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Altered social cohesion and adverse psychological experiences with chronic food insecurity in the non-market economy and complex households of Burkina Faso

Siméon Nanama^a, Edward A. Frongillo^{b,*}

^a United Nations Children's Fund, The Democratic Republic of the Congo

^b Department of Health Promotion, Education, and Behavior, University of South Carolina, USA

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ABSTRACT

Food insecurity negatively impacts outcomes in adults and children including parenting practices, child development, educational achievement, school performance, diet, and nutritional status. Ethnographic and quantitative research suggests that food insecurity affects well-being not only through the lack of food, poor diet, and hunger, but also through social and psychological consequences that are closely linked to it. These studies are limited in number, and have mostly been carried out in contexts with market economies where household access to food depends almost solely on income. This study considers the social and psychological experiences closely linked to food insecurity in northern Burkina Faso, a context marked by subsistence farming, chronic food insecurity with a strong seasonal pattern, and a complex social structure. A total of 33 men and women from ten households were interviewed in February 2001 using semi-structured interview guides. Data were analyzed following the principles of thematic analysis. Food insecurity is closely linked with consequences such as concern, worries, and anxiety that ultimately lead to weight and sleep loss. Food insecurity results in feelings of alienation (e.g., shame) and deprivation (e.g., guilt), and alters household cohesion leading to disputes and difficulties keeping children at home. Decisions made by household members to manage and cope with food insecurity are shaped by their fear of alienation and other cultural and social norms. These findings, although derived from data collected 10 years ago before the 2008 food and fuel crises, remain valid in the study context, and emphasize the importance of social and psychological consequences closely linked to food insecurity and their negative impact on the well-being at both individual and household levels in contexts of non-market economy and chronic food insecurity. Attention to these non-nutritional consequences will improve the design, implementation, and evaluation of food insecurity programs in this and similar contexts.

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Introduction

Food insecurity is a major concern for the international development community because it negatively impacts diet and nutritional status. Cross-sectional and longitudinal studies have shown that household food insecurity is also associated with numerous non-nutritional outcomes in children, adolescents, and adults (National Research Council, 2006; Weaver & Hadley, 2009), including poor physical health (Alaimo, Olson, Frongillo, & Briefel, 2001; Heflin, Siefert, & Williams, 2005; Siefert, Heflin, Corcoran, & William, 2004), educational achievement (Alaimo, Olson, & Frongillo, 2001; Jyoti, Frongillo, & Jones, 2005; Winicki & Jemisen, 2003), behavioral problems (Alaimo, Olson, & Frongillo, 2001;

Huang, Oshima, & Kim, 2010), poor child development (Alaimo, Olson, & Frongillo, 2001; Hernandez & Jacknowitz, 2009; Jyoti et al., 2005), poor mental health (Alaimo, Olson, & Frongillo, 2002; Hadley & Wutich, 2009; Heflin et al., 2005; Maes, Hadley, Tesfaye, & Shifferaw, 2010; Melchior et al., 2009; Siefert et al., 2004), problems in parenting (Huang et al., 2010; Zaslow et al., 2008), poor infant feeding (Saha et al., 2008), and poor physical growth (Saha et al., 2009). These findings have led to conceptualization that household food insecurity affects well-being through multiple pathways involving social and psychological conditions such as deprivation, worry, distress, alienation, and alteration of family interactions as well as a pathway involving dietary intake to nutritional status (McCurdy & Gorman, 2010; National Research Council, 2006).

These quantitative findings and the related conceptualization of non-nutritional pathways are supported by qualitative work in mostly developed countries showing that food insecurity, in

* Corresponding author.

E-mail address: efrongillo@sc.edu (E.A. Frongillo).

addition to its nutrition-related effects, manifests itself through social and psychological conditions leading to altered behavior at individual and group levels. Radimer, Olson, Greene, Campbell, and Habicht (1992) found that food insecurity was related to concern and worries about not having enough food in households in the United States. Hamelin, Beaudry, and Habicht (2002) conducted an in-depth investigation of food insecurity in Canadian households, and identified guilt, shame, deprivation, and alienation as consequences closely linked with food insecurity; at the household level, food insecurity was associated with disrupted household dynamics. Wolfe, Frongillo, and Valois (2003) investigated food insecurity among elders in the United States and found feelings of worry, anxiety, and embarrassment associated with food insecurity. Other studies from the United States have reported similar experiences in adults (Quandt & Rao, 1999) and children (Connell, Lofton, Yadrick, & Rehner, 2005; Fram et al., 2011).

In the developing world, similar findings on non-nutritional consequences of food insecurity were reported in South Africa (Lemke, Vorster, Jansen van Rensburg, & Ziche, 2003), Latin America (Moreno-Black & Guerron-Montero, 2005) and Asia (Piaseu, Belza, & Shell-Duncan, 2004). These studies were conducted in urban or semi-urban contexts where access to food depends mostly on income from employment or were focused on women. Ethnographic research investigating in-depth the social and psychological conditions closely linked to food insecurity remains limited, and the most comprehensive of these studies were carried out in contexts with simple household structure and where household food acquisition is mostly income-dependent.

In sub-Saharan Africa, households are often complex due to large family size, valued kinship, extended family, and polygamy. As in many contexts, rigorous cultural and social norms shape people's decision-making, including decisions about food. Most rural households rely on subsistence farming to ensure food security. In this context, especially where access to adequate food for most household is constantly limited (i.e., chronic food insecurity), the extent and severity of people's experience of food insecurity are likely to be different from that reported in market-economy contexts. Most efforts to understand food insecurity in subsistence farming and chronic food-insecurity contexts have focused on strategies implemented by households to manage and cope with food insecurity and famine (Maxwell, Caldwell, & Langworthy, 2008; Maxwell & Smith, 1992; Parker, 1990), perception of food insecurity (Gervais & Beaudry, 1994), and quantitative assessments of food insecurity using measurement tools addressing a limited set of primarily diet-related components of food insecurity (Becquey et al., 2010; Frongillo & Nanama, 2006; Hadley, Lindstrom, Tessema, & Belachew, 2008; Melgar-Quinonez et al., 2006).

The present study aimed to contribute to the ongoing effort to comprehensively understand household food insecurity by examining it in the context of subsistence farming, chronic food insecurity, and complex household structure in northern Burkina Faso, with particular attention to the non-nutritional, closely linked social and psychological consequences of food insecurity. We used qualitative methods to describe and analyze experiences of food insecurity and closely linked consequences at individual and household levels, and analyzed how these experiences influence household decision-making and priority-setting with regard to management of food insecurity.

Methods

Study context and population

The study was conducted in 2001 in Zondoma province in northern Burkina Faso, a region with marked seasonality (one short

rainy season July to October and a long dry season), soil infertility, recurrent drought, and regular attack of food crops by predators such as locusts and caterpillars. These factors, plus high prevalence of endemic diseases, impact the economics of households (McMillan, 1995) and constrain livelihoods. Arable land is scarce (Furth, 1998), and desertification combined with a growing population place limits on scarce productive resources. Subsistence farming does not prevent food shortages for the majority of people (Kaboré et al., 1997). These factors plus widespread poverty cause persistent food shortage for most households leading to chronic food insecurity. People are mostly involved in subsistence farming of staple crops such as sorghum, millet, and maize, and some cash crops (e.g., peanut, sesame). They rely on home production to ensure food provision year round.

The population is mostly Mossi, a patriarchal male-dominated polygamous society where men hold most decision-making power, and kinship and extended family are valued (McMillan, 1995; Skinner, 1964). Decision-making power and resource allocation differs with rank, which is a function of age, gender, and lineage (Fiske, 1991). Older men hold more decision-making power than younger ones, and women have less decision-making power than men. Cultural norms differentiate the role of women and men in all sectors including food production and decisions about food utilization.

Mossi households are derived from extended family, and may include a husband and his wives, their children, and their married sons' families (Hammond, 1966). Within households, there are sub-units formed by women and children. These sub-units play important roles in production and consumption, and therefore food security. Regarding production, household members farm cooperatively; additionally, household sub-units (mainly women and children sub-units) work on private farms or enterprises and have their own food stores. Family members' access to food and income is largely mediated by their sub-unit (McMillan, 1995). Within the kinship group, members have relative rank. Older people outrank younger people, and men outrank women (Fiske, 1991). Rank is central to distribution decisions, and therefore impacts individuals' access to productive resources, food, and income. Females are generally disadvantaged in the Mossi social system, which is reflected in gender inequality and resource allocation (Kevane & Gray, 1999; Udry, 1996). The society has norms and defined roles and responsibilities in domestic labor. Male members share the labor of building houses or other structures mainly during the dry season, and provide the daily food ration for the whole household (Fiske, 1991). Women have responsibility throughout the year for food preparation (including gathering water and firewood, and grinding) and childcare (Coulibaaly, 1994).

Study design

This qualitative study involved individual semi-structured interviewing using open-ended interview guides, and was nested within a larger collaborative project that involved Cornell University, the Food and Nutrition Technical Assistance project (FANTA), and Africare, a non-governmental organization implementing a food security initiative in the study area. A qualitative method was chosen because of the need for in-depth understanding of food insecurity leading to development of a questionnaire for assessing people's experience of it.

Sample

Purposive sampling using predefined criteria was used. Two Mossi villages were selected with assistance from Africare field workers with good knowledge of the area. There were small

differences in language and culture because the villages represented different sub-ethnic groups. One village was mostly 'yadse, and nearly all Muslim, while the other was a mixture of several sub-ethnic groups ('Nyonyonse', 'Cebta' and 'Saaba'), with a portion from the traditional religion (animist). In each village, we identified three key informants based on their knowledge of food insecurity issues and the village households, ability to discuss articulately, and sense of confidentiality.

Each key informant independently listed and ranked the most and least food-secure households in his village. A semi-final list of households was obtained by matching lists, and was then compared to a second list obtained from Africare staff that, before beginning their project, had ranked each village's households based on food-security status. Households classified as secure or insecure on both key informant and Africare-staff lists were kept in a final list that corresponded to the sample frame. The key informants then provided a brief description of demographic characteristics of households in the final list. From this, five households were selected in each village to include simple, complex, polygamous, and monogamous households. Within each selected household, the head of the household, his wife or wives (in polygamous households), and any other married man or woman were selected to be interviewed. In total, 35 people were identified for interview.

Data collection

A semi-structured interview guide was developed from one used previously in Bangladesh (Frongillo, Chowdhury, Ekström Eva, & Naved, 2003) and from qualitative research of Suzanne Gervais (personal communication) in Yako, a town close to the study area. We began with one interview guide with eight themes addressing both women and men. After a pre-test, the initial guide was split into two, one addressing household heads and the other addressing women heading women-children sub-units. The final version for household heads had eight general themes: 1) identification and demographic information, 2) production and decisions about food, 3) cooking and eating patterns, 4) perception on food quality, 5) daily concerns, 6) income sources and utilization, 7) long-term strategies to escape from food insecurity, and 8) coping mechanisms. The guide for women had the same themes except that the theme on long-term strategies to escape from food insecurity was not included. Instead a theme on the perceived difference with other women was added.

Interviews were conducted in Moré in February 2001 by two teams, each of which had two trained interviewers, one guiding the interviews and the other taking verbatim notes in French. The interviews were held privately with each respondent and lasted 3.5–4 h. At the end of each day, each team read and completed notes. After all interviews were completed, the team took one more day for further editing. Notes were typed in French and stored electronically.

Data analysis

Data were analyzed using thematic analysis (Strauss & Corbin, 1990). Face validity was ascertained because food insecurity is chronic and affects most households. Both insecure and less food-insecure were selected for inclusion. The content of the interviews at the end revealed that data saturation was reached. That is, no new issue was raised in the last interviews compared to those conducted at the early stage of data collection. This helped ensure credibility in the data.

The French version of the interviews were coded as small and meaningful quote segments (Miles & Huberman, 1994; Tesch, 1990) independently by the first author and another researcher on a sub-

set of interviews. Then, the two researchers discussed findings and reconciled any discrepancies. A final list of 56 codes grouped into 13 themes was generated from a total of about 250 pages of text. The quotes were then translated from French to English by the first author.

The interviews were differentiated by men vs. women and polygamous vs. monogamous. Codes and related quote segments were compared and contrasted according to this differentiation. The constant comparative method (Miles & Huberman, 1994) was used to interpret findings and draw conclusions. The analysis was done with ATLAS.ti version 5 software (ATLAS/ti., 2004). Ethical approval was obtained from the Cornell University Committee on Human Subjects.

Results

Characteristics of the sample

One woman refused to be interviewed, and the interview of one man was excluded because he exhibited mental problems during data collection. In total, 33 persons (10 men and 23 women) contributed information to analysis (Table 1).

Experiences and closely linked consequence of food insecurity

The most commonly reported experience of food insecurity was concern about lack of food. Twenty-eight respondents from food-secure and food-insecure households reported being concerned about not having "enough food for their needs".

Our harvest this year did not last more than 40 days. So we are very worried about what will happen not in the future but even tomorrow [woman, 56 years, from polygamous food-insecure household].

The concept of "enough food for needs" went beyond concern about food for consumption needs. Food is used for various purposes including social and religious reasons. The social role of food includes giving food to reinforce kinship within the extend family, or to pay respect to friends. Food is used to help needy people in time of food shortage, and plays an important social role in traditional events such as wedding parties, naming ceremonies, and funerals. Food is also used for religious purposes. For example, the Islamic religion recommends that each Muslim give up to 10% percent of his earnings for charity during the fasting month. Because they do not have alternate income sources, most people give cereals. Not being able to properly follow the religious recommendations because of food insufficiency was a serious concern for 7 of the 10 heads of households interviewed.

Table 1
Characteristics of the sample.

Characteristics	Min	Max	Mean	SD
Household heads (<i>n</i> = 10)				
Age (in years)	30.0	73.0	49.9	12.8
Household size	6.0	32.0	13.7	7.4
Number of household active members	2.0	12.0	6.2	2.9
Ratio of household size divided by number of active members	1.3	3.6	2.3	0.7
Women (<i>n</i> = 23)				
Age (in years)	19.0	51.0	35.2	10.5
Size of the mother-children sub-units	1.0	6.0	4.0	1.5
Number of active members in the sub-unit	0.0	6.0	2.0	1.4
Ratio of sub-unit size divided by number of sub-unit active members	—	4.0	1.9	1.4
Number of children under five years of age	1.0	4.0	2.2	1.0

...often, I take food from my store for women to make cake that we give to needy people to comply with the Muslim requirement for charity. This is to replace the 10% gift that I should do with my harvest. People who harvest a lot give 10% of their harvest away. Since we do not harvest a lot, I cannot give full baskets away [man, 44 years, from food-insecure polygamous household].

When food shortage becomes acute, i.e., when there is no more food in the store, men (4 of 10, all from food-insecure households) reported that they feel guilty for not being able to feed their families

When women and children think that I can do something while I cannot do anything, I feel guilty [man, 35 years, from food insecure monogamous household].

Feeling ashamed was also reported as a consequence of acute lack of food (5 women and 5 men mostly from food-insecure households). This feeling arises especially when the household head has to go to somebody else to borrow or ask for food. According to the men's reporting, the feeling of shame is exacerbated by their Mossi cultural background which is marked by the fear of shame.

You [the first author] are Mossi, you know the Mossi hates shame. When I am obliged to rely on somebody else to feed my family, I feel ashamed and I am not happy [man, 56 years, from food-insecure polygamous household].

Some of the men recognized that when they completely lack food they will compromise their dignity and go to ask for food.

The fact that I have to go out to other people to ask for food makes me lose my personality (social status) in the community [man, 53 years, from monogamous food-secure household].

Women reported worry and concerns about food, but they said that these affect the household head more than themselves.

Food shortage leads to weight loss for everybody. Men, however, are the first to lose weight because they are the one who knows the content of the granary and they are also responsible of providing the food [woman, 30 years, from food-insecure monogamous household].

Several respondents (5 men and 3 women mostly from food-insecure households) reported that lack of food leads to the head of household becoming irritable which leads to dispute within the household.

When you look at your husband who is normally the one who should provide you with food and he cannot do so, you feel like fighting [woman, 28 years, from food-secure polygamous household].

... he [the husband] becomes like crazy and tends to get upset even by minor things [woman, 30 years, from food-insecure polygamous household].

Women reported difficulty with child rearing because children in times of food insecurity tend to eat outside their households (5 respondents from food-insecure households).

Children cry and they can go and eat in other households. Very often, those who have food can keep their children at home and can educate them properly. Children only know [listen to] the persons who can give them food [woman, 37 years, from food-insecure polygamous household].

Other feelings of severe food shortage reported were feeling lonely or avoiding getting together with other people (7 of 33), stealing or telling lies to get food (3 respondents), and being fatalistic (7 respondents).

Hunger! Ah hunger can drive you steal. A hungry person tends to not joint other people. [man, 30 years, from food-insecure polygamous household].

What did I do wrong to God to live in such a bad situation?[woman, 29 years, from food-insecure monogamous household].

Respondents discussed hunger and its physical effects including feelings of stomach pain (6 respondents), weight loss (15 respondents), sleep loss (15 respondents), and dizziness (5 respondents).

Hunger can cause disease such as stomach pain because intestine (walls) sticks to each other. It can also lead to madness, suicide. A hungry person is weak and cannot work [women, 40 years, from food-insecure polygamous household].

Respondents believe that weight and sleep loss in adults is attributable both to hunger and to worry and concern about food insecurity.

These days, we cannot sleep well. Look at how I am, this is not my normal size and I am not sick [man, 51 years, from food-insecure polygamous household].

Respondents, especially women, reported that food insecurity in its severe stage (i.e., hunger) leads to manifestations in children such as children crying (12 respondents including 11 women), having bad mood and not playing with others (3 respondents), and children going to other households to eat (5 food-insecure respondents) which is seen as highly unacceptable, especially when it happens with a family outside the extended family. Stealing money or food within or outside the family and being impatient before food were also reported as behavior-related consequences of hunger for children.

My kids are too young and cannot go out by themselves. If they were not that young, they would follow their friend and if they offer them food they would eat and that is not normal [woman, 19 years, woman from food-insecure polygamous household].

Most respondents reported that hunger leads to weight loss in children, although they report that these cases are rare because they manage to protect children from going hungry often.

Management and coping strategies for food insecurity

Several strategies were used to manage and cope with food insecurity. These strategies are tightly related to the psychological and physical experience men and women have of food insecurity. The major strategies relate to food production, management of food stock including buying food early, reduction of the amount of the daily food ration, reduction of feeding frequency, eating hungry foods, and other compromising actions such as borrowing, asking, and stealing.

The most common crops produced in the study area are cereals (i.e., sorghum, millet, maize) and legumes (i.e., beans, peanuts, peas). These crops are produced by men and women, but men are more involved in the production of cereals and beans (on the household common plot) while women produce both cereal and all other legumes on their individual plots. To deal with the difficult natural conditions (i.e., soil infertility and insufficient rainfall), people engage in the application of new agricultural techniques that involve use of chemical and organic fertilizers, use of efficient agricultural equipment such as plows and carts, and development of strategies for keeping water as long as possible on plots. Women reported low access to agricultural techniques and equipment either because they require heavy work or are too expensive.

Rigorous management of food in time of shortage was reported by both men and women as a major strategy to mitigate food insecurity. This includes buying food (11 respondents), asking women to

rely on their individual food store (18 respondents), and reducing the amount of the daily food ration (7 heads of household).

Refraining from sale (8 heads of household) and purchase of cereals during hungry season was reported by men as a way to avoid or delay food insecurity.

We do not have enough sorghum and millet [for consumption] therefore we do not sell them [man, 58 years, from food-insecure monogamous household]

The decision not to sell food is influenced by need to avoid being criticized by others as well as concern about levels of food.

I do not sell cereal because we do not have enough. In these conditions [not enough cereal] if I sell [cereals] I will have to face people's criticism [man, 55 years, from food-insecure monogamous household]

Management of the household food stock was the responsibility of the man in all households. Women own their food stock that in normal time is used for starting income-generating activities and supporting their own parents and relatives. In time of food shortage, however, women are required to use their food stock. The decision as to when and for how long women should rely on their own stocks is made by the head of household. This practice is perceived by many household heads as a strategy to ensure that food provision is stable. It is more common among polygamous than monogamous households.

When women have enough [harvest] we are happy because they can use their granary [cereals] two days [two days does not necessarily mean 2 days; it can be longer than that; it means for a while] and then we take over. When they do it, they serve the day and night meal [man, 58 years, from food-insecure monogamous household].

Usually the use of women's food stock (called *robi*) is a strategy to save food from the common granary and make it last longer (4 heads of household), but sometimes it is a strategy to compensate for an exhausted household stock (2 heads of household).

This year, because of the bad season, we did not harvest a lot. The common granary just got emptied two days ago. And we have started the robi since 10 days [woman, 44 years, from food-insecure monogamous household].

Women and men all reported that reduction of the household daily food ration (called *the monde*) is a strategy commonly implemented during food shortage with the hungry season that corresponds to peak agricultural activity.

During the rainy season, food ration is given daily with a container that corresponds to 1.5 Yorba (a container used by cereal traders to measure cereals, corresponding to about 2.5 kg of cereals). In dry season, it [the monde] is reduced to 1 Yorba [per day] [man, 51 years, from food-insecure polygamous household].

When I realize that [the content of] my granary is shrinking, and that I will have to buy [cereals] to complement, I reduce the monde because it is better to eat regularly even in small amount [than to skip meals] [man, 30 years, from food-insecure household].

Only one food-secure household head reported increasing the *monde* during the hungry season to allow people to work.

I do not reduce the monde; best, during the rainy season, I increase the monde by half a Yorba to allow people to eat more and work more [man, 51 years, from food-secure monogamous household].

The reduction of the *monde* affects the quantity of food served to the various eating groups. Both men and women reported that

reduction first affects the amount of food served to men, but they have diverging opinions as to why men's group is most affected. For men, the amount of food for the women's eating group is not reduced because there are small children in these eating groups. In contrast, women reported that the amount of food is not reduced in their eating group mainly because these groups are larger in size than men's groups.

Reduction of the amount of daily ration affects frequency of meals as well as serving size. Both men and women reported that reduction in serving size occurs before reduction of meal frequency. The morning meal (breakfast) is first to be skipped, followed by dinner. Lunch is considered the most important daily meal by both women and men. For men, the daytime meal is important and cannot be suppressed because nights are shorter than days and during the night people sleep as opposed to daytime that corresponds to working time. Another reason reported by both men and women is that during the night, children sleep and would not cry for food. That children cry for food, besides not being good on its own right, is not appreciated by parents because it signals others that the household is lacking food.

Even if his [the child] stomach is not full, the most important is to avoid having him cry [for food] because that discloses the household's situation to others [woman, 35 years, from food-insecure polygamous household]

In more advanced stages of food insecurity when there is little or no food stock, households rely on consumption of hungry foods. These are foods (usually leaves) that people would not normally eat unless they face severe food insecurity and do not have other choices. Consumption of hungry foods is part of a series of actions taken by households to cope with severe food shortage. Both men and women reported the same hungry foods.

Discussion

Several social and psychological consequences are closely linked with food insecurity or with actions that households in chronic food insecurity and relying on subsistence farming take to manage or cope with it. These social and psychological experiences, as well as the management strategies, occur throughout the range of severity of food insecurity, and are each indicative of different levels of severity of food insecurity. The most important social and psychological consequences reported were concerns, worries, and anxiety about food; alienation and social deprivation; and altered household cohesion.

Concerns, worries, and anxiety about food

Concern, worries, and anxiety about food security are common in the study area. Similar feelings were reported in contexts with market economies (Hamelin et al., 2002; Radimer et al., 1992; Wolfe et al., 2003). In northern Burkina Faso, however, concerns, worries, and anxiety are present all year long, which is as expected given that households face chronic food insecurity. These add to the stressors that farmers typically face (Fraser et al., 2005).

Most previous ethnographic research on food insecurity reported feelings of concern, worries, and anxiety as being associated mostly with not having enough food for needs, including needs other than consumption. In this context, concern, worries, and anxiety are about not having enough food as well as about some determinants of food production such as shortage in rainfall, expected given that agriculture is solely based on rainfall with little irrigation.

Previous work showed that adults in households with even mild to moderate food insecurity reported concerns, worries, and anxiety

(Hamelin et al., 2002). In most tools developed to measure food insecurity (Bickel, Nord, Price, Hamilton, & Cook, 2000; Coates, Swindale, & Bilinsky, 2007), including two adapted and used in Burkina Faso (Becquey et al., 2010; Melgar-Quinonez et al. 2006), it has been assumed that frequency of affirmation is inversely related to severity of food insecurity and therefore that items for concern, worries, and anxiety (which are affirmed most often) reveal less-severe food insecurity than other items on the instrument. This in-depth analysis suggests, in contrast, that in northern Burkina Faso concerns, worries, and anxiety about food are experienced by a large number of people from both food-insecure and otherwise food-secure households, and are present along the range of severity of food insecurity; this is consistent with quantitative information from the study area (Frongillo & Nanama, 2006). Food-secure households are concerned about insufficient rainfall (considered less severe as it relates to future food shortage) while the food-insecure households are concerned about finding food for immediate needs. This finding fits with previous findings that concern about running out of food—supposedly the least-severe item on the US national measure of food insecurity—is associated with poor child learning and behavioral outcomes (Jyoti et al., 2005; Winicki & Jemisen, 2003). Therefore, concerns, worries, and anxiety about not having enough food for needs should not be assumed to indicate only mild to moderate food insecurity in all settings or for all outcomes.

Alienation and social deprivation

Alienation and social deprivation were strong social and psychological consequences associated with food insecurity. Alienation is expressed through feeling of shame especially by the heads of household. This feeling occurs when the household runs out of food and must rely on socially unacceptable ways of accessing food such as borrowing food or asking others for food. These actions reveal one's food insecurity to others, and expose a person to judgment about ability to provide for his family. Fear of criticism and alienation shapes decisions to manage food and cope with food insecurity. Using women's food stores, reducing the daily food amount, skipping meals, and sometimes eating hungry foods are preferred to borrowing and asking others for foods. Evening meals are more often skipped than day meals, one reason being to avoid having hungry children crying for food during the day, which would disclose a family's shortage of food. These findings are similar to those from Niger where decision about child care was guided by several contextual factors including the aversion of risk and the need to preserve dignity and self-respect (Hampshire, Casiday, Kilpatrick, & Panter-Brick, 2009; Hampshire, Panter-Brick, Kilpatrick, & Casiday, 2009).

In Mossi society, household staple foods are primarily provided by men. In acutely food-insecure households (i.e., during hungry season), men often fail to fulfill this responsibility, resulting in feeling guilt and alienation for the household head and community. Feelings of guilt and shame lead to loneliness and the tendency by food-insecure people to stay by themselves.

Ethnographic research on the experience of food security has enabled development of novel food-insecurity measurement instruments for quantitative assessment (Coates, Wilde, Webb, Rogers, & Houser, 2006; Frongillo et al., 2003; Frongillo & Nanama, 2006; González, Jiménez, Madrigal, Muñoz, & Frongillo, 2008; Melgar-Quinonez et al., 2006; Perez-Escamilla et al., 2004; Radimer et al., 1992; Studdert, Frongillo, & Valois, 2001). These instruments primarily capture diet- and nutrition-related aspects of food insecurity such as worry about food running out, poor quality and quantity of diet, physical hunger, and physical outcomes (e.g., weight loss). These aspects of food insecurity are universally experienced and can be measured accurately and reliably (Coates,

Frongillo et al., 2006). Findings from this study and others (Hamelin et al., 2002; Radimer et al., 1992; Wolfe et al., 2003) suggest that feelings of alienation and deprivation are likely also universally experienced, but measuring these conditions is difficult. For example, in González et al. (2008), the item "to have food in your home, did you have to do things that make you feel ashamed" had the lowest reliability in the instrument, and a comparable item was not included in the FANTA instrument because of similar concerns (Coates et al., 2007).

Altered household cohesion

Food insecurity and hunger in northern Burkina Faso leave people, especially the head of household, irritable and sometimes aggressive, negatively impacting household cohesion. Disputes within the household and difficulty in keeping children at home were consequences of food insecurity. In eastern Burkina Faso, Gervais and Beaudry (1994) described a concept called *entente* in French, which refers to people's ability to listen to each other and to discuss constructively, as a major determinant of food security. In this study, in contrast, lack of cohesion within the household was a consequence of food insecurity. Irritability and disrupted family interaction was reported by Hamelin et al. (2002) as a consequence of food insecurity in Canada, but there it was expressed in a more passive way than in northern Burkina Faso where it can translate into fights and disputes between men and women. In this context of chronic food insecurity, these strains in social relations are similar to, but less severe than, strains observed in acute famine (Dirks, 1980).

We did not study specifically consequences of food insecurity for children. Household food insecurity negatively impacts children's behavior, hypothetically through parental functioning and distress that affects quality of parental care provided to children (Alaimo et al., 2002; Jyoti et al., 2005). Our findings support this hypothesis, but also suggest an alternate mechanism. Disputes in households resulting from aggressive behavior of food-insecure people are a possible source of distress for both parents, but specifically for mothers. If food-insecure parents cannot keep children at home, they cannot provide them with instruction they believe is good for their future and children are exposed to environments out of their parent's control. These suggest that food insecurity could affect children's psychological well-being independently from parental distress. This possible mechanism should be further investigated in this context and elsewhere.

Since 2001 when these data were collected, the 2008 global food and fuel crises that occurred theoretically might have impacted food-insecurity conditions and the way people experience and manage food insecurity. In Burkina Faso, the major response to increased food prices was to subsidize several food commodities, but not including local cereals such as millet, maize, and sorghum that are the staples for rural households. This response has not impacted the food-security conditions of rural households, and our findings remain valid.

Conclusions

Food insecurity in northern Burkina Faso has three sets of closely linked social and psychological consequences. First, concerns, worries, and anxiety about not having food for consumption or other social and religious needs and about determinants of food availability such as rainfall persist throughout the year, lead to weight and sleep loss, and indicate more severe food insecurity than in other contexts in which food insecurity has been studied. Second, implementation of socially unacceptable ways of coping with food insecurity (borrowing and asking for foods)

generates shame which contributes to and is a sign of alienation. Failure by the head of household to fulfill his primary responsibility of providing food leads to feeling guilt and deprivation. Fear of alienation and deprivation determines the decision-making of the household related to management of food insecurity, including child feeding. Third, food insecurity alters intra-household cohesion through irritability and aggressiveness that it causes in adults, and through lack of food that makes it hard for parents to keep children at home.

These findings have implications for program design and evaluation. Food-security programs, especially in sub-Saharan Africa, typically focus on the long-term aim to make food more available or accessible (e.g., soil fertilization, improved agricultural, micro-credit). This study shows that there are consequences that are closely linked to food insecurity at both individual and group levels, and that these consequences negatively impact vulnerable groups such as children and women. These consequences, because they go beyond meeting nutritional requirements and include impacts on peoples' self-worth and their perceived ability to fulfill to social roles, are not likely to be addressed by typical food-security programs. Although long-term programs are valuable, policy makers and program planners need to also initiate and integrate actions to mitigate the impact of these social and psychological consequences.

These findings on the importance of social and psychological conditions closely linked to food insecurity and the negative non-nutritional impact of food insecurity reinforce those reported in other settings. Non-nutritional experiences of food insecurity are likely universally experienced. Future attempts to assess food insecurity comprehensively need to include assessment of the social and psychological consequences closely linked to food insecurity.

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