhat food insecure relative to people living in richer countries. In contrast, household food insecurity in North America is typically less severe. Java, even in the midst of the severe economic and political crisis of 1998 (9), had less severe food insecurity compared with Bangladesh.

An important objective in developing this measure was to use it in an intervention study to understand the role of food insecurity in pregnancy and birth outcomes and in possibly altering the beneficial responses to interventions. In North America, the availability of accepted experience-based measures of household food insecurity has made possible much of the research in recent years to examine consequences associated with food insecurity. Developing measures in other countries will make it possible to conduct studies to understand consequences of household food insecurity in those countries.

Although this study was not designed to fully establish the validity of the questionnaire, the important criterion that the measure has to be well grounded in understanding of the phenomenon being measured (13) was fulfilled. The in-depth interviews and subsequent field testing ensured that the questionnaire was well grounded. Incorporation in the questions of phrases used by the women interviewed helped ensure that questions were meaningful to respondents, and subsequent field testing contributed to the refinement of questions that are cognitively sound (14).

The quantitative information required to examine the other criteria will be available in a few years from a large, longitudinal, intervention study ongoing in rural Bangladesh. This longitudinal study will allow examination of the validity of the measure to identify households that are food insecure and to assess changes in household food insecurity over time. The latter is important because food situations in developing countries are often volatile. We anticipate creating a score from the questions to be used as a continuous variable, and also to classify households based on the meanings of the items.

An important potential challenge to direct assessment of household food insecurity by asking people about their experience is possible intentional bias in reporting due to self-interest (1). Respondents may not answer truthfully if they anticipate gaining food or other assistance. It was not perceived as a problem in this study and if anything, we found that women were reluctant to express the marked deprivation that they experience. The research underlying the development of the U.S. Food Security Survey Module found that it was possible to largely avoid such reporting bias through careful construction of questionnaire items, as was done in this study.

Issues have been raised regarding the potential portability of the approach used in the United States to developing measures of household food insecurity in other countries (1). Research was required to determine whether there are fundamental constraints to applying this approach where immediacy, prevalence and severity of prolonged food deprivation is high. This research led to the implementation of this approach in a developing country. The results affirm the value of gaining in-depth understanding of household food insecurity, and demonstrate that the approach can be implemented feasibly and efficiently. On the basis of work in Bangladesh, Java (9) and Burkina Faso (10), we believe that implementing this approach, rather than translating and adapting questions developed elsewhere, will likely lead to the best direct, experience-based measures for assessing household food insecurity in other countries. Further research to understand the experience of food insecurity in other countries and to compare approaches for constructing local and national measures is warranted.

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LITERATURE CITED


2 A technical guide is available with the online posting of this article at www.nutrition.org. It was developed to aid in the construction of an experience-based measure, anticipating that the process could be completed in 3 mo time. The guide covers all of the steps required to construct a measure, including interviews, analysis, development, testing, scoring, classification and establishing validity.
APPENDIX: SET OF QUESTIONS PROPOSED FOR MEASURING FOOD INSECURITY IN RURAL BANGLADESH

Q-1. During the last 30 d, at what interval has your household purchased rice?
1. Did not buy
2. 1–3 times the last 30 d
3. Once in 7 d
4. 2–3 times in 7 d
5. At least 4–5 times in 7 d

Q-2. During the last 30 d, at what interval has your household purchased “kanchabajar”? (Note: “kanchabajar” refers to shopping of perishable food items such as vegetables, fish and meat.)
1. Did not buy
2. 1–3 times the last 30 d
3. Once in 7 d
4. 2–3 times in 7 d
5. At least 4–5 times in 7 d

Q-3. During the last 30 d, how many times a day did cooking usually take place in your household?
1. Never
2. Once a day
3. Twice a day
4. Three times a day
5. Four times or more

Q-4. During the last 30 d, has your household helped others with cash or food items (like rice) for enabling them to make a meal? (If the woman is rich, tell her that we need to ask this question of everybody, so she does not mind.)
1. No
2. Yes

Q-5. During the last 30 d, how often has your household had to borrow from others to make a meal?
1. Never
2. 1–3 times the last 30 d
3. Once in 7 d
4. 2–3 times in 7 d
5. At least 4–5 times in 7 d

Q-6. Have you paid back or do you think you can pay back?
1. No
2. Yes

Q-7. During the last 30 d, how many times on average have you had a fulfilling meal in a day when you did not lack appetite?
1. One time
2. Two times
3. Three times
4. Four times

Q-8. During the last 30 d, how often has it happened that you could NOT eat as many fulfilling meals as you would like to have done when you did not lack appetite?
1. Never
2. 1–3 times the last 30 d
3. Once in 7 d
4. 2–3 times in 7 d
5. At least 4–5 times in 7 d

Q-9. For the last 30 d, did you usually have snacks in between meals when you did not lack appetite?
1. No
2. Three times or more
3. Once or twice

Q-10. For the last 30 d, how often did you have fish when you did not lack appetite? (If the woman is rich, tell her that we need to ask this question of everybody, so she does not mind.)
1. Not once
2. 1–3 times the last 30 d
3. Once in 7 d
4. 2–3 times in 7 d
5. At least 4–5 times in 7 d

Q-11. During the last 30 d, how often have you had to eat rice with just chili and salt even if you did not lack appetite?
1. Did not have to
2. 1–3 times the last 30 d
3. Once in 7 d
4. 2–3 times in 7 d
5. At least 4–5 times in 7 d