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# The Measurement of Food Insecurity among Children: Review of Literature and Concept Note

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Maryah S. Fram, Jennifer Bernal  
and Edward A. Frongillo

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### **Correspondence should be addressed to:**

UNICEF Office of Research - Innocenti  
Piazza SS. Annunziata, 12  
50122 Florence, Italy  
Tel: (+39) 055 20 330  
Fax: (+39) 055 2033 220  
[florence@unicef.org](mailto:florence@unicef.org)  
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## THE MEASUREMENT OF FOOD INSECURITY AMONG CHILDREN: REVIEW OF LITERATURE AND CONCEPT NOTE

Maryah S. Fram,<sup>a</sup> Jennifer Bernal<sup>b</sup> and Edward A. Frongillo<sup>c</sup>

<sup>a</sup> College of Social Work, University of South Carolina, Columbia, SC [fram@mailbox.sc.edu](mailto:fram@mailbox.sc.edu)

<sup>b</sup> Laboratorio de Evaluación Nutricional, Universidad Simón Bolívar, Caracas, Venezuela [jbernal@usb.ve](mailto:jbernal@usb.ve)

<sup>c</sup> Department of Health Promotion, Education, and Behavior, University of South Carolina, Columbia, SC [efrongil@mailbox.sc.edu](mailto:efrongil@mailbox.sc.edu)

**Abstract:** Child food insecurity is associated with a range of negative developmental consequences, including behaviour problems. While research shows that the phenomenon is both common and consequential, there is a lack of consistency in what is being measured and how. This results in incomplete information affecting our ability to effectively address child food insecurity, its causes and consequences. We present a review of the literature, and advocate for a global system to measure and monitor individual children's experiences of food insecurity. The conceptual and practical challenges for developing an effective, efficient, and feasible system for global monitoring of child food insecurity are discussed and alternatives are suggested.

**Keywords:** food insecurity, malnutrition, health, stunting, surveys, child nutrition

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## 1. WHY MEASURING AND MONITORING CHILD FOOD INSECURITY IS IMPORTANT

The world population has reached more than seven billion people, including 805 million who suffer from chronic undernourishment [1]. Children are particularly vulnerable – 66 million children go to school hungry, one in four are stunted, and nearly half of deaths of children under five are attributable to poor nutrition [2]. As concerning as these numbers are, by focusing narrowly on anthropometric consequences of malnutrition rather than on child food insecurity more holistically, we probably underestimate the extent to which children are negatively impacted by food-related hardships. Child food insecurity is related to hunger and malnutrition, but it also includes experiences of worry, stigma, and shame related to food challenges. It is predictive of severe physiological outcomes such as stunting, but also of the more moderate nutritional deficiencies that precede those severe and sometimes irreversible outcomes [3]. Child food insecurity focuses attention on food, but also on other interconnected domains of children's daily lives, highlighting the role that food plays in children's choices between school and paid work, between their own well-being and their responsibilities to siblings and parents. Children experiencing food insecurity also means that they are under stress given the important role that food has in family well-being and functioning.

Child food insecurity is associated with a range of negative developmental consequences, including behaviour problems, poor health [4], disrupted social interactions, delayed early childhood language development [5], shamefulness [6], poor school performance, absenteeism at school [3, 7], lower physical activity [8], altered daily activities [3], poor dietary intake [8], high intake of energy-dense foods [9], less healthy diets, and inadequate intake of micronutrients such as calcium, iron, and zinc [3]. Existing research demonstrates that child food insecurity is both consequential and common, but limitations in the range of countries, contexts, and time points for which data have been collected, and a lack consistency in what is being measured and how, has resulted in incomplete information for addressing child food insecurity, its causes and consequences.

## 2. THE NEED FOR A GLOBAL MONITORING SYSTEM FOR CHILD FOOD INSECURITY

An effective global monitoring system for child food insecurity is needed to increase awareness about the nature, extent, and distribution of child food insecurity, both within and across countries and regions, and over time. The effectiveness of a global monitoring system rests on two components: measurement of child food insecurity that reliably and accurately captures the phenomenon, and a vehicle for delivering that measurement to samples that support reliable and accurate inference to the populations of interest.

There are currently four main tools for directly measuring and monitoring household food insecurity: the Household Food Security Scale developed by the United States Department of Agriculture and delivered through the Current Population Survey and other U.S. government surveys, the Food Insecurity Experience Scale (FIES) developed by the Voices of the Hungry [1] and delivered through the Gallup World Poll, the Latin American and Caribbean Food Security Scale (ELCSA) delivered through several national surveys in Latin America, and the Household Food Insecurity Access Scale [10] used in many research and evaluation studies. At national and sub-national levels countries such as Canada

[11], the United States [12], Colombia [13], and Brazil [14] systematically monitor food insecurity at household level, and more than twenty countries produce technical reports of their food security situation [1]. In addition, the prevalence of food inadequacy is estimated indirectly, based on national food balance sheets reporting the quantities of food available in 113 countries [15]. These monitoring systems give a panoramic view on what is happening in a country, and they provide information about the adequacy of wages, existing resources, and benefits to meet food needs at household level, for the populations to which household samples are representative. They may also capture the experiences of adult survey respondents, providing guidance on the nature and prevalence of those respondents' food needs.

These existing systems for monitoring household food insecurity are not, however, sufficient for global monitoring of child food insecurity because they do not measure accurately enough, and they are not delivered in samples that are nationally representative of children's experiences. In terms of measurement, existing systems do not tap children's perspectives on their own lives, nor do they flow from a conceptualization of food insecurity that is grounded in children's experiences, their roles within households, or the ways in which they make sense of their environments. Adult survey respondents tend to under-report child food insecurity, missing as many as half of children who, themselves report going hungry because there is not enough food [16]. In terms of delivery, these systems rely on household samples, which exclude children in institutional settings and homeless children, and can substantially under-represent them in highly vulnerable household situations (migrant workers, those living in urban slums, distant rural households, those living in refugee camps, multi-family or extended family households) [17]. In short, existing household survey vehicles tend to under-represent the children at greatest risk of being food insecure, and the measures those systems deliver tend to under-report children's food insecurity for those who are sampled.

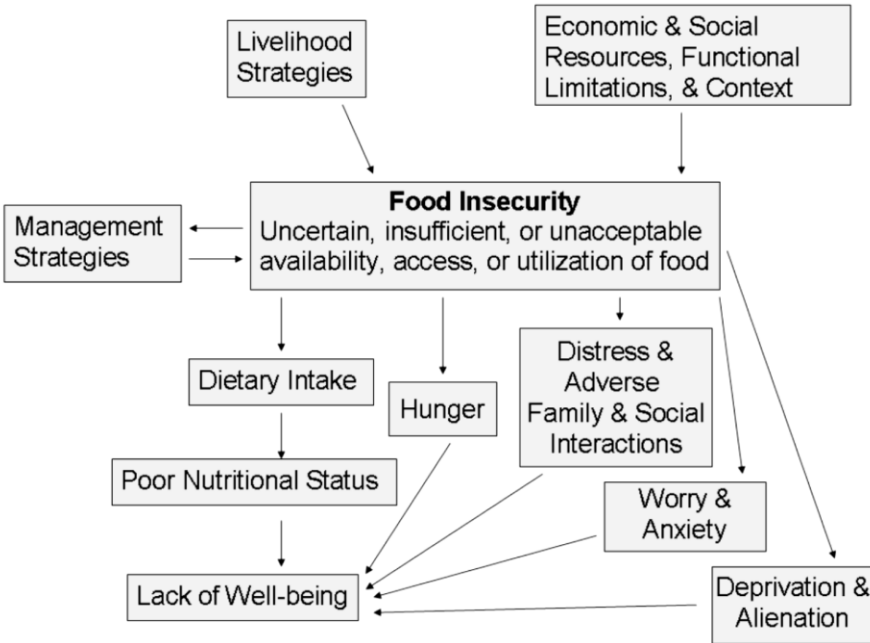
To fully address the problem of child food insecurity will require a global system for measuring and monitoring individual children's experiences. That system would 1) be grounded in a core conceptualization of child food insecurity that derives from children's experiences, 2) identify indicators that tap those child experiences with equivalence across cultures, situations, and languages, and 3) be widely and regularly implemented, allowing for cross-sectional comparisons as well as for tracking progress within an area over time. The remainder of this paper discusses these conceptual and practical challenges, and suggests alternatives for developing an effective, efficient, and feasible system for global monitoring of child food insecurity.

### **3. CONCEPTUAL DISTINCTIONS BETWEEN FOOD INSECURITY AND RELATED CONSTRUCTS**

Food insecurity is the limited or uncertain availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways [18]. Most broadly, food insecurity involves issues of availability, access, stability and utilization of food [1]. These domains reflect the spectrum of factors that shape the food environment from the most macro to the most micro level – from facilities to produce, distribute, commercialize, acquire, preserve, prepare and consume foods, nutrients and water through to the biological utilization of them into the body. In recent decades, as the world's overall production of food has surpassed overall need, attention to food insecurity has

shifted downward, from a focus on global food supply, to greater concentration on national, sub-national, and household-level food insecurity. At the household level, food insecurity is characterized by four dimensions : 1) inadequate quantity of food, 2) inadequate quality of food, 3) psychological unacceptability of food and ways of obtaining food, and 4) social unacceptability of food and ways of obtaining food [19]. Figure 1 shows the relationships between household food insecurity, its causes, and its consequences.

Figure 1. Household food insecurity, its determinants and consequences [20] adapted from Habicht et al. [21]



**a) Economic resources/poverty**

Poverty is a main determinant of household and individual food insecurity, limiting the amount and quality of food that can be accessed. The relationship between poverty and food insecurity is complex. For instance, in the United States in 2013 more than 55% of poor households (those below 100% of the Federal Poverty Line (FPL)) were food secure, and 24% of all food-insecure households had incomes at or exceeding 185% of the FPL [calculated from 22]. The relationships between poverty and food insecurity vary across contexts and population groups. For instance, older adults may have enough money to meet food needs, but be food insecure due to functional limitations that make it hard to shop for or prepare food. A child may live in a non-poor household, but be subjected to inappropriate feeding practices that lead to food insecurity. Alternatively, a child in a poor household may be food secure due to parents’ food management strategies that preference child over adult food needs [23-25].



**b) Food management strategies/household food expenditures**

Food management strategies involve ways of using available foods (e.g., fixing low-cost meals, carefully allocating each person's share of food, canning and preserving food, and removing mold, insects and spoiled portions from foods), and ways of regulating eating patterns to conserve food (e.g., cutting back portions, skipping meals, overeating when food is available) [26]. Food management strategies both contribute to and are impacted by food insecurity.

**c) Dietary intake**

Food insecurity is associated with less healthy and less varied diet [27, 28], due at least in part to the greater affordability of mass-produced, highly-processed foods. Ready-to-eat and convenient foods and drinks are selectively eaten by the socially disadvantaged [29-32], and food insecurity is associated with reduced consumption of more nutritious foods including animal products, dairy products, and fruits and vegetables [33-38]. Consequently, food insecurity can lead to either excess or insufficient energy consumption [20]. Among children specifically, food insecurity has been linked to poorer quality diets, with higher total energy and sugar [8, 9], less likelihood of meeting nutrient recommendations for potassium or vitamin D, and lower calcium, iron, and zinc in boys [39].

**d) Hunger**

Hunger is the uneasy or painful sensation caused by a lack of food [18], and is associated with the interruption of a socially-accepted eating pattern, and the inadequacy of the food eaten [40]. The concept of hunger covers a spectrum from the short term physical experience of discomfort, to chronic food shortage, to severe and life-threatening lack of food [20]. Research with adults indicates that, in most cultural contexts, hunger is associated with more severe levels of food insecurity since quantity of food consumed is reduced only as a last resort [41]. It is not yet known whether hunger reflects a similarly severe food situation among children.

**e) Nutritional status and malnutrition**

Nutritional status is a reflection of diet quality, amount of physical activity, and the absence/presence of disease. Malnutrition includes undernutrition, which can lead to both micronutrient deficiencies and underweight and stunting. It also includes overnutrition, which can lead to overweight, obesity, and related health problems. Worldwide, about 161 million children under age 5 are stunted, and 42 million are overweight [42]. With the possible exception of sub-Saharan Africa, the prevalence of stunting is rapidly decreasing, but child overweight is increasing [43]. Undernutrition in children is expected to be associated with greater child food insecurity. The magnitude and direction of any association of overnutrition with child food insecurity probably depends on the severity of the food insecurity.

**f) Child food insecurity is distinct and important**

To date, efforts to address children's food-related needs at a global level tend to use "child hunger", "child food insecurity", and "child malnutrition" somewhat interchangeably. In part, the slippage among these constructs reflects limitations in the data that are currently available. Child anthropometry is regularly and widely assessed, and provides estimates of child undernutrition which have been used to make inferences about child hunger. National-level food balance sheets indicate the food available at

the country level, but do not consider allocation of food to individual children. These data have provided an important starting point, drawing attention to the unacceptable extent and severity of child food-related needs. But, they lack specificity about the nature of the problem, and they focus attention too narrowly on nutritional pathways through which food impacts children’s well-being. In addition, using these data to inform about children requires too many assumptions about what happens within households, and how children are impacted. For all of these reasons, it is important to move forward with a global monitoring system that measures child food insecurity. Table 1 summarizes the constructs described above and why they are inadequate as proxies for child food insecurity.

*Table 1. Food insecurity and related constructs that do not measure child food insecurity*

<b>Construct</b>	<b>Definition</b>	<b>Why this construct is not the solution to measure child food insecurity</b>
Poverty	State of absolute or relative economic deprivation. Generally based on a household-level income-to-needs ratio reflecting overall household capacity for a minimally adequate standard of living [44].	Most poor households are food secure, and many food insecure households are non-poor [45]. Variation in resource management strategies, priorities, and idiosyncratic resource demands make poverty an inadequate proxy for household food insecurity. Intra-household variation in resource allocation makes poverty a highly inadequate proxy for child food insecurity.
Food management strategies/ Household food expenditures	Food acquired by household for consumption and amount of financial resources used for food over a given period of time. Use of food within the household [46].	Represents household access to food, and single household member’s perspective on use/allocation of food among all household members. Focuses only on two core food insecurity domains (quality and quantity), excluding other important domains at household and child levels.
Dietary intake/ Food consumption	Total amount of foods, food groups, and/or macro- and micro-nutrients consumed by an individual in some period of time.	Quantity and quality of the diet are only two of the core domains of the food security. No information about why foods were/were not consumed, or about more general dietary patterns, or non-nutritional domains of food insecurity.
Hunger	The “uneasy or painful sensation caused by a lack of food” is “a potential, although not necessary, consequence of food insecurity”. Hunger, is a recurrent and involuntary lack of access to food which may produce malnutrition over time [20].	Limited to one indicator of one domain of food insecurity. No existing evidence on the relative importance of hunger versus other aspects of child food insecurity, as a reflection of severity of food insecurity, or developmental risk.
Nutritional status/ Malnutrition	Body size and composition, reflected in anthropometric measures such as BMI and stunting [47].	Reflects longer-term patterns of food intake, as well as physical activity, and disease. No ability to distinguish food insecurity from other possible causes. No ability to identify less severe situations or to prevent harm. No information about non-nutritional domains of food insecurity.

## 4. MEASUREMENT OF CHILD FOOD INSECURITY

### a) Conceptual considerations for a global monitoring system

The foundation of an effective monitoring system is reliable and accurate measurement of the phenomenon being monitored. Determining the measurement approach for monitoring child food insecurity involves first deciding what, conceptually, is to be measured.

#### Level of measurement

Although food insecurity has meaning across systems levels – from global, to regional, national, subnational, household, and individual – for a global monitoring system to provide meaningful information about child well-being it must begin by measuring children’s actual experiences rather than the capacity of surrounding systems to deliver particular types of experiences. For instance, the United States has sufficient food supply and systems for distribution to ensure that all children are food secure, and yet many US children experience food insecurity [16, 48]. Beginning with measurement of actual child experiences allows for aggregation to higher levels of analysis, and can thus meet the purposes of a global monitoring system to compare prevalence within and across countries and over time. Children’s actual experiences of food insecurity can potentially be conceptualized and measured at two levels: household and individual (child).

*Household-level conceptualization of child food insecurity.* Because the household is the economic unit through which resources for children are generally acquired and allocated [49], child food insecurity can be conceptualized as a property of a household. From a household-level perspective, children could experience household food insecurity through exposure to an overall household context that is shaped in part by food insecurity, or through exposure to food situations that reflect a household’s overall approach to managing food insecurity. Food-insecure households are characterized by insufficient quantity or quality of food, and by a host of related challenges such as high levels of stress, feelings of social exclusion, maternal depressive symptoms and anxiety [50, 51], time pressures related to accessing food resources, and disrupted family eating patterns. Children who live in these households are exposed to an overall household context that presents developmental challenges, likely through nutritional (diet quality and quantity) and non-nutritional (parent/child relationship, psychosocial stress) pathways. For instance, research shows that children have negative developmental consequences in households in which a parent worries about food access but has no actual compromises in food quality or quantity [7]. This suggests that the household food situation is an important context for children’s development, and that in the broadest sense any child in a household with any degree of food insecurity may be at some risk. This would support measurement of the concept of **food insecurity among households with children**. If the goal of monitoring is to identify children who are at greatest risk for negative developmental outcomes related to food insecurity, this conceptualization may be too broad. In this case, a household-level conceptualization could focus on **developmentally consequential food insecurity among households with children**.

*Individual-level conceptualization of child food insecurity.* Although the household is an important context shaping children’s food security, it is not the only important context, and not all children will have the same experiences even within the same household context [52]. Like all contexts, the

household influences rather than determines individual experience. Conceptually, this means that each household member has a unique, individual-level experience of food security. Although these experiences are mutually influenced by the common household resource context, they are distinct due to differences in personal characteristics, priorities, choices, roles, expectations, and exposures to contexts outside the household. Children's experiences will be related to their age, developmental stage, role in the family, and access to food resources from child-related social contexts outside the household (e.g., school, friends). Children's experiences will also be unique because, like adults, children are active agents, making choices about how to navigate their food environments. These considerations would support measurement of the concept of *child food insecurity*.

#### Domains of food insecurity among children

Food insecurity, as a concept, incorporates issues of food access, food quality, food quantity, and both the reliability of sufficient food, and feelings about that sufficiency and the ways in which it is negotiated. Food insecurity has multiple domains, and each may influence children's well-being, health and development [48]. Measurement for global monitoring could reflect one, some, or all domains, depending on the priorities and purposes of the system. For instance, if the system is primarily intended to identify places where children are at risk for nutritional deficits, a focus on food quality and quantity may be sufficient. But if the system also intends to identify places where children are at risk for poor cognitive development, early school departure, early marriage, socio-emotional deficits, or stress-related obesity, the focus would need to include more domains. Since the system is, at a minimum, intended to support comparisons across countries and cultures, it will be important to identify domains that are common across locations, situations, and cultures.

*Common domains of household food insecurity.* A cross-cultural analysis of existing, published research identified four domains of household food insecurity that are common across fifteen countries [41]: uncertainty and worry, inadequate quality, inadequate quantity, and social unacceptability. This study also found some additional commonality in subdomains; for instance, social unacceptability generally included unacceptability of means of acquiring food as well as eating foods that are socially unacceptable. These subdomains were experienced and expressed differently depending on cultural context. Socially unacceptable means of acquiring food in the United States include borrowing food from a neighbour, while this practice is common and socially acceptable in Bangladesh where social unacceptability includes a woman working in the fields with men [41].

*Common domains of child food insecurity.* To date there has been less extensive use of child self-report assessments of child food insecurity, but existing work supports the existence of common cross-cultural domains. Studies in the United States and Venezuela both found that children experience awareness of food insecurity, including cognitive awareness, emotional or psychological awareness, and physical awareness [48, 53]. There are also commonalities in how children take on responsibilities for managing food insecurity, including children's participation in parent-initiated strategies, and strategies that children initiate themselves. Accurate measurement for global monitoring of children's experiences of food insecurity will require research to determine how universal these child domains and subdomains are across cultures.

### Food insecurity across the span of childhood development

In addition to cross-cultural considerations, measurement of child food insecurity should attend to developmental differences across childhood. For instance, there is probably a developmental threshold below which a child cannot clearly connect an experience of worry, or even of hunger, with an attribution to its cause (e.g., that there is not enough food at home). Is this an experience of child food insecurity even if the child does not understand it as such? Or, is the worry or hunger in that instance a consequence of household food insecurity? In addition, some child experiences that reflect food insecurity at some stages of childhood may reflect developmentally appropriate responsibilities at other stages. Part-time work to help pay for food may be an indication of serious food insecurity for a young child, but an indication of appropriate transitioning into adult responsibilities toward the end of childhood. Is it the experience itself, or the meaning it holds for a specific child in a specific situation that, conceptually, we wish to capture as child food insecurity?

### Development in cultural context

At the nexus of culture and the child developmental trajectory, it is also important to consider that although there are some fairly universal developmental trajectories (e.g., language acquisition, self-regulatory skills, capacity for abstract thinking, and capacity for empathy that each unfold in similar timeframes across cultures), other developmental milestones vary substantially. In the United States, children's economic and social dependence on parents generally extends at least until age 18 years and in many instances through age 22 or 23 with the completion of college. In other countries, economic and social dependence ends much earlier, with entry to the workforce, marriage, and child bearing often occurring during the teenage years. Global measurement of child food insecurity will need to determine who counts as a "child" (e.g., perhaps based on age, social status, or dependency on parents), and be sensitive to developmental norms that may shape the experience of child food insecurity within a particular culture [48, 54, 55].

### **b) Practical considerations for a global monitoring system**

Intertwined with conceptual consideration are the practical implications of different ways of conceptualizing child food insecurity. Of particular importance are the challenges related to who can and should report, and how.

#### Who should report what?

Although both children and adults are exposed to a common, overall household food security context, their experiences may be quite different, flowing from unique roles, developmental stages, expectations, and needs. When we ask an adult to report about the household's food situation, they are reporting their own, individual experience of the household food context. When we ask them to report on their child's experiences, they are reporting their own experience and perceptions of what their child experiences. This distinction is important in two main ways. First, even if an adult has some knowledge about the food quality, food quantity, and ways of obtaining food that a child experiences, that adult cannot fully understand how the child thinks and feels about those experiences. A mother's

experience of how a child feels is not the same as what the child actually feels. Second, although adult respondents may believe that they know what children experience, research indicates that their knowledge is partial at best. For instance, mothers report managing household food resources for the whole family, and cutting back how much they eat at times of food scarcity in order to protect children [23]. Children, however, report eating less when food runs low so that younger siblings and parents have enough to eat [48]. Each reporter may be accurately reporting their experience, and yet these reports lead to contradictory information about children's food insecurity. Practically this means that accurate measurement of food insecurity requires that people report only on things that they, themselves, experience.

### Parent report

*Parents can report accurately on the overall household food situation.* If the ultimate goal is to measure the degree to which each household has access to foods that a parent thinks can be used to adequately meet children's needs, the parent report of household food insecurity is appropriate. This approach has practical benefits. First, the common domains of parent-reported household food insecurity have already been determined [41], and indicators of those domains are already validated and in use across many countries [56]. In addition, parents can provide consent to participate in surveys, and a number of existing survey vehicles already reach large samples of parents, as respondents for household-level questions. An additional benefit of this approach is that parents tend to have the most complete knowledge about the household economy as a whole, and about the ways in which food management strategies fit within that overall household economy [40]. We should expect parent reports of household food security status to match well with other socio-economic indicators, both at the household level and within the surrounding local or national environment.

*Parents can also accurately report on their stress, health and mental health, parenting practices, and other experiences and behaviours that may be consequences of household food insecurity, and which may contribute to the context that impacts children's well-being.* To the degree that some constellation of parent experiences and behaviours may predict either a threshold or a profile which place children at developmental risk, parent reports may be appropriate to measure the degree to which each household represents food-related developmental risk for children. Establishing these thresholds or profiles would, however, require additional work with samples that include both a parent report on parent experiences, and direct measurement of child experiences and/or developmental outcomes. There also is no guarantee that child well-being can be adequately predicted from parent reports.

*Parents cannot accurately or reliably report what their children experience.* Children have unique experiences of food insecurity; parents are not always knowledgeable of their children's experiences, and therefore cannot report accurately or reliably about them. The extent of inaccuracy may depend on context, the survey interviewer, respondents' perceptions of the agency conducting the survey, and how the data will be used. Because children may try to hide their experiences from parents, and have some experiences outside of the household, parents are not fully knowledgeable of children's food insecurity [48]. In addition, parents may not be accurate reporters of children's experiences due to stigma, feelings of shame, fear of involvement from social services if children are found to be hungry,

role expectations, and social desirability bias [for instance, see 54, 55]. It may also be that inequities in intra-household food allocation are either not socially acceptable to acknowledge, or are so culturally ingrained that reporters are unaware of children's hardships. For instance, depending on cultural norms and contextual factors, males may receive more food than females [57, 58]. These challenges to parent reporting of child experiences are reflected in disparities between parent and child report of children's food insecurity, and between parent report and direct assessment of the consequences of children's diets. Parents report that their children experience food insecurity less frequently than children report their own food insecurity [16], and parent report underestimates child outcomes including stunting, wasting, and underweight [59].

### Child report

*Children as young as seven can report accurately on their food insecurity.* Measuring child food insecurity requires accurate, reliable, and complete information from children themselves. Children have the most complete knowledge about their own lives and experiences [60, 61], and child self-report is widely seen as the "gold standard" for assessing children's internal experiences such as quality of life [60], exposure to domestic violence [62], and pain [60]. Although children are the only accurate reporters of their food insecurity, it is important to note that what they are reporting – **child** food insecurity – may be substantively different to adult and household food insecurity. Adult food insecurity has been shown to have four core domains: compromises in the quantity and quality of food, and psychological and social strains related to food hardships. Children's experiences of food insecurity also include cognitive awareness of household food hardships, and psychological strain related not only to running out of food, but to awareness of parents' difficulties meeting household food needs [48]. Another difference is that adult experiences of food insecurity are conditioned on inadequate resources for food, but child experiences are not, and are instead grounded in the household social and food environment (e.g., quality of interactions, parental affect and behaviour, and foods available for children) [48]. Adult/child differences are also possible in the ordering of experiences. Adults in the United States (but not in all countries) generally report that worry about running out of food is the least severe experience of food insecurity, followed by compromises in quality and quantity and with hunger being the most severe level of food insecurity. Research with children, however, indicates that worry about whether parents can provide enough food may, at times, reflect quite severe situations [48]. This makes sense from a developmental perspective since children have less control over their food environment, and children's sense of safety depends on the reliability of parents' ability to meet child needs. A child may feel unhappy about reduced food quality, may feel hungry when food quantity is reduced, but feel most distressed when they lose confidence that, in the end, their parents will always find a way to feed them.

*Children cannot report accurately on the causes of their food insecurity or on the household context overall.* There is evidence that children age 7 and older can accurately report their food security [3, 9], but particularly younger children are less able to report the causes of their experiences. For instance, young children may not be able to distinguish whether a reduction in food quality stems from parental under-employment, crop failure, or increased demand on food resources from extended family or neighbours. Similarly, children may misinterpret adult cues, perceiving that food is running low when

adults are actually stressed or not eating at mealtime for other reasons. In short, children's perspectives reflect their household role and developmental stage, and since young children are still developing the problem solving capabilities that support causal thinking [63], and have limited understanding of some household-level economic and access issues, they may experience and be aware of the presence and consequences of their child-specific food insecurity rather than its causes.

From a practical perspective, measurement of child food insecurity for global monitoring would require foundational work to determine common domains, and to validate indicators for use across countries. It would also introduce new challenges in data collection, including the need to obtain adult consent for child participation, and extending existing survey procedures to include a brief, private, interview with a child.

#### Adult versus child report

The conceptualization of food insecurity among children, and the pros and cons of adult- versus child-report approaches to measurement need to be considered together in making decisions about measurement. If the ultimate goal of the global monitoring effort is to identify the prevalence of households that do not have access to foods that a parent thinks can be used to adequately meet children's needs, a household conceptualization with parent report seems appropriate. If the ultimate goal is to identify the prevalence of child food insecurity, an individual-level conceptualization with child report seems appropriate. There are also more nuanced decisions to be made, in terms of the degree and type of risk children face. We provide an overview of these distinctions in Table 2 below.

One final cautionary note is important. If parent report of household food insecurity is used, it is essential to stress that what is actually being measured is the prevalence of children who live in households characterized by food insecurity. This is quite different to the prevalence of child food insecurity, and even with clear statements it seems likely (based on experiences in the United States[for instance, see 64]) that the data may be misinterpreted. A household-level conceptualization will not result in accurate information about children's experiences of food insecurity, and this will need to be emphasized in reporting.



Table 2. Concepts, measures, and pros and cons of each

Description of the concept being measured	Measure	Indicators	Reporter	Practical considerations
1. Food Insecurity among Households with Children	<u>Household resource adequacy</u> : Given current social and economic conditions, how adequate are households' resources for meeting all members' food needs?	Children who are exposed to a household environment characterized by food insecurity <ul style="list-style-type: none"> <li>• # and proportion of households</li> <li>• # and proportion of children living in these households</li> </ul>	Adult – household food security items (e.g., FIES)	<ul style="list-style-type: none"> <li>• Ease, low cost, low participant burden of implementation</li> <li>• Low accuracy for measuring children's experiences within households</li> <li>• Low precision for identifying children in need of services – dilution of available resources through broad targeting</li> </ul>
2. Developmentally Consequential Food Insecurity among Households with Children	QUESTION ABOVE and: <u>Household risks to children</u> : Given current social and economic conditions, how adequate are households' resources for preventing children's exposure to food-related risks?	Children who are at risk for negative developmental consequences associated with exposure to food insecurity within their household <ul style="list-style-type: none"> <li>• # and proportion of households</li> <li>• # and proportion of children living in these households</li> </ul>	Adult – household food security items (e.g., FIES) and parent stress, parenting practices, etc.  For development: child direct assessment of developmental consequences	<ul style="list-style-type: none"> <li>• Moderate additional cost associated with determination of threshold at which HHFI is developmentally consequential for children</li> <li>• Moderate accuracy for measuring when children's experiences are likely to involve some risk</li> <li>• Moderate precision for identifying children in need of services – assumes that households in similar situations make similar use of resources for all children; assumes that all children in similar situations have similar experiences</li> </ul>

<p>3. Child Food Insecurity</p>	<p><u>Child resource adequacy</u>: Given current household, school, and community provision of food resources, how adequately are children's food-related needs being met?</p>	<p>Children who experience food insecurity</p> <ul style="list-style-type: none"> <li>• # and proportion of children</li> <li>• # and proportion of households that include these children</li> </ul>	<p>Child – child food security items (e.g., Child Food Security Assessment (CFSA) [16] items if validated across countries, GSHS hunger item if validated across countries)</p>	<ul style="list-style-type: none"> <li>• Greater costs associated with child-measure refinement, validation</li> <li>• Greater implementation costs (additional surveys), participant burden (child participants), and implementation challenges (parental consent, child assent, training for interviewers)</li> <li>• High accuracy for measuring children's experiences of food insecurity</li> <li>• Moderate precision for identifying children in need of services – assumes that all children experiencing food insecurity have similar needs</li> <li>• Potential to leverage multiple systems (households, schools, community programmes) to improve child food security</li> </ul>
<p>4. Domain and Degree Specific Child Food Insecurity</p>	<p><u>Child resource adequacy</u>: Given current household, school, and community provision of food resources, how adequately are children's food-related needs being met across domains that influence development?</p>	<ul style="list-style-type: none"> <li>• Children who experience specific aspects of food insecurity (e.g. hunger), or severity of food insecurity (e.g. smaller food portions -&gt; skipped meals -&gt; day without food)</li> <li>• # and proportion of children</li> <li>• # and proportion of households that include these children</li> </ul>	<p>Child – child food security items (e.g., CFSA items if validated across countries, including validation of items for different domains)</p>	<ul style="list-style-type: none"> <li>• Slightly higher costs than row above – additional domains would be built into processes for measuring development and for implementation</li> <li>• Same high accuracy for measuring children's experiences of food insecurity</li> <li>• High precision for identifying which children need which services – optimizing use of available resources to address children's needs</li> <li>• Potential to leverage multiple systems (households, schools, community programmes) to improve child food security</li> </ul>

## 5. VEHICLES FOR DELIVERING MEASURES

Global monitoring of child food insecurity requires that measures be delivered to samples that are representative of the population of children, ideally for every country. We are aware of no existing system that achieves this. Assuming that the development of an entirely novel system is not feasible, we evaluate several existing systems. Consistent with the discussion above, we differentiate vehicles that rely on parental report to assess household food insecurity to which children are exposed (first two rows of Table 2) and vehicles that rely on child reporting of their own food insecurity (last two rows of Table 2).

### Vehicles for delivering measures through household assessment

*Derive measures about children from household food security assessments.* Existing tools for assessing household food security could be added to on-going monitoring systems such as the Multiple Cluster Indicator Surveys (MICS) or the Demographic and Health Surveys (DHS) to determine the prevalence of children living in households that are food insecure. This would be appropriate to the first row of purposes in the table above. To accomplish the second row of purposes would require associating scores on the household food insecurity assessment with the onset of negative developmental consequences for children. Existing research in the United States indicates that, on average, there are negative developmental consequences for children living in households that affirm even one indicator of household food insecurity. Additional research comparing different thresholds to a definitive measure of child food insecurity (e.g., interviews with children), or to proxy measures such as outcome data on child development, would be needed to determine what threshold is appropriate globally. This approach would not adequately achieve purposes in rows 3 or 4, because it would assess household conditions that generally expose children to food-related hardships, rather than children's actual experiences of food insecurity or the nature or severity of those experiences. For instance, some children are buffered at least partially from food insecurity even in food insecure households, while other children experience food insecurity even when a household as a whole has resources to meet food needs. Also, among children who experience food insecurity, information about variations in experiences of stress, worry, hunger, and responsibilities for food production and earnings are not obtained in household-level measures, and cannot be accurately or reliably reported by parents. So, while this approach could provide accurate information about the prevalence of children being exposed to household food insecurity, and even about those who we expect are at risk from household conditions, it would be less helpful for quantifying the number of children with experiences of food insecurity.

*Derive measures about children from a profile of household and adult data* Similar to the above approach, this would use existing monitoring systems to provide information about overall household situations, which would then be used as a proxy for child food insecurity or child risk of negative developmental consequences associated with food insecurity. The first approach relies only on data about household food security, and would provide little specificity about type or degree of child risk. It is possible that a combination of household food security and other economic, contextual, or health indicators could provide a more accurate prediction of which children are at risk, and for what. For

instance, it could be that a child in a household that reports very low food security, and who, based on parental report is engaged in paid work and does not attend school, is more likely to experience hunger and food-related educational deficits, while a child in a household that is similar but in which the reporting parent indicates depression has additional risk for psycho-social experiences of food insecurity. As with the first approach, preliminary research would be necessary to empirically determine the profile of factors that predict different child food insecurity experiences, based on either a definitive direct measurement of child food insecurity (e.g., interviews with children) or a validated set of child items implemented in a diverse set of countries.

#### Vehicles for delivering measures through child assessment

Accurate measurement of child-specific food insecurity requires asking children directly about their experiences. If the measures in rows 3 and 4 of Table 2 are priorities, direct assessment is the most appropriate approach. It would require augmenting existing data collection systems to include child direct report assessments. Although this approach would require more innovation to the existing monitoring systems than would the two household-level approaches, it could build on the existing systems by inviting participation in an add-on interview from each child, or from a sampled child, in each sample household with children. A determination would need to be made about the age at which a child is able to accurately report, and the best proxy reporter for children at younger ages. It may be, for instance, that for children age 5 and younger, parent report is most appropriate, or it may be that an older sibling or other primary caregiver is the best reporter, depending on who spends most time on, or is most responsible for, the focal child's feeding. This approach would be most expensive, and would involve implementation challenges related to parental consent, protection of child privacy, and the interviewer skills necessary to survey younger children. The costs for monitoring could be offset, however, by the accuracy of information about child food insecurity, and the resulting power of that information to advance advocacy efforts, prioritize where resources and attention are most needed, and efficiently detect how changes in policy and economic context influence children's well-being.

## **6. KNOWLEDGE NEEDS FOR DEVELOPING MEASURES AND MEASUREMENT STRATEGIES**

The first two approaches described in the previous section would require collecting data at the household level from adult respondents in countries, whereas the third approach described would require collecting data directly from children. Excepting if the measure chosen is children who are exposed to a household environment characterized by food insecurity (row 1 in Table 2), then designing and implementing either the household-level approaches or the child-level approach depends on knowledge that is not completely available at this time, so that additional research using qualitative and/or quantitative methods would be needed.

#### Household-level approaches

If the measure chosen is children who are exposed to a household environment characterized by food insecurity (row 1 in Table 2), then no new knowledge is required. Otherwise, for the household-level approaches to work, information is needed regarding which existing household measures predict child developmental risk. For example, we would need to have knowledge about these questions:

- Which developmental outcomes are impacted by household food insecurity across cultures?
- Does household severity predict child outcomes (e.g., some threshold of affirmations about household conditions is reliably predictive of child developmental risk)?
- Do particular household conditions predict child outcomes (e.g., compromised quantity of food or obtaining food in socially unacceptable ways could be predictive)
- Do severity and conditions impact children differently at different ages? Do we need to rely on different thresholds or indicators for young children, school-aged children, and older teens?

Only very limited data exist through which these questions could be answered because few studies or surveys have collected information about household food insecurity and other household conditions along with information about child development or directly assessed child food insecurity.

Furthermore, for some purposes (e.g., estimating prevalence) it is sufficient to establish whether household conditions predict child outcomes well, but for other purposes (e.g., directing specific types of resources towards countries or areas within countries based on the types of food security experiences that threaten child well-being in that area) it is important to establish how (i.e., through which mechanisms) household conditions lead to child outcomes.

#### Child-level approach

For the child-level approach (i.e., directly measuring child food insecurity) to work, information is needed that builds on and expands the existing qualitative [48, 53] and quantitative research [3, 8, 16] that has been done in the United States and Venezuela. The required process for developing a base of knowledge about domains and potential indicators across countries has been successfully implemented previously to develop international measures and indicators of household food insecurity [41] and of family care [65]. In particular, qualitative research with small samples to clarify domains and develop indicators would be needed in several diverse additional countries. The resulting indicators would be evaluated for linguistic and cultural equivalence [10]. Once a candidate set of measures and indicators was selected, cognitive interviewing would be done with a small number of children in several diverse countries to ensure that the items are answerable and have the intended meaning for child respondents, leading to refinement of the items. The final step would be quantitative field testing and validation through comparison of the proposed assessment tool in small survey samples in different countries and contexts. This process is explained in detail in Frongillo et al. [66].

Implementing a measurement system to obtain estimates of the prevalence of child food insecurity globally would require establishing a new set of cross-national surveys or adding items to an existing set. Collecting data directly from children in such a measurement system would require attention to a number of details. Procedures for recruitment, obtaining consent and assent, and protecting child privacy would need to be developed, vetted, and established. Depending on the laws in each country, a procedure would be needed to establish responsibility for reporting and disclosure of child maltreatment, how to respond, and who should respond. The research done in the United States and Venezuela [48, 53] on direct measurement with children has found that children as young as 7 years of

age can respond accurately to questionnaire items, but further work should be done to determine the earliest age when child self-reporting is appropriate and who (e.g., caregiver, older sibling) should best be the reporter when children are too young to report for themselves. Other research in countries should be done to determine any differences by gender, what is the appropriate recall period, how do children understand time in relation to events, and what prompts can help children situate experiences accurately within time. Another issue is what gradations in frequency will children report most accurately (e.g., never, once or twice, many vs. never, sometimes, often) and how to grade severity of experiences, if warranted.

## 7. DEVELOPING THE EVIDENCE BASE FOR MONITORING CHILD FOOD INSECURITY

This section of the paper lays out activities for developing the knowledge necessary for measuring the multiple concepts related to children and food insecurity (as in Table 2). If the decision is made to engage in global monitoring of food insecurity among households with children, no new knowledge is needed in terms of measurement; however, without additional knowledge even this measure will be limited in its utility as it is not yet established how, or to what extent, household food insecurity represents a developmental risk to children across contexts. For all other measurement purposes some new knowledge is necessary. As discussed in the previous sections of this paper, three main conclusions from existing research are particularly important to informing the development of that new knowledge.

- ***Children have unique, multi-dimensional experiences of food insecurity, and they can report accurately on those experiences.*** Child food insecurity is distinct from related constructs such as hunger, nutritional status, and diet quality, and has nutritional and non-nutritional components, all of which may impact children’s development and thus should be accounted for in a measurement strategy. Children as young as 7 years old can report accurately on these experiences.
- ***Parents cannot accurately or reliably report on their children’s experiences of food insecurity.*** Conceptually and empirically, parental reporting of child experiences of food insecurity is inadequate. Parents do not and cannot know what their children feel, think, and experience. Consequently, parents substantially under-report child food insecurity, at least in some contexts. Children tend to keep their thoughts, feelings, and actions private and to look outside the household to meet their food needs – particularly in the worst situations – so parents’ knowledge of and ability to report on child food insecurity is possibly weakest when children are at greatest risk.
- ***The household environment is important to children’s well-being, and household food insecurity represents a risk factor for child development.*** Households are not the only important context influencing children’s food insecurity, and some children do not live in households at all. For most children, however, especially young children, households are the most important context. Household food insecurity is associated with negative child developmental outcomes. A richer, cross-cultural understanding of relationships between

household food insecurity (and the factors that cause it) and child experiences and outcomes will provide important information about child food insecurity.

Building on these three conclusions, activities for developing a better base of knowledge for monitoring child food insecurity can be identified. A first step should include information gathering, grounded in the current knowledge base, to determine cross-cultural consistency, accuracy, and feasibility. Questions that should be addressed are:

- *To what extent understandings of child food insecurity, primarily from the United States and Venezuela, apply across cultures and contexts?* This work should involve confirmation of existing domains, or refinement of those domains, as necessary, and adaptation of indicators to ensure linguistic, cultural, and measurement equivalence.
- *Are there household conditions that, beyond parent report of household food insecurity, are strong proxies for child food insecurity?* This work should involve comparison of household data on food environment, caregiving practices, resource constraints, and child-related parental priorities with both child developmental outcome data and child-report of child food insecurity.

*To what extent does the relationship between any household food insecurity and child developmental risk hold true across cultures and contexts?* This work should involve comparison of household food insecurity data to both child developmental outcome data and child-report of child food insecurity.

To address these questions, four activities would be helpful.

#### Analysis of GSHS data on going hungry

Analysis should be done to examine the data available on child food insecurity in the World Health Organization (WHO) Global School-Based Student Health Surveys (GSHS) [67]. In these surveys, the food insecurity of adolescents aged 13-17 years is assessed by one item in which they are asked about frequency of going hungry. The GSHS (<http://www.who.int/chp/gshs/en/>) currently has data on about 80 countries for children aged 13 to 17 years, with other surveys planned [67].<sup>1</sup> The key topics addressed by the GSHS are: alcohol use, dietary behaviours, drug use, hygiene, mental health, physical activity, protective factors, sexual behaviours, tobacco use, and violence and unintentional injury. The questionnaire includes one item on food insecurity: “During the past 30 days, how often did you go hungry because there was not enough food in your home?” with response options never, rarely, sometimes, most of the time, and always. For example, for India in 2007, the (weighted) prevalence of the last three responses together was 17.1%. Some of the countries have national datasets but others have datasets only for certain areas of the country. The surveys began in 2003 and a few countries have more than one survey. A common questionnaire was used across countries (with three versions over time). These data can be used to construct provisional estimates of the prevalence of adolescents going hungry and to examine associations of going hungry with adolescent health behaviours. The

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<sup>1</sup> Another on-going monitoring system of adolescents is the Health Behaviour in School-Aged Children survey (hbcs.org), a research collaboration with the WHO Regional Office for Europe that is conducted every four years in 44 countries and regions across Europe and North America. In the past, the questionnaire has included four rounds an item on going to bed hungry.

analyses will require attention to the complex survey methods used (i.e., cluster and disproportionate sampling), the limited areas surveyed in many countries, and the breadth of years covered by the surveys. Analytic strategies previously used in other monitoring efforts, for example with child stunting [68], can be adapted to analyze these data. Our group has experience in conducting such analyses; we have begun analyzing the datasets and are interested to complete an analysis during the summer and fall of 2015.

#### Field work to determine applicability of assessing child food insecurity from children

Field work should be done with small, reasonably representative samples of children in countries, with priority on countries recently surveyed through the WHO GSHS, to determine the applicability across cultures and contexts of assessment of child food insecurity based on previous research in the United States and Venezuela. This can be accomplished quickly and efficiently through focus group or individual interview strategies, added on to existing food-related projects. Fram et al. [16] and Bernal et al. [3] developed and validated questionnaires to assess child food insecurity asked directly to children that were based on previous qualitative research in the United States and Venezuela. Whether the domains of child experiences of food insecurity that were found in that qualitative research and the questionnaire items developed to assess them are applicable across cultures and contexts needs to be tested. This testing can be accomplished quickly and efficiently using focus group and/or individual interview methods, adding on to existing food-related projects. This strategy was successfully used to help develop the family care measures for MICS [65]; the reference cited describes the process that was used. Frongillo et al. [66] prepared a technical guide for developing questionnaires for assessing household food insecurity that can be directly applied to this work. The guide describes seven phases of work, the first six of which apply here. The first phase is to define and understand children's experiences of food insecurity to be measured; it involves gathering knowledge from key informants, developing an interview guide, selecting a sample, and conducting focus groups and/or interviews. The second phase is to break down the food insecurity experiences into measurable components; it involves summarizing the interviews, classifying children by types and severity of experiences, summarizing interviews across children by theme, and identifying domains of food insecurity that discriminate children. The third phase is to create questionnaire items to assess the domains of food insecurity experiences; it involves developing or adapting items and answers and then review by local informants and experts. The fourth phase is to determine the quality of the items; it involves cognitive interviewing and further input from key informants. The fifth phase is to assess the functional and quantitative performance of the questionnaire in a quantitative field test with a modest sample to compare results of items to that expected. The sixth phase is to create the indicators and determine how they might best be used. We suggest that priority be given to countries that have recently completed (or soon are going to be undertaking) GSHS surveys so that the GSHS item on going hungry can be part of the testing.

#### Food Insecurity Experience Scale (FIES) measure and existing survey vehicles

The FIES measure [56] should be included in major global monitoring systems where feasible. Some possible systems include the DHS [69] and the MICS [70]. The MICS is different from the DHS because



of the inclusion of items that assess family care practices [65] and child development, particularly for children aged 36 to 59 months. Data on disciplinary (i.e., limit-setting) practices are available for children in the household up to age 14 years. The addition of the FIES measure to the household questionnaire of the DHS and MICS, if feasible, would provide data to address two important questions. First, what are the relationships between household food insecurity and child outcomes and what cut-points or categories of household food insecurity are indicative of deficits in child outcomes? Second, are these relationships consistent across countries? The outcomes of interest are both nutritional (i.e., height-for-age, weight-for-height, weight-for-age) and non-nutritional (i.e., family care, child development).

#### Child-reported child food insecurity, household FIES, and other data collected in small samples of households

Child-reported child food insecurity, household FIES, and other data should be collected in small, representative samples of households with children in various cultures and contexts. This could happen by adding a child survey component onto existing household surveys, or by collecting household-level data through a parent survey attached to the field work described above.

## **8. IMPLEMENTING GLOBAL MONITORING OF CHILD FOOD INSECURITY BASED ON CURRENT KNOWLEDGE AND VEHICLES**

Designing and deploying a global monitoring system for child food insecurity is a challenging task, one that is far more likely to be realized if an existing monitoring system can be used with minimal modification. Existing systems, however, will likely miss accounting for some children. Children who are living in institutions, are homeless, migrating, and orphaned are at high risk for food insecurity, and are unlikely to be tapped in household-based or school-based systems [17]. If assessing child food insecurity among these groups is a priority, additional systems would need to be developed, using perhaps aid programme personnel to conduct point-in-time assessments. Several possible existing monitoring systems might be useful.

For assessing child exposure to household food insecurity from household data, the most obvious possible existing monitoring systems are the Gallup World Poll/Voices of the Hungry [71], DHS [69], and MICS [70]. The latter two surveys target households with children under 5 years of age, and therefore do not provide data currently on older children (with minor exceptions). These surveys use common protocols and questionnaires for the countries participating in each programme, and provide extensive coverage of low- and middle-income countries, usually with nationally representative samples (of relatively stable households, as discussed above). If the main goal of the system is to provide regular estimates of the numbers and prevalence of children by country, then current findings primarily from the United States suggest that the most appropriate indicator of child risk from household data will be any adult affirmation of household food insecurity. It would provide a broad metric to aid in raising public awareness, and in directing resources at the country or regional levels.

For assessing children directly on child food insecurity, there is one existing monitoring system, the Global School-based Student Health Survey (GSHS) [72]. The GSHS uses a common protocol and

questionnaire for the participating countries. It provides reasonably extensive coverage of low- and middle-income countries in the African, American, Eastern Mediterranean, South Asia, and Western Pacific regions, with limited coverage in Europe. The GSHS collects data from adolescents aged 13-17 years. For some purposes, this age coverage may be adequate, but for other purposes the lack of data on younger children who could be surveyed directly will be a potentially large constraint.

Another limitation is that children not attending school are likely to be the most vulnerable on average to food insecurity, but only children attending school are surveyed, an issue common for all school-based surveys. Furthermore, some children may be in the wrong grade, some attend only part of the time, and some are completely out of school and perhaps not even in a household. Theoretically, this limitation could be addressed by collecting food insecurity data for small samples of children not in school, and using the comparative prevalence estimates along with national data on the proportion of children not in school to estimate overall prevalence. Generally a population frame is lacking, however, and surveys run in countries with large populations of out-of-school children have been unable to solve this sampling problem. Nevertheless, it would be worthwhile to explore this possibility, as well as the potential of expanding the age coverage of the GSHS, although often it is difficult to make such a major change in survey protocol for on-going monitoring systems.

Although there are examples of multiple GSHS surveys over time in countries, they are done infrequently over time. Some GSHS countries do not have national data. The one item in the GSHS on child food insecurity, i.e., going hungry, assesses the physical domain of child food insecurity. No items assess the cognitive and emotional domains. In principle, although space in surveys for items is always limited, a relatively easy change to the GSHS would be to add a few additional items that assess these other domains.

Making changes to existing data systems would require negotiation and development. One existing data system, Voices of the Hungry implemented through the Gallup World Poll [71], can produce at this time estimates for countries of the prevalence of children who are exposed to a household environment characterized by food insecurity. Respondents in the Gallup World Poll are asked eight questions about food insecurity from the Food Insecurity Experience Scale (FIES, see text box below) that refer to the respondent's (seven questions) or household's (one question) food insecurity. Most surveys are nationally representative of the resident, civilian, non-institutionalized population aged 15 and older, and cover the whole country including rural areas (excepting unsafe or very remote areas in some countries).

To convert national prevalence estimates from the FIES from the Gallup World Poll to estimates of prevalence and number of children exposed to household food insecurity will require data on the number and age distribution of children within households. These data can be obtained directly in the Gallup World Poll as the number of children in broad age groups (e.g., 0 to <5 y, 5 to < 10 y, 10 to < 15 y).

## 9. CONCLUSIONS

From existing research we know that children have unique, multi-dimensional experiences of food insecurity about which they can accurately report; parents cannot accurately or reliably report on their

children’s experiences of food insecurity; and, given the importance of the household environment for children’s well-being, household food insecurity puts child development at risk. This knowledge has led us to suggest activities to inform both household- and child-level approaches to measuring concepts related to child and food insecurity in monitoring systems. We need to understand to what extent the relationship between household food insecurity and child developmental risk holds true across cultures and contexts. Although parent reports of child food insecurity are inaccurate, a combination of these reports with other information about household and child conditions could be more accurate. Existing research primarily from the United States and Venezuela has provided understanding of children’s experiences of child food insecurity, but it is important to expand this understanding to other cultures and contexts. This research has also demonstrated that direct assessment of children about their experiences of food insecurity is accurate and can be implemented in surveys that include children.

Until this expanded evidence base is available, one existing monitoring system, the FIES items in Voices of the Hungry implemented through the Gallup World Poll, can be used with minimal modification to produce estimates for countries of the prevalence of children who are exposed to household food insecurity. Having such estimates from the FIES and the Gallup World Poll would be an important step forward, and could suffice until more knowledge and opportunities are created to estimate child food insecurity more accurately. As noted earlier, it is important to emphasize that what would be measured in the Gallup World Poll is the prevalence of children who live in households characterized by food insecurity, not the prevalence of child food insecurity as experienced by children.

*Food Insecurity Experience Scale (FIES) for the Voices of the Hungry Project implemented in the Gallup World Poll*

During the last 12 months, was there a time when, because of lack of money or other resources:

You were worried you would not have enough food to eat?

You were unable to eat healthy and nutritious food?

You ate only a few kinds of foods?

You had to skip a meal?

You ate less than you thought you should?

Your household ran out of food?

You were hungry but did not eat?

You went without eating for a whole day?

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