Rome, 17-19 January 2012

PROCEEDINGS International Scientific Symposium on Food and Nutrition Security information:

from Valid Measurement to Effective Decision Making

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PREFACE

This Symposium was held as a follow up to the 2002 International Scientific Symposium on measurement and assessment of food deprivation and undernutrition. However, in addition to bringing together experts on measurement and assessment to report on progress made, this Symposium has also taken a closer look at how to increase the use of food and nutrition security information in decision making. This second focus reflects the current demand to better align information generation with policy priorities, and is essential for moving the food and nutrition security agenda forward at country, regional and global level. We are grateful for the support of the European Union that made possible both the discussion of this important issue and the Symposium as a whole.

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FAO extends special thanks to the members of the Steering Committee and the Scientific Advisory Committee. The **Steering committee** was chaired by Kostas Stamoulis (FAO) and included Terri Ballard (FAO), Winnie Bell (FAO), Barbara Burlingame (FAO), Richard China (FAO), Kinlay Dorjee (FAO), Pietro Gennari (FAO), Joyce Luma (WFP), Laurent Thomas (FAO), Luca Russo (FAO) and Teunis Van Rheenen (IFPRI). The **Scientific Advisory Committee** was chaired by Terri Ballard (FAO) and included Gustavo Anriquez (FAO), Carlo Cafiero (FAO), Karel Callens, (FAO), Gero Carletto (World Bank), Dramane Coulibaly (Comité permanent Inter-Etats de Lutte contre la Sécheresse dans le Sahel), Ben Davis (FAO), David Dawe (FAO), Marie-Claude Dop (Institut de Recherche pour le Développement),Marie Gaarder (International Initiative for Impact Evaluation), Stephan Klasen (Goettingen University), Chris Leather (Independent), Daniel Maxwell (Tufts University), Nancy Mock (Tulane University), Sylvie Montembault (WFP), Kathryn Ogden (WFP), Marie Ruel (International Food Policy Research Institute), Shahla Shapouri (U.S. Department of Agriculture/ FAO), Roy Stacy (Independent) and Anne Swindale (Food and Nutrition Technical Assistance).

All panel and parallel session chairpersons, presenters, rapporteurs, speakers, and audience members are gratefully acknowledged for lending their expertise to the Symposium.

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LIST OF ACRONYMS

3ie	International Initiative for Impact Evaluation
ASEAN	Association of Southeast Asian Nations
CCT	Conditional cash transfer
CFS	Committee on World Food Security
CONEVAL	Consejo Nacional de Evaluación de la Política de Desarrollo Social (Mexican National Council for Evaluation of Social Development Policy)
DFID	U.K. Department for International Development
DHS	Demographic and Health Surveys
ELCSA	Latinoamericana y Caribeña de Seguridad Alimentaria (Latin American and Caribbean Food Security Scale)
EBIA	Escala Brasileira de Segurança Alimentar (Brazilian Food security Scale)
FNS	Food and nutrition security
FSIN	Food Security Information Network
FAO	Food and Agriculture Organization of the United Nations
FEWS NET	Famine Early Warning Systems Network
HFIAS	Household Food Insecurity Access Scale (FANTA II)
IDS	Institute of Development Studies
IFPRI	International Food Policy Research Institute
ISS	International Scientific Symposium
IPC	Integrated Food Security Phase Classification
LRP	Local and regional procurement
LSMS	Living Standards Measurement Surveys
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Surveys
NGO	Nongovernmental Organization
RASKIN	Beras untuk Rakyat Miskin, Indonesia (subsidized rice for the poor program)
RCT	Randomized controlled trial
SAGI	Secretaria de Avaliação e Gestão de Informação, Brazil (One of six Secretariats of the Ministry of Social Development and Fight Against Hunger)
SR	Systematic review
UN	United Nations
UNICEF	United Nations Children's Fund
WFP	World Food Programme

EXECUTIVE SUMMARY

Background

This Symposium was held as a follow up to the 2002 International Scientific Symposium on measurement and assessment of food deprivation and undernutrition. The 2002 Symposium reviewed five distinct methods: the FAO methodology for estimating undernourishment; the measurement of food insecurity using household income and expenditure data; dietary intake based on individual intake surveys; child nutritional status based on anthropometric surveys; and qualitative methods for measuring people's perceptions of food security and hunger.

In addition to its coverage of these five established methods, the 2002 Symposium also gave impetus to the development of new methods and indicators of food and nutrition security by FAO and other institutions. It was considered a landmark event that brought together a wealth of expertise, knowledge and experience. Its proceedings continue to be widely quoted in the literature.

However, since 2002, global and country contexts have changed in ways that call for innovations in how food and nutrition security is assessed. These include the effects of various ongoing and emerging crises, as well as the impacts of urbanization and globalization. The latter have influenced the nutrition transition and its ripple effects (e.g. the double burden of malnutrition), while the former includes protracted local, national and regional conflicts, and persistently high and volatile food prices. In addition to these changes and challenges, international forums on food security are now paying greater attention to partnership and coordination issues, implying increased demand for harmonization of food security measurement methods as well as improved alignment with policy priorities.

The 2012 Symposium was held against this background and had the following objectives:

1) Report on progress made in the five methods originally reviewed in 2002, in particular FAO's undernourishment estimates, the use of household income and expenditure data, and questionnaires for measuring people's experience of food security and hunger (referred to as "qualitative methods for measuring people's perception of food security and hunger" in 2002 but now known as "experience based food security scales").
2) Report on innovations in new metrics, particularly in regard to changes in the global and country contexts cited above.
3) Move the discourse past information generation *per se* towards taking a closer look at how to increase the use of that information in decision making for food and nutrition security.

Most of the Symposium's plenary and parallel sessions centered around improving data quality and credibility for both established and new indicators, the question of which indicators to use and when, and the challenge of linking information to decision making. The Symposium closed with a session dedicated to the way forward, during which key areas for concrete action were proposed.

Improving data quality and credibility

FAO's methodology for estimating undernourishment, currently under revision, was addressed in both plenary and parallel sessions. Progress made in the revision of the coefficient of variation, a key underlying parameter, was highlighted, as were innovations in estimating and accounting for the correlation between food intake and energy requirements.

Quality and credibility were also addressed with respect to the use of household income and expenditure data. Living Standards Measurement Surveys (LSMS) and other integrated household surveys, in addition to more specialized assessments such as Demographic and Health Surveys and Multiple Indicator Cluster Surveys, are administered regularly in most countries and have potential to meet at least some of the demand for more frequent and routine collection of food and nutrition security data. Although these surveys remain challenged

in regards to capturing intra- and inter-annual variability in food and nutrition security, efforts to increase sensitivity are being made. Incorporation of dietary diversity indicators into LSMS and integration of child growth measurements into permanent agricultural surveys were specific examples presented during the Symposium's parallel sessions.

The use of more than one indicator to capture the multidimensional nature of food insecurity, and thus improve reliability and credibility of its measurement, was a major theme. Population based estimates of calorie consumption were cited as an insufficient measure of food and nutrition security, in and of themselves. In addition, established household food access indicators which are often used interchangeably, such as the Coping Strategies Index, Food Consumption Score, and Household Food Insecurity Access Scale, were found to be capturing different dimensions of food insecurity, with implications for household classification and subsequent targeting. In these cases and others, the importance of triangulation via the collection and analysis of a range of indicators was endorsed.

Reports on the refinement and use of experience based food security scales in different settings also reflected the current emphasis on capturing multiple dimensions of food security. One of the five methods reviewed at the 2002 ISS, these tools are designed to assess how households and individuals experience food insecurity. One in particular, the Latin American and Caribbean Food Security Scale, has been widely used to target vulnerable populations and to evaluate social development and food security policies.

Other innovations presented at the Symposium aimed to improve the context specificity of assessment. Methods for capturing the effect of exogenous shocks, seasonality, and sociocultural norms were introduced, as were justifications for and methods of data disaggregation by age and gender. For example, a presentation that used gender disaggregated data to assess the impact of new agricultural technologies on individual intake revealed that, despite large positive impacts on household assets and consumption, no long-term improvement in individual nutritional status among girls occurred for some types of interventions. Here and elsewhere, the policy implication was two-fold: first that improved household level outcomes are by no means automatically followed by improvements in individual nutritional status, second that consideration of gender disparities and inequitable allocation practices in programme design may improve the connection.

These and other findings presented in panel and parallel sessions were consistent with the call made by many participants to move beyond reliance on averages. This argument underscores the need to expose the heterogeneity of outcomes that occurs at individual level, as opposed to relying on household level data which can mask critical disparities between individuals with subsequent implications for intervention impact.

The Symposium also covered new developments in information communication technology. Innovations cited during the plenary include use of geographic information systems and remote sensing technologies to provide decision makers with satellite-derived data. Mobile communication devices, which can be used in conjunction with short message services or digital pen and paper technologies in the field, were also discussed.

Which indicators to use and when

Initially identified in 2002, the ISS again cites the need to define a limited number of commonly used standardized indicators to describe food and nutrition insecurity in all its dimensions. Such a "suite" of indicators would serve to reliably inform the international community and national authorities in designing appropriate responses, and would provide a very high level of comparability across analyses. It would also provide a foundation for use of a set of valid and reliable indicators in the vast majority of assessments. It was proposed that selection of these indicators be guided by both the Committee on World Food Security (CFS) and the United Nations Statistical Commission to guarantee accountability and technical soundness.

However, the concept of a single suite of indicators was not endorsed by all. The counterargument was that, given the multidimensional nature of food security, a single set

of indicators would not be able to capture the many different contexts and levels at which food security is assessed, and hence a single suite might not be universally applicable. The proposed alternative was to acknowledge the complexity of the subject and move towards a distillation of best practices, where indicators are mapped according to when and how they should be used. This proposal called for the development of several different suites of indicators, rather than just one, in order to capture the richness and diversity of data in different contexts. This approach is consistent with the output of the Symposium during which a wide range of indicators and ways to conceptualize food security were presented.

The need to distinguish between "food security" and "nutrition security" was a key aspect of the discussion throughout the ISS. It was raised in both the first day's plenary session and during the panels on Day 3. In both cases, the question was whether to make improved nutrition outcomes a consistent focus in food security analysis. Those arguing in the affirmative noted that better nutrition should be the ultimate objective for food security programming and hence nutrition indicators (e.g. child growth, biomarkers, dietary diversity) should be routinely included in food and nutrition security assessments. Those arguing against cited the importance of distinguishing between food supply, food access, and nutrition, and stated that attempts to routinely capture data for all three concepts would risk oversimplification of one or more. The practicality of collecting some types of nutrition indicators on a regular basis, such as anthropometrics and nutritional biomarkers, was also discussed.

Linking information to decision making

Strengthening the link between information generation and use of that information by decision makers in food and nutrition security policy was a key objective of the Symposium. Recommendations made during the panels and plenary discussions highlighted the need to make evidence more demand driven in order to improve strategies for information dissemination and to build government capacity for both generation and use of evidence. Specific proposals included moving away from conventional modes of information dissemination (e.g. policy briefs and articles) towards "friendlier" translation techniques as well as increased government involvement in information generation. The Government of Mexico's National Council of Evaluation of Social Development Policy (CONEVAL) was introduced as a strong example of the latter, having facilitated the formulation of evidence-based policies through institutionalized impact evaluation. Similar evaluation mechanisms have been set up in Brazil within the Ministry of Social Development (SAGI).

The use of impact evaluation findings was mentioned throughout the Symposium; the consensus being that in general this type of information is underutilized but holds great potential to inform policy and programming design and implementation. Not only does impact evaluation determine whether the policy or programme has had an effect, it is also instrumental for tracking progress and for creating feedback loops that allow for adjustments mid course.

At the close of the Symposium, the consensus was that not enough examples of successful linkages between food and nutrition security information and decision making had been presented or discussed. A number of issues, listed below, were presented as fundamental constraints to narrowing the gap between information generation and decision making processes:

- The tendency is to identify policy makers as a homogenous group rather than to recognize the range of different actors and situations that contribute to policy making.
- Policy decisions are more often political than technical, and the propensity of analysts is to not fully take political economy into account when seeking government collaboration and commitment.
- Capacity in many countries is so low that policy formulation and consequent implementation are severely constrained, regardless of evidence.
- Currently, not enough evidence is demand driven, nor is the related information presented in a way that is accessible and attractive to policy makers.

The way forward

Key areas for concrete action presented at the Symposium's close include establishing an Expert Committee on Food and Nutrition Security Measurement to guide data collection techniques and indicator selection, bringing together policy makers, researchers and practitioners, and making evidence and information demand driven. The nascent Food Security Information Network (FSIN)[1] was nominated as a possible host for the Expert Committee on Food and Nutrition Security Measurement. The UN Statistical Commission's Interagency Working Group on Food Security, Sustainable Agriculture and Rural Development was proposed as an appropriate platform for addressing specific technical issues. The Expert Committee's primary function would be to reconcile questions regarding the identification of a suite, or suites, of indicators that describe food and nutrition security in all its dimensions. A suitable suite of indicators would provide reliable information to the international community and national authorities responsible for designing appropriate responses.

To increase the involvement of decision makers in the discussion on using food and nutrition information for policy formulation, a proposal was made to initiate regular (as opposed to one-off) joint gatherings to bring together researchers, practitioners and decision makers from sub-national, national, regional and global levels. Another proposal called for facilitating experience-sharing between countries via South-South collaboration initiatives. The need to include decision makers more directly in future symposiums and other international forums was endorsed repeatedly. The consensus at the Symposium's closing was that these actions would increase the generation of valid, credible, demand driven information and enhance the use of that information to improve the formulation and application of food and nutrition security policies worldwide.

1 The FSIN was first conceived in 2010 through consultation with the EC and USAID at a Symposium on Information Systems held in Brussels. The FSIN has three main objectives, which are to a) strengthen country and regional food security information; b) help propose and establish food security information standards, harmonize methods, share best practices; and c) advocate and raise awareness about food security information. The FSIN has been formed through joint partnership between FAO, IFPRI, and the WFP with support from a variety of stakeholders including donors (USAID and the EU/EC in particular), regional organizations and representatives from national food security information systems.

DAY 1
OPENING REMARKS & KEYNOTE ADDRESS

Kostas Stamoulis,
ISS Chair and Director of the Agricultural Development Economics Division, FAO

Distinguished guests, ladies and gentlemen, colleagues and friends, good morning and Happy New Year to everyone.

I want to welcome you to this International Scientific Symposium (ISS). This Symposium is a follow up to the 2002 ISS on the measurement and assessment of food deprivation and undernutrition. The 2002 International Symposium focused on 5 distinct methods: the FAO method for measuring undernourishment, measurement of food insecurity using household income and expenditure data, dietary intake based on individual intake surveys, child nutritional status based on anthropometric surveys, and qualitative methods for measuring people's perception of food security and hunger. The 2002 Symposium established that no individual measure suffices to capture all aspects of food insecurity and therefore it was determined that a suite of indicators should be used. As such, the ISS represented the beginning of a global partnership contributing to the improvement of current methods of measurement of undernourishment to monitor progress towards internationally agreed goals.

Today, ten years later, we are still working on refining our methods for measuring hunger; the latest effort towards that being a workshop sponsored by the Committee for World Food Security held in Rome last September. Many different events and changes in perceptions and priorities regarding food and nutrition security have contributed to our initiative to have a follow up to the 2002 ISS: A number of man-made and other crises, several of them of a protracted nature, humanitarian emergencies, the emergence of agriculture, food security and nutrition as important items on the development agenda globally, regionally and nationally, especially following the food security crisis of 2007-2008, and the prospect of continuing high and volatile food prices.

Countries are compelled to address both actual and potential threats to the food and nutrition security of their citizens through policy development and implementation of strategies and programmes often requiring regional support and coordination. At the international level there is increasing attention paid to partnership and coordination issues, which also implies increased demand for harmonization of food security tools, methods and their alignment with policy priorities.

Against this rapidly evolving background it is necessary to take stock of a number of advances achieved since the 2002 ISS. However, at the same time, there is a pressing need to move beyond analysis and research and strengthen the link between improved measurement, tools and decision making regarding food insecurity and poor nutrition. This link between producing tools and making them available for policy is extremely important. Establishing the link between accuracy and timeliness of information on the one hand, and the relevance and usefulness for decision making on the other, is one of the key pillars of this International Scientific Symposium.

The Symposium complements and follows up on some of the important themes discussed during the Round Table on Review of Methods to Estimate the Number of Hungry, which took place at the request of the Committee on World Food Security in September 2011. The composition of participants of this present Symposium reflects its objectives. We have over 250 participants for this ISS: including scientists, researchers, national and regional partners, civil society, FAO resource partners, government representatives, the private sector, and decision makers. We are planning to review recent advances in measuring food and nutrition security at individual and household levels, discuss the importance of information in decision making to improve food and nutrition security, identify ways to promote synergies across

disciplines and sectors to improve generation and *use* of food and nutrition information, and determine future research and analysis needs for providing decision makers with valid information and evidence for policy formulation, programming and impact evaluation.
We have spent a year preparing for this event, which is the outcome of tireless work of some key individuals, including the steering committee which we thank very much, the scientific committee and the organizing committee. I would like to particularly thank Terri Ballard and her collaborators Winnie Bell, Luca Russo, Denise Melvin, Patrizia Belotti, Aurelie Dussossoy, Fortuna D'Errico and Antonella Apuzzo di Portanova for the incredible amount of work they put into this effort. Finally, I would like to give a special thank you to the European Union, which is a major donor for this workshop, for their generosity and support throughout this process.

At this point, it is my great pleasure to introduce our new Director-General, Mr. José Graziano da Silva to formally open this Symposium. Sir, you have the floor.

José Graziano da Silva,
Director-General, FAO

Ladies and Gentlemen,

I am very pleased to have the opportunity to open this very important Symposium. I want to begin by reaffirming my commitment to the five pillars I presented during my campaign and that I intend to implement during my mandate as Director-General of FAO:

First, eradicate hunger; second, move towards more sustainable systems of food production and consumption; third, achieve greater fairness in the global management of food; fourth, complete FAO's reform and decentralization; and, fifth, expand South-South cooperation and other partnerships.

I am convinced that we can regain lost ground in the fight against hunger and make progress towards the first Millennium Development Goal of halving the proportion of people living in hunger and extreme poverty by 2015. But our goal is bolder: we want to guarantee the right to food for every human being.

It is a possible goal, we can achieve it, but it is one that requires the commitment of everyone: neither FAO nor any other agency or government can win this war alone. We also need a more comprehensive approach, looking at food security from different perspectives – agricultural, economic, social, and nutritional.

Measuring social phenomena is of utmost importance in this process. We need quality measurements to understand the problem we are facing, and to design and implement the policies we need. In this case, the quantity qualifies the problem: it is quite different to have one million or one billion undernourished or overweight persons.

Participatory approaches to policy making and programme design are considered to be key to successful food security outcomes. At the same time, partnership and greater participation implies increased demand for harmonisation of food security tools and methods and their alignment with policy priorities.

It is widely recognized that food and nutrition security is a complex, multidimensional and dynamic concept, and that improving it requires the involvement of multiple disciplines and multiple types of knowledge. There is still a need to arrive at a holistic understanding of the problem, which is a challenge because the work is often divided into "silos" corresponding to the different dimensions of the phenomenon.

Progress in the elimination of hunger in a sustainable manner will depend on collaboration and partnership, especially for dealing with cross cutting issues such as provision of training, skills and infrastructure; research and information generation; routes for translation of research; international partnerships; public engagement and dialogue. What influences policy making will

depend heavily on the availability of valid, accurate and timely information on the geography of food insecurity.

In October 2011, the Committee on World Food Security (CFS) held a Round Table to review methods used to estimate the number of hungry. A consensus emerged during the discussion that an appropriately defined and widely accepted suite of a limited number of valid indicators needs to be established to guide national institutions and international organizations in monitoring food security and in informing policy interventions.

While more work in still needed, much progress has been made in methods for measuring the phenomena of food insecurity and poor nutrition. This present Symposium has an additional task, which is not only to judge whether we can generate accurate and valid information but also to take stock of how well our information is really being used to influence policy and to design strategies for reducing hunger and improving food security.

We should work together to strengthen the use of information for effective decision making; for example, better or more timely information, improved communication strategies with decision makers evaluating the impact of policies, programmes and projects.

Countries rely on FAO and other partners in the food and nutrition policy area to provide support in formulating effective policies for improving people's food and nutrition security. These policies should have a strong base in information; that is, data on where the problems are and the characteristics of the most vulnerable populations and, equally important, evidence on how programmes and policies are working or not and how to improve them.

I am very pleased to open this Symposium and to express my expectation for strengthening our collaboration in the future. We should work together in many ways to shape the policy environment for fighting poverty and inequalities and promoting universal access to safe and nutritious foods to all persons.

I would like to end by congratulating Kostas Stamoulis, Director of the Agricultural Development Economics Division and Chair of this Symposium, and the Assistant Director-General of the Economic and Social Development Department, Hafez Ghanem, for organizing this event. I also thank Shenggen Fan, Director-General of the International Food Policy Research Institute (IFPRI), with whom we have a very important partnership, and all of you for your participation.

Shenggen Fan,
Director-General, International Food Policy Research Institute (IFPRI)

Food and nutrition security remains a tremendous challenge around the world, but the lack of valid, relevant, and timely data are likely to hinder global efforts to reduce hunger and undernutrition. Not only are information and data crucial to understand the status of food and nutrition security across the world but they are also vital to inform the policymaking process within developing countries. In 2010, FAO was asked to review its methodology for estimating undernourishment in order to provide more up-to-date information on food security. As the global food and financial crises have worsened and further challenges to global food and nutrition security emerge, it is a good time to direct and step up our efforts to support more effective decision making through improved food and nutrition security information.

Up to now, major sources of food and nutrition security information have been based on FAO and World Bank simulations. In 2010, the FAO's annual report on the State of Food Security in the World estimated that the number of people who suffered from hunger fell to 925 million, after increasing sharply to over 1 billion between 2006 and 2009 as a result of high food prices and the global economic crisis. More recently, the upward swing in food prices between 2009 and 2011 and the Horn of Africa famine in 2011 further raised concerns about the state of

global and regional food and nutrition security. However, the FAO's estimates of food insecure people in the world have been increasingly contested. For example, a recent Gallup World Poll showed that self reported food insecurity decreased during the 2007-2008 food crisis.[2] Indeed, 60-250 million fewer people reported that they had trouble affording food in 2008 than in 2005/2006. Regionally, Africa and Latin America were the hardest hit, whereas Asia was less affected by rising food prices due to strong economic growth and limited food inflation. At the same time, even more people suffer from "hidden hunger", that is deficiencies in essential vitamins and minerals such as Vitamin A, iron, and zinc. Hidden hunger has the potential both to weaken the mental and physical development of children and adolescents and to reduce the productivity of adults. For example, Vitamin A deficiency can be found among one third of preschool aged children (190 million), with most cases occurring in Africa and Southeast Asia.[3] The economic cost of micronutrient deficiencies has been estimated to be 2.4-10 percent of GDP in many developing countries.[4]

Food security is a complex concept that covers four overlapping dimensions: (i) practical and physical availability, (ii) economic and physical access, (iii) food utilization, and (vi) stability of access over time. It is therefore important that food and nutrition security data capture the multidimensional reality they aim to measure. However, in order to capture this, it is important that FAO and other institutions address the following five questions regarding the measurement of food and nutrition security:

How?— A range of methodologies are currently employed to measure food security, including estimates, surveys, and medical measurements such as anthropometry. FAO hunger measurements are based on country data estimates and household survey data. More specifically, the current FAO food security index uses data on production, imports, and exports of all food commodities along with the calorie content of each food to calculate total availability of calories in a given country. Despite the usefulness of these indicators of food security, they tend to overlook the key qualitative and individual aspects of food and nutrition security—with a strong focus on one particular aspect of food/nutrition security at the expense of other variables, resulting in a narrowed scope for food and nutrition security.
Who?—The average amount of food available to each person in a population has been found to be a poor predictor of individual food security.[5] In fact, food security that is measured at the household level can overlook the fundamentally individual nature of hunger. A household level analysis of food security ignores the differences within households—including age, gender, and status—and the role that these differences play in determining individual food security.
Where?—National averages of food availability can mask important subregional differences. They do not provide much actionable information at sub-national levels nor do they allow for the geographical targeting of policy responses.[6] This is a critical flaw as food security often varies considerably within many developing countries. For example, while only 5 percent of the national population in Ghana is considered food insecure, the prevalence of food insecurity in the Upper West region of the country jumps to 34 percent.[7]
What?— Food security can be represented using a wide variety of indicators, ranging from the prevalence of food energy deficiencies to micronutrient intake and anthropometric data. However, past evidence from developing countries has shown that there are discrepancies between the various food security indicators. In fact, food availability has been shown not to be a sufficient indicator of food security and economic productivity.[8, 9] For example, the

2 D. Headey. 2011. Was the Global Food Crisis Really a Crisis? IFPRI Research Brief 17. Washington DC: IFPRI.

3 WHO (World Health Organization). 2009. Global prevalence of vitamin A deficiency in populations at risk, 1995–2005: WHO global database on vitamin A deficiency. Geneva: WHO.

4 For summary of studies see A. Stein and M. Qaim. 2007. The human and economic cost of hidden hunger. *Food and Nutrition Bulletin*, 28(2): 125-134.

5 L. Smith, A. Alderman, and D. Aduayom. 2006. Food insecurity in Sub-Saharan Africa: New estimates from household expenditure surveys. Research Report 146. Washington DC: IFPRI.

6 H. De Haen, S. Klasen, and M. Qaim. 2011. What do we really know? Metrics for food insecurity and undernutrition. *Food Policy* 36(6): 760-769.

7 World Food Program. 2009. Ghana comprehensive food security and vulnerability analysis 2008-09. Executive Brief. Rome: WFP.

8 E. Masset. 2011. A review of hunger indices and methods to monitor country commitment to fighting hunger. *Food Policy* 36: 102-108.

9 J. Mason. 2005. Measurement and assessment of food deprivation and undernutrition. Rome: FAO.

FAO calorie cut point has been criticized for underestimating nutrition insecurity.[10] Similarly, a number of developing countries have experienced worsening trends in malnutrition among children (weight-for-age) even when national food availability improves.[11] At the same time, the use of dietary energy as a proxy for food security focuses on the "quantity" dimension of food, but it overlooks the "quality" dimension that links food security with the intake of essential vitamins and minerals.
When? — Food and nutrition insecurity can be either chronic or transitory, and each case calls for different policy responses. However, the FAO food security index does not permit the tracking of food security over short periods of time since its annual numbers are derived from a three year average. As a result, it potentially overlooks transient hunger (as caused by temporary food price, health, or seasonal shocks). Other indicators, such as the anthropometric measure of weight-for-age, have greater potential to capture short term changes in food security.

Information and knowledge are vital for policymakers to target particular groups, regions, or individuals accurately, to identify crises at the appropriate time and to measure impact and to scale up programmes, policies, and investments. Accurate and timely data on food and nutrition security has the potential to be an especially important component of evidence based policymaking in many developing countries, both influencing policymaking and achieving impact. For example, IFPRI's Global Hunger Index—and, in particular, the India State Hunger Index—has gained coverage by international media outlets and information services and has been included in government debates. Another example of IFPRI's policy research impact is its rigorous evaluation work on intra-household allocations and the food and nutrition impact under Mexico's Progresa/Oportunidades programme.[12] The findings have been utilized not only to improve the programme but also to support its short and long run sustainability and expansion, both in Mexico and internationally.

Innovations—ranging from new information and communication technologies (ICTs) to developments in anthropometry and medicine—offer great potential to improve food and nutrition indicators. In the field of ICTs, a variety of promising tools are available to facilitate the measurement, collection, and analysis of food and nutrition security indicators, including: geographic information systems (GIS), mobile communication devices—which can be used in conjunction with short message services (SMS) or digital pen and paper technologies—and remote sensing technologies.[13] For example, the European Space Agency's Global Monitoring for Food Security initiative aims to provide international, national, and sub-national decision makers in sub-Saharan Africa with satellite-derived data on agricultural production and soil conditions in support of food security monitoring activities, accompanied by capacity building efforts to integrate this information into decision making processes.[14]

Another area with innovation potential is the measurement of anthropometric indicators, which are based on physical body measurements such as height and weight. Anthropometric indicators not only provide food security information that is useful at the individual and population level but they are considered cost effective, broadly applicable, and noninvasive.[15] Advances in anthropometric instruments—including digital scales and readers –have the potential to improve accuracy and collection of food and nutrition security data but more effort is needed in making these technologies cost effective for field use. Similarly, past constraints to the use of biomarkers to assess vitamin and mineral deficiencies—including the need for "intrusive" blood collection, skilled technicians, and sophisticated storage and transport

10 P. Svedberg. 2000. Poverty and undernutrition: Theory, measurement, and policy. Oxford, UK: Oxford University Press.

11 L. Smith. 1998. Can FAO's measure of chronic undernourishment be strengthened? FCND Discussion Paper No. 44. Washington DC: IFPRI.

12 J. Behrman. 2007. Policy-oriented research impact assessment case study on IFPRI's Mexican Progresa anti-poverty and human resource investment conditional cash transfer program. Impact Assessment Discussion Paper No. 27. Washington DC: IFPRI.

13 P. Fong. 2011. Innovative ways of collecting and sharing food security data in East and Central Africa. 2nd Annual AgriKnowledge Share Fair, IFAD, Rome; World Bank. 2011. ICT in Agriculture Sourcebook. Washington D.C.: World Bank. http://www.ictinagriculture.org/ictinag/content/ict-agriculture-sourcebook

14 Global Monitoring For Food Security http://www.gmfs.info/

15 O. O'Donnell, E. van Doorslaer, A. Wagstaff, and M. Lindelow. 2008. Analyzing health equity using household survey data analyzing: A guide to techniques and their implementation. Washington DC: World Bank.

infrastructure—have been eased through innovations such as the collection of blood as dried blood spots that are obtained from the prick of a finger or a heel.[16]

In recent years, significant strides have been made in the development of innovative information, communication, and medical technologies. More efforts are needed to translate the relevant innovations into field friendly and cost effective tools that can be used to assess food security and micronutrient deficiencies effectively and accurately among populations in developing countries.

My recommendations are three-fold.

Revamp the food and nutrition security information architecture
The FAO methodology should be revised to include diverse and comprehensive data on food and nutrition security that capture its multidimensional nature. First, data collection and analytic methods need to be widened to include macro and micronutrient intake and anthropometric/ biophysical indicators at the population, household, and individual level. New individual level indicators should be integrated to shed light on the impact of variables such as gender, age, and caste status. Furthermore, food and nutrition security indicators need to reinforce cross country comparisons (through coordination among international institutions) and to assess the impacts of shocks (both significant and mild). Second, the quality of food security and nutrition data and indicators needs to be improved. This requires increased investments in regular and inclusive data collection (every 1-2 years) and the scaling up of new measurement tools and mechanisms that facilitate data collection, especially in sub-Saharan Africa. More studies are needed to enhance and test the robustness of emerging methodologies, data, and proxy indicators, comparing not only their validity but also their cost effectiveness against more standard indicators. In the past, for example, IFPRI has conducted studies to validate dietary diversity indicators against indicators of (household) income and food security.[17]

Build country capacity to achieve food and nutrition security
Greater technical and financial support should be allocated towards establishing domestic institutions for data collection in developing countries. This also includes community based and national research institutions, universities, and governmental and regional repositories. Country capacity for data analysis and monitoring can be especially strengthened by scaling up mechanisms and platforms for collaboration. IFPRI has been working with several countries in Africa to build country's statistical capacity in agriculture, food and nutrition through its Country Strategy Support Programmes and Regional Strategic Analysis and Knowledge Support System. In addition to public resources, private sector investments in new communication and information technologies can be leveraged to improve food and nutrition security measurements.

Form an advisory group to develop appropriate measures and methods using research based evidence.
An advisory group should be established to advise the FAO and other institutions on how to strengthen measures and methods for collecting and analyzing food security information. The group should be composed of recognized technical experts from the agricultural, nutrition, and health sectors in order to represent the multidimensional character of food security effectively. The work of this advisory group should focus on developing appropriate measures and methodologies using research based evidence and to support cooperation and harmonization of methodologies, measurements, and indicators of food and nutrition security.

16 D. Garrett, J. Sangha, M. Kothari, and D. Boyle. 2011. Field-friendly techniques for assessment of biomarkers of nutrition for development. Am J Clin Nutr 94(suppl):685S–90S.

17 For further information see M. Ruel. 2002. Dietary diversity an indicator of food security or dietary quality? A review of measurement issues and research needs. FCND Discussion Paper No. 140. Washington DC: IFPRI.

DAY 1
PANEL ABSTRACTS & AUDIENCE DISCUSSION

Abstracts in this section were provided by the panelists. Corresponding PowerPoint presentations are available online at http://www.foodsec.org/web/newsevents/iss/presentations/

Panel 1: Measures of Global Hunger and Food Insecurity

Chaired by Christopher Barrett, Cornell University

Measuring food insecurity in times of crisis

Derek Headey, International Food Policy Research Institute

Food insecurity is a very broad concept. For measurement and operation purposes it needs substantial unbundling. It formally covers a continuum of problems ranging from anxiety over food access and issues of dietary quality to outright hunger. Food security also has an uncomfortable overlap with nutrition, but nutrition outcomes are individual level outcomes influenced by both food intake and other factors. And food security has both chronic dimensions associated with persistent poverty and acute dimensions associated with irregular shocks. So we need to systematically unbundle this concept before we operationalize measurement.

In the last Symposium there was some agreement to focus on a suite of indicators. This stemmed from criticism of the FAO hunger measure, but most of the criticism was about cross country comparisons. That criticism has magnified since 2002 because the FAO could not gauge the impact of the 2008 food crisis. Even with technical improvements, The FAO hunger indicator would still suffer from some inherent flaws. For example, in the Indonesian financial crisis rice prices tripled, but people consumed roughly the same amount of rice because it was still the cheapest source of calories. What they did do was cut back on micronutrient rich foods, so anemia prevalence in Java went from 52% to 68% in the space of a few months. The World Bank poverty simulations performed better, but ultimately, poverty is not necessarily tightly linked with food security, though it matters in its own right. So we have a problem gauging food insecurity across countries, but we are also bad at gauging the impact of shocks. These shocks may be more prevalent in the future, not less.

I therefore want to propose two principles for food security measurement. First, attempt to measure both inputs and outcomes. From a welfare perspective, it is really nutrition outcomes that matter: e.g. stunting (low height-for-age), wasting (low weight-for-height), anemia, etc. The objection that these are caused partly by health factors is in some sense not a very defensible one. Health and food intake factors interact so intimately that solely focusing on food insecurity can actually be disadvantageous. On the other hand, measuring inputs into nutrition outcomes – including food security - is useful for diagnostic purposes. A second principle is to try to get cross country comparisons right, but also to have a better platform for gauging the impact of shocks.

How do we this? For cross country purposes, there are proposals to scale up LSMS type surveys. Such a plan has total benefits that are well in excess of just measuring food security. But the frequency of health and nutrition surveys has also improved tremendously. Moreover, measuring nutrition outcomes is important because early childhood and maternal nutrition have lifelong welfare effects. Better coordination between UN, DHS, and greater advocacy on the part of donors would make regular nutrition surveys a reality. Moreover, these surveys could include dietary diversity or food consumption scores, as they already do to a large extent. Ultimately, developing countries themselves should be promoting nutrition monitoring at the community level, and in principle this community monitoring could be aggregated to national level indicators.

What about gauging the impact of shocks? This is the greater challenge. For extreme shocks, the WFP and others already have approaches. They typically focus on wasting as their key indicator of the depth of a food/nutrition crisis, but they have food consumption scores and other indicators. WFP could improve their dissemination of this data, perhaps in collaboration with specialized research institutes. For "milder" shocks, such as food price shocks, we may need another platform. If we had tri-annual nutrition surveys that included food consumption scores, for example, then ad hoc surveys in intermediate years could be used to gauge the impact of shocks where warranted. These food consumption scores are relatively cheap to measure, and are less likely to be biased by the kind of problems that permeate more direct self reporting of hunger and food insecurity. One could also add equivalent questions on health. Of course, institutional responsibility for conducting ad hoc surveys is still an open question.

Measuring food and nutrition security in multipurpose household surveys: experience to date and mapping a way forward

Calogero Carletto, The World Bank

At the International Scientific Symposium on Measurement and Assessment of Food Deprivation and Undernutrition held at FAO in 2002, two main consensus points emerged. The first was that a suite of indicators should be used to measure and capture the multiple dimensions of food and nutrition security. The second was that different data sources needed to be tapped and improved in order to better measure and monitor global food insecurity. In this respect, the Symposium highlighted those shortcomings of data sources and indicators which needed to be addressed in order for the global community to successfully monitor achievements towards the World Food Summit goal of halving the number of hungry people by 2015.

Household surveys such as the Living Standards Measurement Study and other Integrated Household Surveys, as well as more specialized surveys like Household Budget Surveys, Demographic and Health Surveys and Multiple Indicator Cluster Surveys are routinely collected in most countries and provide an indispensable source of information on food and nutrition security. Each survey has different but often overlapping objectives, partly reflecting the agenda and mandate of the sponsoring institution. Despite great strides in improving the availability of data on food and nutrition security, large gaps remain in terms of quality, consistency and periodicity of the information being collected. Also, to date, few sources are able to adequately capture seasonality and other forms of intra- and inter-annual variability of food security. Most sources also remain unable to provide the geographic level of disaggregation needed to inform proper targeting.

The presentation will review current global household survey data collection efforts and highlight the main strengths and weaknesses of different instruments in measuring and monitoring food and nutrition security. The presentation also proposes ways in which better synergies could be created as we move forward. Emphasis will be placed on the institutional framework in an attempt to provide practical recommendations on ways in which the current data collection apparatus - supported by individual countries and donors - can be fine tuned to provide better quality and more timely and relevant data.

Advances in hunger measurement

Carlo Cafiero, FAO Statistics Division

The question of how to properly capture and monitor the "food problem" has preceded and then accompanied the entire history of FAO. In this presentation I shall begin by offering my view on the essential elements of the debate and try to link them to the methodological problems that are raised by adherence to any of the various views that, from time to time, have become prevalent. This background will give me the opportunity to highlight the fundamental

conceptual issues that need to be considered when monitoring hunger at the global, national and local level, and that condition the choice of the best possible methodological approach.

As the emphasis in the development literature has shifted from looking at the food problem as one of global scarcity towards emphasizing the limitations of individual households' ability to access food, we shall see how the debate on hunger assessment has tended to play down the relevance of food supply assessment while emphasizing the need for collection and analysis of household level food consumption data. This process has conceivably been affected by the parallel evolution of income poverty assessments, where assumption that households' total expenditure is the best indicator of real income (and therefore of standard of living) has become the norm, at least within the economic development profession. Recognizing that expenditure on food constitutes an indispensable component of households' budgets, high expectations have been put into the analysis of household budget surveys as a way to assess food security at the household level.

Over time, however, perhaps as quantitative measures of households' economic access to food seem to be at odds with perceptions of the extent and global distribution of the food problem, emphasis in the debate has shifted to the proper definition of food insecurity, recognizing that, perhaps, measuring the supply of and access to food are not sufficient to capture the various dimensions of the "hunger" problem, seen now as one of "food and nutrition". As nutritionists have had their voices heard more and more in the debate, concerns regarding qualitative aspects of the diet as well as the effects of health and sanitation conditions have become central. A different view has emerged that seems to be shared by part of the development community, according to which the relevance of monitoring household food access is dwarfed by the need to measure nutrition outcomes in terms of child growth, thus emphasizing the role of anthropometric assessments.

The undoubted conclusion of the debate so far is that there are indeed many dimensions of well-being associated with food and that it is not possible to come up with a single, measurable, objective parameter that could be deemed superior to any other indicator.

At times it appears that the debate itself has taken precedence over trying to understand both differences and potentially useful complementarities among various proposed indicators. It is my personal impression, formed by reviewing the technical elements of the hunger measurement debate, that the way it has been proceeding is clouding rather than revealing ways for improving our joint effort to monitor hunger. Since the 2002 Symposium, in particular, too little progress has been made in the practice of monitoring hunger, and it is perhaps time to correct this state of affairs.

I shall describe the current situation in terms of available indicators to highlight the complementarities that exist, and advocate for the need to move beyond the quest for "the" best indicator. I will advocate instead for trying to identify a set of different indicators that, considered together, can hope to capture the fundamental dimensions of food insecurity and allow better informed action.

We shall discover that, even once it is understood which dimension of food insecurity each indicator is likely to capture, there is still a lot of work to be done in improving the way in which the indicators are constructed. For obvious reasons, I shall focus on the major FAO indicator, but I hope to shed some light on problems that all agencies, organizations, institutions and individual analysts face when attempting to improve their methods. Two conclusions that I hope will emerge clearly from the arguments I present are that:

First, in some cases, the need for the proper statistical treatment of the available data has not been adequately recognized (I would say, especially by critics of the FAO methodology). We have often been forced to use secondary data that have not been collected with the primary aim of assessing food security, and that creates the need for procedures to identify and correct for "noise." Procedures for statistical treatment of information to filter the proper "signal" from noisy data, unfortunately, are not easily understood by the general public, and sometimes are

highly specific to the field of analysis. In this challenge resides, in my view, one of the most promising areas for improvement in the short run. I believe there to be ample scope for cross-fertilization between econometrics and medical and biological statistics that has not been yet fully exploited.

Second, a corollary from the previous conclusion is that the most significant improvement we can all hope for from our combined institutional and individual efforts, one that is likely to have the highest marginal benefit, is the improvement of the quality of the elementary data that we use for food security assessment. If efforts currently underway in both technical innovation and professional capacity development are successful in giving us the opportunity to access more timely and precise data on things such as local food supply, food stocks, prices, etc., the benefits will be enormous, not only in our ability to narrow down the uncertainty that surrounds our estimates, but also in using methods that will be more easily understood and accepted.

Highlights from the audience discussion and the chair's comments

The importance of developing multiple suites of indicators was underscored by the audience in response to Mr. Headey's presentation. The case of Burkina Faso was brought up. When food prices went up in Burkina Faso, food security predictably decreased but dietary diversity, counter-intuitively, increased due to foraging. This situation was presented as illustrative of contexts where measuring a single indicator – in this case dietary diversity – might produce misleading results due to coping strategies or other unpredictable responses. In reply, Mr. Headey emphasized the importance of having the "right" suite of indicators to assess a particular situation and triangulate results.

The importance of using multiple indicators was also brought up in response to a question regarding the potential distortion effects of food subsidies on consumption, as in the case of the dietary impact of Egypt's universal bread subsidy. The subsidy limited the negative impact of the recent food price spike to mainly decreasing intake of meat and other high value foods. Mr. Headey reiterated that population based estimates of average calorie consumption do not provide an ideal measure of food and nutrition security; using a suite of indicators when attempting to assess the impact of a particular shock is essential to unpacking what is happening in terms of individual intake.

Also in terms of using multiple indicators, a comment was made about the importance of involving policy makers during the indicator section process to ensure political relevance. The speaker noted that the cost of using multiple indicators must be taken into account, as well as the benefit or lack thereof for policy making that comes from assessing diverse indicators.

The issue of keeping food security separate from nutrition security was raised and the question of whether good nutrition should be the ultimate outcome indicator was asked. Mr. Headey responded in the affirmative, while Mr. Cafiero emphasized the importance of distinguishing between the two concepts and not neglecting one for the other. He cited the difference between food supply and access and nutrition, underscoring that nutrition was a more complicated phenomenon that should not be conflated with food security.

An appeal was made regarding the validity of self reported data on household food deficits, primarily in reference to capturing the psychosocial aspects of food security. Mr. Headey responded by acknowledging the cost effectiveness of self reported indicators but also asked how these types of indicators can be interpreted quantitatively. In addition, he pointed out the biases inherent to self reported data. In certain countries (such as Ethiopia), endemic food insecurity creates low expectations leading to lower rates of self reported food deficits, whereas higher levels of food security in other countries, such as Sri Lanka and those of Eastern Europe can lead to higher standards on what makes an "adequate" food basket, affecting how people self report food deficits in their households. Mr. Headey argued that, given this and other types of context specific bias, the cross sectional validity of self reported indicators of food deficits is probably quite low.

In response to Mr. Headey's remarks and the comment from the audience, Mr. Cafiero pointed out that methods for transforming self reports into quantitative indicators do exist. He also highlighted the timeliness advantage in having quick self reported surveys during a crisis or shock.

While not discussed explicitly during any of the presentations, the potential contribution of sentinel site monitoring generated a number of comments during the audience discussion. Mr. Headey, Mr. Barrett and members of the audience noted that data collected from sentinel sites can serve a number of important functions. Mr. Headey cited Bangladesh and Indonesia as countries where sentinel site monitoring has paid off by galvanizing a strong policy response to shocks. He also mentioned Thailand, where community monitoring of nutrition informed government programming. Mr. Barrett explained how sentinel sites provide a foundation for the development, refinement and cross validation of various assessment methods while controlling for variations across time and different contexts. Mr. Barrett also argued that sentinel sites can allow us to sort out why we see low correlation between different indicators, can help clarify which indicator is most appropriate for a particular question, and can provide experimental platforms for testing the impact of interventions.

The feasibility of methodological and institutional harmonization across countries for carrying out large scale surveys was questioned by the audience. It was mentioned that that most countries already have assessment methodologies firmly in place and that while some adjustments can be made, such as for the sampling frame, periodicity of conducting surveys and other factors, it may be difficult to get agreement upon these issues. Institutional coordination was also held up as a challenge by another member of the audience. Both comments called for further discussion of coordination mechanisms within the international community. Mr. Carletto responded that some preliminary discussion should be held at the international level to agree on key principles. He also pointed out that a significant amount of adjusting can be done within existing systems. He spoke about the need to understand and identify what currently exists and is adaptable; asserting that agreement on a minimum set of criteria and principles is achievable.

Mr. Cafiero responded by citing recent initiatives to develop guidelines based on the accumulated experience provided by existing surveys. His statement was supported by Mr. Pietro Gennari (Director of FAO's Statistics Division) who provided further clarification by citing two current efforts to achieve coordination among agencies and gain information regarding which methodologies are feasible at country level. In his opinion, the first effort is via the Food Security Information Network (FSIN), currently under formation[18], the second is via establishment of an interagency expert group mandated by the United Nations Statistical Commission to review methodologies and produce guidelines for best practices.

18 The FSIN was first conceived in 2010 through consultation with the EC and USAID at a Symposium on Information Systems held in Brussels. The FSIN has three main objectives, which are to a) strengthen country and regional food security information; b) help propose and establish food security information standards, harmonize methods, share best practices; and c) advocate and raise awareness about food security information. The FSIN has been formed through joint partnership between FAO, IFPRI, and the WFP with support from a variety of stakeholders including donors (USAID and the EU/EC in particular), regional organizations and representatives from national food security information systems.

Panel 2: Building the Evidence Base for Policies and Programmes - Innovative Approaches to Analysis

Chaired by Daniel Maxwell, Tufts University

Generating evidence on individuals' experience of food insecurity and vulnerability

Agnes R. Quisumbing, International Food Policy Research Institute

Although hunger and deprivation are intrinsically experienced by individuals, many indicators of food security and vulnerability are reported at the household level. This prevents policymakers and development practitioners from identifying how differences among individuals within the household—whether due to gender, age, or status within the household—affect individual food security and vulnerability. The lack of attention to individual level indicators and the use of proxies such as sex of the household head could lead to unintended consequences. This is illustrated using examples from recent work in Uganda, Bangladesh, and Ethiopia that capture different dimensions of food security and vulnerability, such as agricultural productivity, nutritional status and coping mechanisms in response to shocks. In Uganda, we show how using only a household level indicator of gender differences (the sex of the household head) tends to underestimate differences in agricultural productivity between men and women, which are more starkly revealed when the sex of the plot manager is used as an indicator of gender differences. In Bangladesh, evidence from an evaluation of the long term impact of agricultural technologies suggests that lack of attention to individual health and nutrition outcomes could lead to misleading conclusions on the impact of antipoverty interventions. In Ethiopia, we show how focusing only on household level coping mechanisms in response to crises may obscure differential impacts on household members by gender. Finally, this presentation will discuss a variety of methods to elicit information on individual experiences of food security and vulnerability, ranging from the use of finer levels of gender disaggregation that go beyond headship, the standard use of individual measures of wellbeing (such as nutritional status), and modifications of household level questions on coping mechanisms to take into account differences that arise owing to age and sex within the household.

From complexity to food security decision support: novel methods of assessment and their role in food security information systems

Nancy Mock, Tulane University

This presentation explores the relationship between the theory and practice of collecting food security information in light of recent technological advances. The presentation will provide a framework for incorporating new and traditional methodologies for gathering and analyzing data relevant to food security. The theoretical foundation of understanding food security is anchored in complex adaptive systems thinking. A framework for incorporating methods and increasing the utility of information will include the following elements: predictive versus damage assessment, hazards versus solutions, and scale. Different techniques for gathering and analyzing food security data will be assessed, especially emphasizing and defining the role of newer methods such as event monitoring, crowd sourcing, global polling, social media, mobile computing technologies and visualization analytics. The presentation will examine empirical findings from these more recent applications and discuss the implications for food security decision support systems.

Empirical associations of the adequacies of food, health and care with nutritional outcomes

John L. Newman, The World Bank

This research analyses the empirical associations between measures of adequacy of food, health and care with nutritional outcomes using household survey data from Bangladesh and India. While there is widespread knowledge and acceptance of the UNICEF framework that focuses attention on food, health and care, there is not yet a consensus around what constitutes adequate food, health and care. And there is not yet a clear body of empirical evidence that relates these adequacies to nutritional outcomes in different settings. When children receive adequate food, health and care at the same time, is this sufficient to ensure that they do not suffer from stunting or being underweight? How does this vary if they are inadequate in one or another of the dimensions of food, health and care?

This research builds on ongoing efforts to develop criteria for what constitutes adequacy and presents examples of visual data analysis which illuminate these relationships. There is already consensus on what constitutes adequacy of improved sanitation and improved water (with the efforts of WHO's and UNICEF's Joint Monitoring Programme) and of infant and child feeding practices, antenatal care and immunization coverage. There are several measures of food security, but no single dominant measure. One of the goals of the research is to test how the results vary as one modifies the definition of what constitutes adequacy and to develop tools to make it easier for these comparisons to be carried out.

A key part of the work is to make results of the analyses accessible to policy makers, not just researchers, so that those advocating for improved attention to nutrition can make their case that multisectoral interventions are needed. To this end, we have adapted tools of data visualization to allow one to quickly see how nutritional outcomes vary with measures of adequacy. We do this in two ways, by controlling and by not controlling for background variables. Our approach to controlling for background variables such as wealth and education is to use unconditional quantile regressions (Firpo, Fortin and Lemieux, 2009), which allows the coefficients to vary at different points of the unconditional distribution of Height for Age (and Weight for age) z-scores. This allows considerable flexibility in the estimation. However, we then create microsimulations based on the estimations that allow the results to be presented in interactive dashboards that allow for visual analysis of the relations between adequacy of food, health and care and nutritional outcomes, both with and without controlling for background variables. The econometrics is fairly sophisticated, but it is hidden to the policy maker, who need only focus on pictures and how the pictures change as one varies different characteristics.

Firpo, S., N. Fortin and T. Lemieux, "Unconditional Quantile Regressions, Econometrica, Vol. 77, No. 3, May 2009, pp: 953-973.

Highlights from the audience discussion and chair's comments

In reference to Mr. Newman's presentation, the MICS (Multiple Indicator Cluster Survey) versions two and three were cited. The commenter explained that these surveys might be of relevance, as they measure access to food, health and care simultaneously, with the caveat that they assess children only; women are not included. Mr. Newman responded that his model permits simultaneous analysis of multiple data sets, citing comparison of DHS data from India, Bangladesh and Peru, and noting the potential of comparing MICS data from Asia, Latin America and Africa to see if and how irregularities or similarities were noted.

In reference to Ms. Quisumbing's presentation, the point was made that identification of the plot owner per se is as important as identifying gender. The commenter cited preliminary findings from analysis of LSMS data indicating that it is not always the plot owner who serves as the respondent for plot level data collection. The commenter also noted in addition to

gender, there may be other characteristics associated with agricultural productivity defined at the individual level that are relevant for analysts. In her response, Ms. Quisumbing agreed, noting the importance of (1) distinguishing between plot owner and manager and (2) identifying both. She suggested matching identifications assigned by household roster to plots and assets as a simple way to capture all the information necessary to make these types of distinctions.

Several members of the audience directed questions to Ms. Quisumbing requesting more explanation about why female headed households are especially susceptible to shocks and why they may employ coping mechanisms that worsen nutritional status, the assumption being that women tend to do what is "best" for their children. In terms of shocks, Ms. Quisumbing responded that size and quality of land holdings are a major challenge. She noted that investing in policies that strengthen women's land rights (e.g. registration and safeguarding) and encourage women to invest in better land quality could have very high returns. In response to questions regarding coping mechanisms, Ms. Quisumbing responded that in many circumstances, female headed households may be highly constrained, including in ways that economic indicators do not capture, and that at a given point in time certain constraints may be more binding for some goals than other goals. She gave the example of the need to protect the nutritional status of the primary income earner, which may require reducing the quantity and/or quality of children's diets. She also cited contextual factors, using the case of Bangladesh where mothers are compelled to protect their sons more than their daughters because sons are responsible for old age support in Bangladeshi culture. Ms. Quisumbing underscored the need to be aware of these types of tradeoffs when formulating policy designed to ensure nutritional status.

A comment was made in reference to Ms. Mock's presentation, applauding the emphasis on programmatic relevance for information systems. An appeal was made to focus more on the use of data versus rather than on how it is collected. Ms. Mock reiterated the need to ensure pertinence of the information collected. She mentioned the need for high profile champions within the potential user community as well as the need to move away from indicator data and towards presenting information in a way that makes sense to policy makers. She also asserted that visualization tools, such as those described by Mr. Newman, encourage policy makers to look at the data themselves (as opposed to relying on analysts), thus catalyzing decision making.

This panel concluded with a comment regarding the challenge of defining a common suite of a limited number of standardized and validated indicators to be used globally without losing the richness of the work highlighted by the panel: different ways of analyzing data, exploring yet unidentified outcomes and assessing how individuals and households are impacted.

Panel 3: Food and Nutrition Security Information – Evidence Generation is Not Enough

Chaired by Marie Gaarder, Norwegian Agency for Development Cooperation

Steps from research to policy: ensuring and measuring policy influence

Howard White, International Initiative for Impact Evaluation (3ie)

There has been a large growth in the production of rigorous impact evaluations in the last five years. This growth has been driven by a desire to know what works. But will learning what works actually influence policy? Simply producing good studies is rarely sufficient to achieve policy influence from those studies. So what else need be done? This presentation will discuss how both the study design and the process of implementing the study matter for policy influence. How and when do we involve policy makers, how do we present studies with negative findings, what are the best channels for influence? It is argued that an explicit influence strategy is needed, but that the specifics of such a strategy vary on a case by case basis. Having achieved influence, how do we measure it? Is it possible to demonstrate the impact of a specific study on policy change?

Institutionalized evidence based approaches to policy making: the case of Mexico's food security index

Ricardo César Aparicio Jiménez, CONEVAL (National Council for Evaluation of Social Development Policies) Mexico

In the presentation's first section, a brief introduction is made of what CONEVAL is and how food insecurity is incorporated into multidimensional poverty measurement in Mexico. Results from the 2008 and 2010 surveys at the national and state level are discussed. The main findings show that although there have been reductions in deprivations in the areas of education, health, social security and dwelling, an increase in monetary poverty and food deprivation took place. We will also present recently released data on food deprivation at the municipality level for 2010. Finally, we conclude with a discussion about the ways in which these results have led to public policy by the Mexican Government, aimed to reduce food insecurity, and with also discuss some elements of the future research and policy agenda in Mexico.

Use of systematic reviews to understand the impact of programmes and policies on food and nutrition security

Edoardo Masset, Institute of Development Studies (IDS)

The presentation will briefly describe the results of a systematic review of agricultural interventions that aim to improve nutritional status of children, carried out by IDS. It will discuss the lessons learned for policy makers, as well as for researchers conducting primary studies. It will also explore the capacity and the institutional set up needed in order to promote impact evaluations in the area of nutrition and agriculture. Finally, the presentation will include the results of a communication study that was carried out using policy briefs based on the same systematic review to see if systematic reviews in general have an impact on knowledge and policy making.

Highlights from the audience discussion and chair's comments

Ms. Gaarder, chair, made several comments regarding the relationship between evidence and policy reform. This relationship was described as neither linear nor automatic: the causal chain begins with evidence, leading to updated knowledge and attitudes, which leads in turn to

updated actions, programmes and policies and ends with improved lives. Ms. Gaarder argued that a plethora of assumptions exists all along this chain. In moving from evidence to updated knowledge, there are assumptions about evidence being understandable in and of itself, that it is being "packaged" in an understandable way. In moving from updated knowledge to updated attitudes, there are assumptions (explored in recent research) about the extent to which individuals are willing to update prior beliefs based on new evidence. And in terms of the transition from updated attitudes to updated influence, there is the assumption that individuals targeted as recipients of the information in question have the ability to influence policy. In addition, this final link in the casual chain assumes that those individuals have been reached at a time when the policy window for influence is open.

A similar bias was cited by a commenter in the audience that policy making is assumed to be a linear process that intervenes at a single specific level. The commenter further stated that in reality, policy making is a complex progression which occurs at different levels of government at different moments and which can be influenced in different ways. The commenter referred to Mr. White's slide stating "dissemination should die" and suggested replacing conventional forms of information dissemination with more comprehensive types of communication and lobbying, networking and sensitization. He also inquired about the kind of follow up approach 3ie takes with policy makers exposed to different types of information dissemination.

A similar comment referred to the fact that policy influence is a continuum which begins with a document but also refers to implementation. The speaker noted that one major problem is lack of follow up once a policy has been written and approved by government. Implementation is often not evaluated. Mr. White responded that 3ie has recently contracted an external organization to monitor policy implementation, and noted that the different stages of the policy cycle are important points to bear in mind when conducting evaluations.

Mr. White's assertion that qualitative assessments tend to overestimate impact on policy was questioned. The commenter explained that she had recently completed a qualitative study of programme evaluations sponsored by Brazil's Internal Evaluation Department in the Ministry of Social Development, and could not imagine doing it any other way. She cited richness, complexity and interrelatedness of information. The commenter also noted that the study conclude that there has been enormous impact of programme evaluations on decision makers in Brazil, largely because of the institutional arrangement of having an internal evaluation unit within the Ministry of Social Development.

Mr. White responded by clarifying that it was not his intent to imply that qualitative studies of policy influence and reform do not work. Qualitative assessments are clearly an important part of evaluation work. The problem is more in terms of biases, namely errors of attribution, "self importance" bias, and social relativity. Mr. White asserted that his point had been to highlight the need to be aware of these potential biases in interpreting qualitative data; he also noted that quantitative data come with their own set of challenges.

A comment was made regarding the difficulty of interpreting cultural differences when analyzing cross country indicators. In response, Mr. Aparicio confirmed that reporting on hunger experiences is very delicate, and noted that the food access data reported by CONEVAL, using a shortened version of the Latin American and Caribbean Food Security Scale, have been cross checked against three quantitative surveys as well as qualitative data to triangulate results.

In response to a question regarding mobilization of civil society and the role played by the media in information dissemination, Mr. Aparicio explained that one of the first organizations to receive food security data produced by CONEVAL was one of Mexico's most influential NGOs. Although the release of information did expedite dissemination, Mr. Aparicio noted that once the results became public, the risk of misinterpretation of data increased, especially through media coverage.

DAY 2
PARALLEL SESSION SUMMARIES

This section contains highlights from the sixteen parallel sessions presented on the second day of the Symposium. Each abstract appears in its entirety in Annex VI and the power point presentations are available at http://www.foodsec.org/web/newsevents/iss/presentations/

1. How many people are hungry in the world?

This session focused on improving estimates of global and country level food security, namely through greater precision in parametric estimation and in other applications of econometric methods. Two presentations (Dawe et al. & Anriquez et al.) reported on FAO's efforts to improve its estimates of undernourishment. Koyama introduced a projection model for global food security which accounts for the impact of shocks such as recession and prolonged price volatility. Tools to capture more than one dimension of food security and to improve robustness of multidimensional food security indices were presented by Aurino & Cafiero, and the Tandon and Landes made the case for triangulation of food security data to reduce measurement error. This latter used health surveys in addition to expenditure and income data to estimate the number of undernourished households in India. Changing underlying assumptions and consequent estimation methods of calorie consumption resulted in a large difference in the number of households identified. The authors point out that triangulation is likely to "increase the certainty with which decision makers assess efficacy of policies". This statement underscored a simple albeit important point relevant to the Symposium as a whole and to this session in particular: improved assessment methods lead to increased credibility of recommendations.

2. Innovations in analytic techniques: asking questions, giving solutions

Lanjouw and Rascon presented an argument similar to Tandon and Landes by comparing data from Mexico's National Survey of Health and Nutrition 2006 to its Second Count of Population and Dwellings of 2005. In addition to the expected correlation between poverty and malnutrition in Mexico's poorest states, a non-negligible number of municipalities in states with moderate poverty also displayed similarly high rates of malnutrition. Again, these results confirm the value of scrutinizing nutrition *and* expenditure indicators to better understand heterogeneity of food security outcomes. Also in this session, Nubé et al. presented their study assessing successive anthropometric surveys to measure reliability and robustness. The authors found that outcomes of anthropometric surveys such as the DHS and MICS are generally of reasonable to good quality, with error margins of a few percentage points. This session also reported on a model designed to simulate and project food security and nutrition outcomes of specific polices and external shocks (Ecker & Breisinger) and description of an approach to improve prevention and treatment of undernutrition in predictable emergencies (Smith et al.). Finally, analysis of the negative impact of food price and income shocks on food security in Malawi and Uganda revealed that food price shocks had more impact in both countries, and that the impact was greater in Malawi (Harttgen & Klasen).

3. Conceptualizing food and nutrition security through different lenses: how does this affect measurement?

This session focused on creating innovation in food security measurement. Annoni et al. presented the Territorial Competitiveness Index, based on cross sectoral assessment of a population's institutional, social, and economic assets. The authors argued that the Index and related tools enhance capacity to measure the multiplier effect of [food security] investments and policies, with consequent implications for policy reform. Also in this session was a report introducing the World Agriculture Watch framework which proposes using high quality data sets to track the impact on food security of structural change within a country's agricultural sector (Even et al.). Use of a human development and capability approach to assess a population's capacity for achieving food security was illustrated by data from Uganda (Burchi

et al.), and data from Nepal were used to assess the correlation between food security and nutrition with the purpose of testing the validity of a new measure of food security based on measuring the share of calories derived from starchy staples (Skoufias & Tiwari). This measure is designed to remove the need for caloric thresholds, long a source of controversy in conventional food security metrics (see, for example, Mathiassen, Session 4). Finally, Coates et al. reviewed food consumption measurement methods for validity, accuracy, resource requirements and potential to meet different types of programme needs. The review found that each food consumption method has strengths and weaknesses that vary according to purpose and context, and that each should be used complementarily to answer different questions and increase credibility of results. These findings reinforce messages from Sessions 1 and 2 advocating for triangulation of data sources.

4. Indicators for measuring food and nutrition security: diversify or unify?

This session revisited some well known indicators of food security and nutritional status. Evidence from recent multicountry studies of individual (adult and child) dietary diversity was presented as confirmation that these indicators are useful for assessing micronutrient adequacy, especially in developing countries where resources to collect detailed dietary data in large samples are limited (Ruel). Three established food security indicators which are often used interchangeably – the Coping Strategies index, the Food Consumption Ccore, and the Household Food Insecurity Access Scale – were analysed to see if they are in fact capturing information and classifying households in the same way (Maxwell et al.). Using panel data from Ethiopia, the authors found reasonable correlation between the measures but also reported that they are capturing different dimensions of food insecurity. As with other presentations, the recommendation was to combine multiple indicators to improve accuracy, specificity and precision. Also in this session, the food consumption score was validated using LSMS data from Malawi, Nepal, and Nigeria (Mathiassen). Results indicated, *inter alia*, that the score is indeed correlated with caloric consumption, but that its standard cut-off points are too low to reflect true caloric needs. Beteik proposed the indicator “Sum of Terms of Trade” as a simple new way to measure food access which may be more valid than the standard income and expenditure data typically used to measure this aspect of household food security. Finally the relevance of using credit and debit data for measuring household food access was discussed by Krishnaswamy. The author used data from Myanmar and Azerbaijan to argue that analysis of debit and credit information, along with consumption and expenditure data, can improve assessment of food access. Lack of routine collection and analysis of these data can lead to a “masking” of reality if a household’s expenditure patterns appear adequate but are actually a result of borrowing. The author highlighted that investigating this extra dimension can help policy makers understand if improvements in food access are due to real improvements or if, in reality, many households remain at risk.

5. Institutionalizing evaluation processes: looking at government programmes in Latin America that address food security

This session consisted of findings from studies assessing government based food security programmes and activities in Latin America. Two reports on use of the Latin American and Caribbean Food Security Scale (ELCSA) were presented, one in Mexico where ELCSA was administered as part of a public opinion poll on quality of life (Pérez-Escamilla et al.) and the second in Bolivia and Guatemala (Melgar-Quinonez et al.). The former found that food security is independently associated with perceived lower quality of life; the latter detailed how ELCSA was used to improve capacity within official government units in charge of coordinating national food security efforts. Also in this session, a case study of a government run community dining room programme in Bogota (Achagua et al.) was described and a report on the intersectoral Monitoring and Evaluation system used to inform Ecuador’s national strategy for reduction of child malnutrition was presented (Vaca & Samaniego). Results from the Bogata study included a decrease in acute malnutrition among programme participants under the age of 13 and self reported improved diet quality among almost all participants. The Ecuador study described the logistics behind how data collected at local level were used to guide decision making in central government. Lastly, Kepple and Sherring-Siqueira reported on 13 programme evaluations contracted by the evaluation unit of Brazil’s Ministry of Social Development (SAGI).

The authors found strong evidence of impact and also reviewed the important double role played by internal evaluation units like SAGI. In addition to providing technical and scientific expertise, these departments help keep food security and nutrition on the government agenda by coordinating actions that involve diverse partners in a highly political environment. This finding was broadly applicable to most of the programmes described in this session. Although not all have had a multisectoral reach comparable to SAGI's, almost all have reported improved institutional capacity and were able to increase the visibility of food security as a national policy priority for their respective countries.

6. What works to improve diets? From project design to measuring impact

Presentations focused on improved access to diversified diets and consequent impact on nutrition outcomes. A randomized controlled trial conducted in Cambodia found homestead food production of micronutrient rich foods was associated with improved nutritional status (Talukder et al.). Comparison of baseline and endline data using biomarkers showed declines in iron and vitamin A deficiencies as well as anemia in the intervention group. Results were similar for interventions conducted in Bolivia (Bernárdez et al.) and Zimbabwe (Roberfroid), although the Cambodian study was the only one which included analysis of baseline and endline data. This session also included the introduction of software designed to calculate nutrient density in national food intake patterns (Widemer et al.), and findings from the design phase of a Zambian agriculture based nutrition project (Stallkamp et al.). The latter used formative research and other methods to conduct an in depth, ex ante review of the target population's context and needs. Results included findings from a qualitative assessment conducted with national, district and subdistrict level stakeholders. These and other results provided insights regarding sector specific concepts of nutrition and other important considerations which were used to inform project design.

7. Assessing food security with experience based scales at individual, local and national level

Presentations reported on the innovative use of experience based scales. ELCSA, the Latin American and Caribbean Food Security Scale discussed in Session 5, was compared to a shorter scale designed for use in sub-Saharan Africa (Stefani et al.) and Brazil's Food Insecurity Scale (EBIA), originally designed for national level surveys was validated for use at municipal level (Pinheiro de Toledo Vianna et al.). Given the need for reliable information at municipal level to investigate better local disparities, often masked when the survey is national, the authors of the latter argued for inclusion of EBIA in local food security monitoring systems, not least to assure adequate targeting of Bolsa Familia, the national conditional cash transfer programme. EBIA was also discussed in Rodrigues-Pinto et al.'s report on Brazil's recent activities under the national food security and nutrition policy (Fome Zero). Also in this session, two related presentations focused on food security reporting by children and seniors. First, scales for measuring food security among children and seniors in Venezuela were developed via focus groups, informant interviews and factor analysis (Bernal et al.). Second, previously collected qualitative data from the U.S. was used to develop an instrument based on children's self reported perceptions of food security. Validated according to six previously defined domains measured by the scale, the instrument was found to be moderately to highly accurate. In contrast, indicators based on parent report were found to have low accuracy, indicating substantial underestimation of children's experiences with food insecurity when reported by caretakers (Frongillo et al.).

8. The impact of the United States' local and regional procurement of food aid pilot projects

In this session, local and regional procurement (LRP) of U.S. food aid was evaluated with respect to its impact on local prices, consumer preferences and savings in terms of cost and timeliness. In their multicountry analysis, Garg et al. used data on a series of variables in an econometric model to assess impact on food prices and volatility. The authors found that "in most cases, LRP procurement and distribution activities have no impact on local retail price levels and volatility." Similar findings were presented by Harou et al., whose study of a pilot project in Guatemala found that local purchase had no effect on retail food prices or price

volatility. Harou et al. also found that delivery times were substantially reduced with LRP, and that recipients were more satisfied with the product they received. However the authors warned against the risk of price effects in situations where procurement volume is high, and underscored the challenges created by LRP contracting. Time savings were also reported by Lentz at al. and Upton et al. The former compared LRP activities to matched transoceanic food aid shipments, finding that time savings were significant across the board although cost effectiveness varied by country. The latter conducted a comparative analysis of school feeding programmes in Burkina Faso. Findings included overall savings in cost and timeliness when using LRP, as well as beneficial effects for smallholders. A three country matched survey in Guatemala, Burkina Faso and Zambia found that recipients routinely preferred locally sourced foods, although their perceptions of nutritional quality, preparation time and expense were mixed (Violette et al.) Policy recommendations across the board for this session focused on using evidence from LRP pilots to guide design of U.S. overseas food aid programming, especially in regards to the 2012 Farm Bill which includes the option of making LRP a permanently authorized and mainstreamed method of procurement.

9. Looking within the household: focusing on the individual

Presentations in this session aimed to unpack some of the assumptions that are commonly made about food security. Battistin et al. used data from Tajikistan's 2007 Living Standards Survey to assess intrahousehold food allocation and found that the youngest household members are routinely discriminated against, especially regarding access to high nutrient foods. Carletto et al. used disaggregated data from Malawi's Third Integrated Household Survey to estimate how the share of household income received by women impacts preschooler anthropometric outcomes. Montembault and Ogden presented a project designed to assess the capacity of food access indicators to predict nutritional status at household and individual level. The authors argued that using tools of household food access measurement are essential when studying nutrition outcomes and should be always considered in the analysis of the multiple causes of undernutrition. Also in this session, Korkalo et al. assessed diet and nutritional status of adolescents in Mozambique, finding that overweight prevalence is higher than expected. Kumar and Quisumbing analysed the impact of three agriculture based nutrition interventions in Bangladesh and found that impact on household incomes and individual wellbeing was dependent on: (1) differences in dissemination and targeting mechanisms; (2) initial differences between early and late adopters; (3) whether a technology is divisible and easily disseminated; and (4) intrahousehold allocation processes. These contingencies were broadly applicable to most presentations in this session, which emphasized consideration of local context, social norms and a focus on individuals when developing indicators and targeting beneficiaries.

10. Measuring food access in multiple ways: the richness of household data

In this session, household data from a variety of national surveys were presented to show how this type of information can be used for analyzing trends in food access and consumption. Data from household budget surveys were used to analyse socioeconomic variables and their effect on intake patterns in 16 European countries (Oikonomou et al.). The authors found *inter alia*, that plant based diets are more prevalent in Southern Europe and that households whose heads have minimum education report higher consumption of lipids. Jacobs used data from South Africa's General Household Survey to assess how smallholder and farm worker households access food, especially in regards to consumption from own production versus consumption of purchased foods. A dietary diversity questionnaire administered across four Egyptian governorates revealed low diversity and overreliance on oils, sugars, cereals, and tomatoes (Hachem et al.), which reflected the high vulnerability of household consumption to shocks. The Egyptian Ministry of Agriculture used the survey results to prevent a similar occurrence after the 2010 tomato crop failed. Also in this session, Coates and Maxwell assessed the universality or "cross cultural equivalence" of three commonly used household food security measures. All three indicators were found to meet many, but not all, criteria for cultural equivalence. In order to achieve comparability, the more culturally invariant measures sacrificed some degree of measurement range, content validity, and other desirable aspects of more context specific measures. Of note is the issue of cut-off points, which were found to be

the most significant challenge in each case in order to meaningfully categorize household food security status consistently across different contexts. This issue was also addressed in detail by Mathiassen in Session 4.

11. Food security information systems: new developments in measurement, analysis, and institutions

In this session, the focus was on use and refinement of surveillance and mapping tools, including the Famine Early Warning Systems Network (FEWS NET) and Integrated Phase Classification (IPC). Haan et al. provided an overview of the core concept and functions of the IPC, and Kriz described a FEWS NET initiative to monitor food insecurity in countries where FEWS NET is not present. This method is compatible with the methodology used by the IPC and is designed to provide decision makers with information quickly at low cost. FEWS NET's use of scenario development was presented by Coneff et al. This process uses information about current conditions, livelihoods and assumptions regarding future events to project future food security scenarios. Assumptions regarding the future are based on variables such as current and historical price trends, satellite imagery and typical livelihood patterns. In addition to FEWS NET and the IPC, a regional approach to monitoring food security was described in this session by Ahmed & Zappacosta. The authors argued that a regional approach holds technical and governance-related advantages over both country based strategies and regional monitoring by non regional actors (e.g. FEWS NET and IPC). These include shared data management and conceptual frameworks for standardization across countries, economies of scale, broader monitoring capacity, bringing national institutions to a common technical level, reducing political interference, strengthening output credibility, and facilitating movement from information to action. Also in this session, results were reported from a study conducted to determine whether anthropometric data collected over three years as part of Burkina Faso's Permanent Agricultural Survey added value to the national food security decision making process (Tanimoune et al.). Although the initiative raised interest in nutrition at national policy level, the authors found that information dissemination and communication remained weak, and that the data were not used to inform food security activities.

12. Formulating good policy evidence: from the micro level to macro phenomena

This session consisted of findings from studies providing evidence to inform specific food security policy recommendations in the agricultural sector. Data from Tanzania were used to analyse how transaction costs, price, and non-price factors impact smallholders' decisions to participate in local markets (Asfaw et al.), and a household resilience model was used for impact analysis of a DFID funded FAO project to improve food security in the Gaza Strip (Mane et al.). The former found that forming producer marketing groups, improving information and transport infrastructure, building up smallholder assets, reducing barriers to access and facilitating uptake of technological advances are essential to reducing transaction costs. The latter measured project impact using the "resilience framework", finding significant gains in income, food access, agricultural assets, agricultural practices and social safety nets. Also in this session, the case was made for including systematic monitoring and analysis of seasonality in food security policy (Devereux) and a system to measure the quantity and quality aspects of food access simultaneously was proposed (Velazco). Finally, data collected during Indonesia's financial crisis were analysed in regards to which indicators – energy intake, dietary diversity, income and anthropometry – provide the best assessment of food security immediately after shocks (Headey & Ecker). The authors found that energy intake is probably less reliable than income, anthropometric and dietary diversity indicators at assessing impact of shocks. The authors also point out that the benefit-cost ratio of scaling up methods to measure income and poverty measurement is low, while a more cost effective approach is to increase measurement of dietary diversity and nutritional status through anthropometry.

13. Measuring impact in difficult situations

In this session, a range of techniques were used to assess the impact of short and long term shocks on food security. Mane et al. used a variety of econometric methods to estimate long term and intra-household effects of Hurricane Mitch on food security in Nicaragua, finding that caloric intake was negatively affected in the long term but not in the short term, concomitant

to decreasing humanitarian aid, and that these long term negative effects were more relevant for women than men. Pangaribowo used propensity score matching to assess the impact of rice subsidies in Indonesia, and Luckett et al. used the same technique to estimate the impact of food aid disbursements on the livelihoods of households affected by HIV/AIDS in rural Kenya. The former found Indonesia's RASKIN programme, which sells rice to poor consumers at highly subsidized prices, to have had a positive impact on both the consumption of high nutrient foods *and* on alcohol and tobacco consumption: conditionality is proposed as a way to mitigate this fungibility effect. The latter found that food aid increased both income and off-farm employment among recipients, while income of non-recipients decreased over the same time period. Also in this session, Mock et al. assessed the strength of association between traditional measures of food security and measures of resilience. Using data from a survey collected after the 2010 earthquake in Haiti, the authors found that a combination of measures of psychosocial resilience, dietary consumption, coping and hunger were key predictors of improved welfare outcomes while dietary consumption alone was found to provide an incomplete measure of wellbeing. Also in this session, Levine et al. reviewed 39 World Bank livelihoods projects targeting internally displaced persons and returnees, concluding that it is impossible to correlate interventions with livelihood outcomes due to the high number of confounding variables. The authors warn that current practice for these types of interventions will continue to be guided by assumption unless more routine monitoring provides data with which to assess impact.

14. Converting knowledge into sound policy: lessons from far and wide

This session provided diverse examples of how research based evidence can be used in policy creation and reform. Devereux reviewed social protection programmes in sub-Saharan Africa to see which approaches work best in terms of enhancing food security, and Cuesta et al. predicted the effect that levels and changes in agricultural spending have on the probability of Bolivian municipalities moving into or out of high vulnerability to food insecurity. The latter found that while spending did increase concomitant to vulnerability, the impact of such investments (in infrastructure, extension and research) had a very small (albeit significant) positive impact on reducing vulnerability. Rathert and Rose proposed that certain strategies to reduce obesity in the U.S., such as developing a common analytic framework, encouraging public private partnerships and garnering institutional support, be used as a model for food security policy initiatives (Rathert & Rose). Rosales discussed the online platform "Global Forum on Food Security & Nutrition", highlighting how inputs from practitioners have influenced policy formulation at FAO and WFP (Rosales et al.). E-communities of practice were reported to remove spatial and hierarchical barriers, creating a level playing field for productive exchange processes to occur between practitioners and policy makers. Finally, Slater et al. discussed the current role played by Systematic Reviews (SRs) in the formulation and evaluation of food security policy. The authors found SRs reduced bias and increased rigour and objectivity in review processes. However they also argued that these benefits are offset by a number of concerns, including the narrow range of source material, which consequently reduces the number of studies available for meta analysis, the limited extent to which researchers from the south have access to the materials required to carry out an SR, and limited attention given to qualitative research.

15. Assessing food and nutrition security at the household level with a focus on children and their caretakers

Presentations in this session offered evidence for links in the chain between food security and nutrition outcomes, as well as new perspectives on the causes of malnutrition. Chen and Zhang used primary data from 18 villages in rural China to assess the "squeeze effects" of social spending on child growth. The authors tested for associations between "good year events" (e.g. weddings and house building) and "bad year events" (e.g. funerals) and found that frequent ceremonies squeeze food expenditures to facilitate gift giving, and that children born to mothers exposed to frequent ceremonies during their pregnancy are more likely to display higher rates of stunting. These findings provide a new hypothesis on why increased income does not automatically result in improved nutrient intake for the very poor in rapid growth countries. From a policy perspective, they provide evidence for the argument that social

norms should be carefully considered in the design of poverty reduction programmes. Also in this session, the strength of association between household food insecurity indicators, infant growth and prevalence of maternal malnutrition was assessed in rural Bangladesh (Na et al.), and 24 hour recall data from Lesotho were analysed to increase understanding of the links between local food intake patterns, malnutrition and health (Wiesmann et al.). The former found that infant stunting in the sample was not explained by socioeconomic status or diet (assessed at 6 months) but rather by chronic maternal food insecurity and poor nutrition, traced back to early gestation and throughout pregnancy. For the latter study, deficiencies in diet quality were found to be far greater than deficiencies in diet quantity. These results informed Lesotho's National Nutrition Policy in 2011 as well as plans for national food fortification programming.

16. Sampling and surveillance issues in humanitarian and development contexts

Most presentations in this session provided ideas for innovation in monitoring and surveillance techniques. Guevarra and Norris described a pilot project to field test new methods for assessing coverage of Community Management of Acute Malnutrition programmes, reporting that programmes using the new methods achieved coverage of over 50%. The authors also asserted that the greater accessibility of these new methods allows coverage audits to be conducted regularly. In addition, there were two presentations on monitoring and surveillance in cities: Schofield et al. reported on the development process of early warning indicators of urban slow onset crisis in Nairobi, and Kameli et al. analysed food security in Ougadougou and Bobo-Dioulasso (Burkina Faso). The former used different sources of information (e.g. focus group results, commodity price reports, and household food security data) to assess food security in two urban slums in 2011, finding high levels of food insecurity and prompting an emergency response from Concern Worldwide. The latter analysed survey data collected annually in 2009 and 2010, allowing the possibility of studying exogenous shocks better. The authors argued that annual food security surveys administered in urban areas of Burkina Faso should constitute a base for a permanent urban food security and nutrition surveillance system. Waid et al. described an innovation in surveillance methodology in Bangladesh in which the sampling frame was based on agro-ecological zones. This type of sampling frame provides significant information on seasonality and hence may capture more information about food security than the conventional surveillance sampling frame used in Bangladesh, which is district based. This session also included results from a study exploring the links between maternal and infant intake patterns (Daniels & Mukuria). The authors used qualitative dietary recall data from Demographic and Health Surveys in Ghana, Haiti and Cambodia to show that in all three countries, as mother's dietary diversity increased, so did their babies'. The authors argue these findings have policy implications in terms of targeting and intervention design.

DAY 3
PANEL & PLENARY DISCUSSION

Chaired by Mary Amuyunzu-Nyamongo

Opening remarks

The session began with a brief statement from Mr. Stamoulis urging Symposium participants to make explicit promises of collaboration with each other regarding future actions.

Ms. Amuyunzu-Nyamongo then took the floor to reflect on the title of the Symposium: "From valid measurement to effective decision making". She questioned the degree to which decision making had been addressed thus far in the Symposium, and suggested that the focus of the third day be placed squarely on this topic. In discussing the gap that exists between working towards accurate measurement and the use of information for decision making, Ms. Amuyunzu-Nyamongo raised the question of whether these two goals are fully reconcilable, citing the distinction between (1) addressing multifaceted, complex issues of assessment and (2) the challenge of influencing decision makers with hard evidence for policy formulation and reform.

Panelist comments

Ms. Amuyunzu-Nyamongo introduced the panelists and outlined a broad theme for discussion, namely: What has been done since the 2002 meeting and what could be done better? She emphasized the need to develop a concrete, realistic action plan for the short term, noting the 2015 deadline for the MDGs, and called for individuals and agencies to take specific actions.

Haven Ley – Gates Foundation

The Gates Foundation is a voracious consumer of evidence for all its actions, from strategy development to grant portfolios, to marginal dollar investments to monitoring. At this Symposium, evidence has been presented regarding the value added of moving beyond the framework of household level indicators towards individual level indicators. The same holds true for moving beyond the average, which obscures variation in measurement and can undermine the context-specific targeting Gates expects its investments to have. Seasonality and impact of shocks are two examples of how the Foundation is currently looking beyond the average.

However, the Symposium has offered few examples of concrete policy making. Right now too much evidence is supply-side driven; it is unclear what the current tools and measures are designed to change in terms of policy. In addition, policy makers have been painted with a very wide brush during this conference. Increased specificity regarding types of policy makers might improve the supply of demand driven evidence. Finally, one of the major reasons evidence remains supply side driven is because of institutional (as opposed to technical) constraints.

Gates would be pleased to give authority to an interagency team whose objective is moving closer to a demand driven set of research and evidence. This would require bringing different groups of policy makers together, as well as developing a phased approach to meeting policy needs. In addition, if Gates can help incentivize proactive change at institutional level to encourage greater specificity in measurement we'd be happy to do so. Leveraging existing platforms is a third area where Gates could also offer its support.

Marie Ruel – IFPRI

I would like to focus on the measurement aspect of the Symposium. What I have found is that we have made enormous progress in terms of measurement indicators. People have been very innovative, which represents an enormous difference from the previous conference, and a lot

has happened in the last decade. We have also had rich discussions about different methods of assessing food and nutrition security issues. But I have found at the end of the day that I am confused about what we are measuring and why. Trying to encompass both food security and nutrition security in the discussions puts both concepts at risk of getting a bit muddled.

At this point we need to revisit our conceptual frameworks for both food security and nutrition security. What dimensions of food security do we want to measure? And where do these indicators that we have been talking about fit? Can we map these indicators which do not provide the same measure? We need to be more specific about which indicators are measuring what dimensions of food security. We also need to think about the ultimate purpose of each of these indicators. In sum, there is a need to revisit the whole spectrum of indicators and measurement. There seems to be consensus on creating a task force to do this which would include a broad variety of experts and stakeholders. The main function of this task force would be to map the available indicators for different dimensions and different purposes. I am less optimistic about the ability of this taskforce to develop a single suite of indicators.

Joyce Luma – WFP

We talked about shocks. It looks like volatility is the norm but we are still struggling with early warning systems in terms of how to design them. To date there is no agreement on what a minimum design for an early warning system to track the impact of shocks would look like.

We also talked about urban areas. By 2030, more than 50 percent of the world's population will be urban. But the tools we are using to assess food security in urban areas are still rooted in rural food security assessment models. There is a need to spend more time developing a model for assessing urban food security (e.g. for capturing intake of food eaten out of the home, looking at food security by gender and age).

Initial presentations during Day 1 mentioned the current lack of a gold standard as well as a proliferation of indicators. This means we remain unable to compare across data sets and over time. We need to define our indicators better in terms of how we collect the information and interpret them as well as how we use them. According to Ms. Ruel and others, this is an area we really need to focus on. In addition, according to Mr. Carletto, we are unable to take advantage of all the surveys available because there is no agreement on which indicators should be collected. For example, as it stands, it is very difficult [for the WFP] to engage with the Multiple Indicator Cluster Surveys on food security. Once we have an agreed upon set of indicators which could be analysed across time and space, it would be much easier to capitalize on surveys and other assessment tools. Over the past two years, IFPRI, FAO and the WFP have been developing the FSIN to bring a variety of stakeholders together to define some of these issues. The FSIN would have a technical working group that could identify a robust set of indicators that could be used across time and space.

Suriyan Vichitiekarn – Association of Southeast Asian Nations (ASEAN)

What is new is that the key concept of food and nutrition security, which was not clear in 2002, is now clearer. Also, not only is valid measurement now considered important, the link between effective decision making and valid measurement is emphasized. Linking any available data to policy makers can have an impact on real time policy making. For example, having national food security information contributed to the fact that no export bans occurred in the ASEAN region in 2010, as opposed to 2008.

However, many of the Symposium's presentations were still focused on valid measurement. The agenda is (1) to continue to improve measurement, and (2) to increase the focus on linking, not only in terms of making measurement data available but also in regards to improving the capacity for linking, in particular through an integrated knowledge capacity building platform at global level. ASEAN would like to be part of this.

Dina Lopez Menendez – FAO

I would like to follow up on the comments made by Mr. Vichitiekarn. One of the real challenges we have in Latin America and the Caribbean is that information is not widely shared and its dissemination is poorly organized. There are no shared analyses available at regional level. The challenges inherent to retrieving sound information make decision making that much more difficult.

I would also speak to the format in which information is made available. Often, information is not presented in a way that is understandable to those making the policy decisions. We need to identify more attractive ways for policy making officials to access evidence so that they are better able to understand and learn from survey findings, especially when it concerns allocation of resources.

We also need to build bridges between academic and government research. Doing so would 1) make it easier for government institutions to have a sound evidence base, and 2) ensure that academics are meeting demands generated by government.

In addition, data demands should not be driven by agendas of current Secretariats; we need to have continuity. This however requires investment in sharing evidence and overall harmonization.

Finally, the platform that is being suggested should conduct an analysis of why some countries have achieved a reduction in indicators of interest (e.g. Nicaragua).

Chris Leather – Independent Consultant

Much progress has been made in terms of validation and development of tools and indicators by a range of actors; one could almost call it a proliferation. However to reiterate previous comments, what should be at the forefront as food security analysts is an understanding of the ultimate purpose of what we are doing, as well as the knowledge that our analyses are demand driven and aimed at informing policies and actions needed at national levels to reduce poverty and malnutrition.

This Symposium has revealed a lack of consensus on a common suite of outcome indicators, however it has also revealed that finding consensus on such a suite is almost within our grasp, certainly to be achieved within the next five years. I am less optimistic about whether it is feasible to develop a common assessment and monitoring methodology. Lack of consensus is not helpful for decision makers and it creates confusion and contradiction.

Given this situation, a priority for the short term is agreement on a core set of indicators which will provide a common basis for collective analysis of information. But as long as we still have a diversity of indicators and approaches, we will also need to develop a “meta analytical” approach that draws on information from different sources and helps create technical consensus at country level regarding the severity and causes of food insecurity in a particular area. For this to happen, the institutional constraints must be addressed.

Meeting these challenges requires the formation of a strong interagency working group at international level. There is a need to define a common analytic framework as well as to improve data collection through expenditure surveys and other methods. The working group should also provide technical assistance to countries which, as Ms Lopez said, implies that lessons learned should be an important component of the approach. We also need to be clear on how the group would add value at field level. National level working groups would need to be supported by the international group in terms of technical assistance and capacity building.

Bilha Maina – Social entrepreneur

It is time to start asking ourselves critical questions:
1) What do we do with what we already have to make a difference?
2) How do we share what we have in an open way so that societies can start to take action?
3) How can all the discussions be distilled and relayed to governments to become part of the global agenda? What are we going to do to make food and nutrition security a priority on national and global agendas? How can we bring these challenges to the same level as the MDGs?

I question the cost efficacy of pursuing multiple research agendas, and instead would urge participants to focus on the following three key considerations: (1) assessing the intake of food eaten and/or purchased outside the home, (2) assessing how mothers react to shocks and how that impacts their children, and (3) assessing how individuals react to food; that is, the fact that people often eat high calorie foods to satisfy their hunger and are less concerned about nutrition. Post harvest losses also need to be addressed.

I would also underscore the need for this audience and other stakeholders to target policy makers in the Ministry of Education and other line Ministries with a single clear voice. It is essential to simplify communication and provide clear messages, as well as to hold each other to account.

Finally, I would like to urge the establishment of more public-private working groups in policy and advocacy to help communicate the messages we want to promote. Funds should be allocated to pilot ideas on how to change consumer behavior through an implementation working group, using data already available to us.

Highlights from the audience discussion

A number of comments were made in support of Ms. Ruel's statement regarding the difficulty of developing a single set of core indicators. The importance of defining a conceptual framework and mapping out which indicators should be used in what contexts was reiterated, rather than arguing about "which indicator was best". It was noted that food security is a multidimensional concept, and that capturing its various aspects requires a range of indicators. The commenter reminded the audience that WHO underwent a similar process to harmonize measures of malnutrition, which is a model that could be followed by FAO.

Mr. Gennari (Director of FAO's Statistics Division) argued, however, in favor of developing a core set of indicators for food security. He cited measurement fatigue, the plethora of indicators, and less-than-ideal quality of data as key constraints to achieving consensus. He emphasized the importance of overcoming these challenges and cited household surveys in particular as key tools for understanding food security issues at the household level. There is also the potential to improve the data used for food security monitoring.

It was argued that decisions made by policymakers may be more political than scientific, and that understanding how to better work with power should be an objective. It was also noted that one reason for the weak link between evidence and decision making is lack of engagement on the part of policy makers. The need to better identify decision makers and understand how best to work with them was acknowledged, as was the absence of decision makers at the Symposium.

Strengthening the links between evidence and policy making was noted and a call was made to increase the involvement of the Committee on World Food Security (CFS). It was argued that a stronger framework for bringing supply and demand together was needed. It was suggested that the CFS should bridge this gap and increase the practical policy application of food security information.

It was noted that much of the work being done on developing indicators aims at providing decision makers with information on a current situation in as close to real time as possible. The

primary function of these indicators is diagnostic. However, the main point of this comment was that the information derived from indicators should be used not only for policy formulation and programme monitoring but also for assessing whether positive results are being achieved.

Several comments were made regarding the target population for food security information. One participant argued that people who are themselves food insecure, as opposed to analysts and policy makers, should be the primary users. Communities could be empowered with better food security information. Another participant noted the lack of farmer representation at the Symposium, citing the need to invite successful farmers to conferences to gain information from a different perspective.

RAPPORTEUR REPORT – THEMES FROM THE SYMPOSIUM

David Dawe, Rapporteur
Agricultural Development Economics Division, FAO

I would like to summarize the three main themes of the Symposium: measuring hunger and food security; generating more evidence; and bringing evidence to bear on decision making.

1) Measuring hunger and food insecurity

Given the fundamental multidimensional nature of food insecurity, the many different situations in which we try to track it, and the many purposes served (screening, monitoring and evaluation, etc.) in measuring it, we probably will never reach a complete consensus on which indicators to use. We have to recognize this complexity and the fact that it will be very hard to narrow things down. At the same time, we do not want to be too anarchic. There have been many proposals for developing some kind of a framework. This would be a distillation of best practices for mapping some of the most important indicators - including when and how they should be used. However, this framework will need to recognize the different uses of measuring food security. We do not want to stifle creativity too much. In my opinion, we should be more specific when stating that we want a "suite of common indicators". It would help to stipulate what the indicators are for. For example, Ms. Luma said it would be useful to have a common set of food security indicators for the MICs. An innovation of this nature is eminently desirable, as it would facilitate comparison across space and time and is a very specific objective.

2) Generating more evidence

Compared to 2002, we have made progress. There are more household surveys than there were ten years ago, as well as more sophisticated methods of data analysis. We have moved away from a focus on self sufficiency to a current focus on the household and are now looking more towards the individual. We have also moved beyond averages and are looking at data in more disaggregated ways. We are looking at the impact of shocks and seasonality on people's food security situation. However there are still opportunities for improvement. For example Mr. Carletto has provided suggestions for improving household budget surveys, while Ms. Quisumbing recommended including simple rosters of individuals in household consumption and expenditure surveys and linking them to other survey questions which can be disaggregated by sex and age.

Impact evaluation has also been brought up. This is an area where we have not done such a good job, as evaluations are all too often brought in at the completion of the project. If we want our projects and programmes to make a real difference we should build impact evaluation into the design from the very beginning. Collecting the proper baseline information allows adjustments to be made midcourse to improve both process and outcomes. There should be feedback loops throughout the entire implementation process.

3) Bringing evidence to bear on decision making

The broad consensus is that we do not have enough examples of bringing evidence to bear on decision making. There are some examples, such as CONEVAL in Mexico that has brought academics and policy makers into more direct contact. This approach functions much better than simply disseminating policy briefs. At FAO, the Agricultural Development Economics Division supports the National Food Policy Capacity Strengthening Programme in Bangladesh. We are working within the Ministry of Food to build capacity and also work with other arms of government to increase the flow of demand driven information. Although it would be interesting to have government personnel speak in a forum such as this Symposium, it is also important to recognize that in many cases, needs arise very quickly and are difficult to predict. One key conclusion is that we need to work more on institutionalization of evidence generation. Doing so will require longer term commitment from donors, as this type of venture is not a two or three year process. Moreover, as many have noted, it will also require political commitment from national governments.

CONCLUSIONS & THE WAY FORWARD

Chaired by Mary Amuyunzu-Nyamongo

Key actions for the next five years

Ms. Amuyunzu-Nyamongo presented the following key areas for concrete action over the next five years:

Bringing together policy makers, researchers and practitioners

Bridging the gap between information generation and decision making is essential to future progress. We have now talked about holding regular (as opposed to one off) joint forums to bring together researchers, practitioners and decision makers from sub-national, national, regional and global levels. Each of these decision makers has a different audience and role to play. We need to recognize the potential constraints posed by country level capacity issues.

We also need to build on what is already in existence, as opposed to creating entirely new processes. Bringing policy makers and researchers together will help us achieve this objective.

The Food Security Information System (FSIN) mentioned by Ms. Luma this morning should be responsible for moving this initiative forward. The Gates Foundation, the European Union, and USAID have all indicated their interest in seeing this happen. Linking to the Committee for World Food Security (CFS) is also imperative.

Making evidence and information demand driven

Systematically bringing policy makers to the table will facilitate a better understanding of their needs. Ultimately, the information and evidence generated by food security assessment should meet those needs. We also need to find mechanisms for the better translation of information and to ensure it is accessible to policy makers.

Providing opportunities for countries to share their experiences should be a priority. There is much happening at regional and country levels. South-South collaboration and planning is important in this context, as has been mentioned repeatedly, and is especially relevant in terms of capacity building.

We also need to consider how to best engage with the media, especially in regards to the translation of information and evidence for mass consumption.

Establish an expert committee on food and nutrition security measurement

We need an expert committee on food and nutrition security measurement. We are already overloaded with committees but we also want to avoid what happened in 2002, when the call to create a suite of indicators was never fulfilled. This time we need to mandate a group. This committee should be linked to an existing system for legitimacy and we suggest for this purpose the FSIN.

The FSIN Expert Committee would serve a variety of functions. First, it would help establish cohesion among the wide variety of activities and taskforces which currently exist, but which remain disparate and divided into silos. This will help develop strategic and sustainable linkages.

Second, the Committee would form Expert Working Groups to address specific issues, namely: what measures are most useful for assessing the various aspects of food security within a given purpose and context (e.g. what is needed for diagnosis? for programming? to respond to a shock?).

Third, to increase the demand driven aspect of research and help bridge the gap between information and policy, the Expert Committee would identify and bring on board technical experts available in various government offices to contribute to the mandate.

We also need to have a refined technical framework. This would not be a conceptual framework, which, based on the numerous comments, already exists. Rather the proposal is for a technical framework to provide consistent answers to questions regarding the various purposes served by food and nutrition security information. This technical framework would also answer questions regarding the aspects of food security that are most relevant in a given context. The Expert Committee would be responsible for distilling this information into an accessible technical framework used to answer these types of questions and, consequently, act as a guide for improving measurement.

We hope that the Committee will be established in 2012, so that we can begin to develop the work plan.

Improved data collection for food and nutrition security measurement

We endorse the UN Statistical Commission's meeting in February 2012 and its initiative to improve data collection. We also endorse the International Household Survey Network initiative which includes FAO and World Bank for improving the quality and relevance of food data collected in household consumption and expenditure surveys. We feel that these initiatives – if properly supported – will improve the measurement of food and nutrition security.

Meeting development challenges of the 21st century

The following is a collection of issues we feel people working in food and nutrition security need to focus on. They include both existing and emerging challenges:

- Urbanization: Food security assessment tools are still geared towards looking at rural populations. However, an increased proportion of persons will be living in urban areas in coming decades. Are we ready to deal with the issues and complexities that go along with increased urbanization?
- Overweight and noncommunicable diseases: We have discussed these issues with respect to the double and triple burden of malnutrition. Do we have the tools to collect valid and useful information on this emerging challenge?
- Intra-household data collection to uncover discrepancies in, for example, allocations of food or impacts of technology transfers.
- Influence of the sociocultural context on food and nutrition security: this Symposium has provided examples of the impact of funerals, weddings and other culturally proscribed events on assets, food security, and nutrition outcomes, especially for mothers and their children. We need to address how to better incorporate the sociocultural context into food and nutrition security indicators.
- Use of information communication technology: technical innovations can help meet the challenge of making data processing faster and more efficient.
- Assessing shocks, volatility and resilience: given current global trends (e.g. continued price volatility and climate change) we need to recognize the important role these variables play and give priority to analyzing their impact on food security.

Highlights from the audience discussion

The political potential of information and communication technology was highlighted using an example from Brazil where technology was used to support legislation mandating the collection of data at municipal level. It was noted that the choice of which data are collected must be guided by a conceptual framework. When this occurs (as it did in Brazil), technology can facilitate the link between data collection and ideas laid out in a conceptual framework, thus helping a country develop a cohesive national paradigm for how to address and improve food security.

The need to outline what currently exists in terms of food security assessment, and the costs of those assessments, was highlighted. The participant noted the importance of not only looking at what measures are most useful, but also looking at how to help decision makers more effectively allocate resources to employ those measures sustainably.

A comment was made regarding the need to generate more understanding as well as more evidence. The speaker stated that there was too much emphasis on symptoms and not enough on causes.

A number of comments were made regarding the proposed establishment of an Expert Committee under the FSIN, some of which are summarized below:

Mr. Luca Russo (FAO) made the call for the FSIN – which at the time of the Symposium remained nascent – to become a more formal body, complete with Advisory Board to increase awareness of the system. He also noted that linking with governing bodies like the CFS and the UN Statistical Commission was fundamental to increasing accountability.

It was suggested that, once it is established and functional, the FSIN Expert Committee should facilitate a peer review process involving various food insecure countries. The commenter stated that South-South cooperation could be instrumental in identifying both best practices and weaknesses to be addressed by capacity building activities, as well as being useful in translating local concepts of food security to international standards such as the Integrated Food Security Phase Classification (IPC).

Mr. Gennari, who had spoken earlier in favor of establishing a core set of indicators for food security, reiterated the importance of working with the UN Statistical Commission to develop a suite of indicators. He also underscored the need to improve measurement of food consumption in household expenditure surveys. In his opinion, the involvement of the UN Statistical Commission on these two issues is essential to ensure adoption by the global statistical system. Both Mr. Gennari and Mr. Carletto cited an upcoming initiative with the World Bank to establish a technical Working Group focused on these subjects

A representative from the Joint Research Center of the European Commission voiced support of both the FSIN and the IPC, stating that the EC has been the driving force behind the FSIN since its genesis and highlighting efforts of the IPC to improve harmonization of data platforms at country, regional and global levels. He underscored the importance of response analysis in strengthening the link between information and decision making. He cited the crisis in the Horn of Africa as an instance in which the bridging had not occurred, and reiterated its importance in regards to the current global agenda for improving food security.

Closure of the Symposium

The Symposium concluded with statements from Ms. Amuyunzu-Nyamongo and Mr. Stamoulis.

Ms. Amuyunzu-Nyamongo acknowledged that the Symposium had not included representation from policy makers, farmers groups or the private sector. She stated that future joint forums will work to be more inclusive, and include greater representation from agriculture and other relevant sectors.

Mr. Stamoulis spoke as follows:

This Symposium has achieved several concrete objectives. In addition to providing technical reviews and plenary presentations regarding broad trends in assessment, it has also produced some practical initiatives that can be moved forward. These initiatives aim to make use of the resources entrusted to us by our member countries to contribute to an overall vision of a world without hunger. This is our responsibility that we all have at the end of the day and I am happy to say that through this Symposium we have advanced its cause.

In terms of accountability, we should collectively agree to be accountable for what was produced here as well as for follow up. In September of last year, under the umbrella of the CFS, the highest level multi-stakeholder platform for food security debate, we carried out a similar workshop. This workshop resulted in a list of recommendations and we were hoping in this Symposium to move that agenda forward. I think we have done this and more, having discussed a number of relevant subjects in great depth over the last three days. As a result, even though this meeting was not organized under the auspices of the CFS, I propose that we ask the Bureau of the CFS to include a progress report on the action items discussed today in its October 2012 Meeting Workplan and Plenary. Doing so will add to the visibility of this Symposium, as the CFS consists of a group of approximately 160 countries as well as a large number of NGOs, civil society groups, international agencies, and research centres. Discussing the outcome of this Symposium during the October Meeting of the CFS will also add to the accountability debate. Indeed one option is a side event at the meeting which focuses on some of the issues discussed here. Such an event would present a good opportunity to widen the debate, including attracting participation of policy makers, who have been underrepresented here.

As we take stock of what has happened since the 2002 Workshop, it is important to acknowledge the progress made in development, validation and use of food security indicators. We have heard here about a number of innovative ways to analyse data, including new types of data, to identify vulnerable and food insecure groups. However we have heard less about how to bridge the gap between this wealth of information and its direct applications to programme evaluation and policy formulation. In retrospect, we could have held a forum for policy makers or multi-stakeholders as part of this Symposium. This might have helped in the practical expression of needs and demands. We will address this better next time and indeed there have been a number of suggestions regarding how to implement this.

Overall, I think all of us are emerging from this Symposium better informed than when we entered it, and that many of you will go back home and communicate much of what has been said over the last three days to your colleagues. From this perspective the Symposium has been time and resources well spent.

On this note, the meeting was declared closed by Ms. Amuyunzu-Nyamongo.

ANNEXES

ANNEX I
SYMPOSIUM PROGRAMME

AGENDA

16 January, 2012: Pre-Symposium special events	
Session 1: **8:30 - 11:00** (Austria Room, Room C237, 2nd floor, building C) Session 2: **11:30 - 13:00** (German Room, Room C269, 2nd floor building C)	**Strengthening household consumption and expenditures surveys to enable more evidence-based nutrition policies** Moderator: Jack Fiedler (HarvestPlus)
13:30 - 17:00 (Iran Room, Room B116, 1st floor building B)	**The Somalia famine declaration and response—what went well, what did not, and the imperative to improve** Moderators: Daniel Maxwell (Tufts University) and Nicholas Haan (FAO /WFP)

17 JANUARY, 2012 (Green room, building A, first floor)	
Chair: Mr Kostas Stamoulis	
9:00 - 9:30	**Opening remarks:** Kostas Stamoulis, Chair of the Symposium Mr. Jose Graziano da Silva, Director General of FAO
9:30 - 10:00	**Keynote speaker**: Dr. Shenggen Fan, Director General of IFPRI
10:00 - 10:30	Coffee
10:30 - 12:00	Panel 1 – Measures of global hunger and food insecurity
	Moderator: Christopher Barrett (Cornell University) **Panelist 1:** Derek Headey (IFPRI) *Measuring food insecurity in times of crisis* **Panelist 2:** Calogero Carletto (World Bank) *Measuring food and nutrition security in multi-purpose household surveys: experience to date and mapping a way forward* **Panelist 3:** Carlo Cafiero (FAO) *Updates on improving the validity and reliability of worldwide estimates of food insecurity*
12:00 - 14:30	Lunch
14:30 - 15:30	**Panel 2 – Building the evidence base for policy and program: innovative approaches to analysis**

	Moderator: Daniel Maxwell, Tufts University **Panelist 1:** Agnes Quisumbing (IFPRI) *Generating evidence on individuals' experience of food insecurity and vulnerability* **Panelist 2:** Nancy Mock (Tulane University) *From complexity to food security decision-support: novel methods of assessment and their role in food security information systems* **Panelist 3:** John Newman (World Bank) *Empirical associations of the adequacies of food, health and care with nutritional outcomes*
15:30 - 15:45	Coffee
15:45 - 17:15	**Panel 3 – Food and nutrition security information - evidence generation is not enough**
	Moderator: Marie Gaarder (NORAD) **Panelist 1:** Howard White (International Initiative for Impact Evaluation-3ie) *Understanding the steps between research and policy: ensuring and measuring policy influence* **Panelist 2:** Ricardo César Aparicio Jiménez (CONEVAL Mexico) *Institutionalized evidence-based approaches to policy making: the case of Mexico's food security index* **Panelist 3:** Edoardo Masset (IDS) Use of systematic reviews to understand the impact of programmes and policies on food and nutrition security

18 JANUARY, 2012	
9:00 - 17:30	**Parallel Sessions:** Contributed Papers (see section below)
18:00 - 20:00	**Reception and presentation: *SecureNutrition*: Linking Agriculture, Food Security, and Nutrition Knowledge Platform** (Aventino room, 8th floor, FAO Cafeteria) The "Secure Nutrition" Knowledge Platform (KP) was established in 2011, and is funded by the World Bank's Knowledge Learning Council aims to bridge knowledge gaps between agriculture, food security, and nutrition. It will offer a space (virtual and physical) to exchange experiences, to disseminate information, and ultimately to increase coordination, collaboration, and co-generation of knowledge. Specific objectives include: leverage increased reductions in undernutrition through food security related investments for World Bank and partner food security and agriculture operations; produce and disseminate tools and resources to translate new knowledge into project design; and facilitate identification and dissemination of best practices and innovations, and sensitize relevant stakeholders including national governments. More information is available at: http://www.foodsecuritynutrition.org

19 JANUARY, 2012 (Green room, building A, first floor)	
9:00 - 16:30	**Looking forward - key priorities for the next five years** **Moderator: Mary Amuyunzu-Nyamongo**, Director, African Institute of Health and Development, Nairobi.
9:00 - 9:15	**Opening**
9:15 - 10:30	**Panel and plenary discussion** **Panelists:** Ms. Dina Lopez (PESA/SPFS C. America), Ms. Haven Ley (Bill and Melinda Gates Foundation), Ms. Marie Ruel (IFPRI), Ms. Bilha Maina (Private sector), Mr. Suriyan Vichitlekarn (ASEAN), Ms. Joyce Luma (WFP), Mr Chris Leather (Independent consultant)
10:30 - 11:30	Coffee
11:30 - 11:45	**Panel and plenary discussion** (continued)
11:45- 12:00	**Summary and wrap-up**
12:00- 14:30	Lunch
14:30 - 14:45	**Rapporteur report: summary of the three days and outline of points for the final discussion** Rapporteur: David Dawe (FAO)
14:45 - 15:30	Final discussion
15:30 -16:00	Plan for the way ahead
16:00 - 16:30	Closure of the symposium - Kostas Stamoulis, Chair of the ISS

CONTRIBUTED PAPERS 18 January, 2012

AUSTRIA ROOM, FAO Headquarters

9:00 -10:30	How many people are hungry in the world?
Chair: Pietro Gennari	
Osamu Koyama	Projecting the world food situation and policy scenarios using a long-term dynamic simulator
David Dawe	Improving the responsiveness of FAO's undernourishment numbers to economic shocks
Natalia Merkusheva	Improving the measurement of undernourishment: estimating and accounting for the correlation between food intake and energy requirements
Elisabetta Aurino & Carlo Cafiero	Multidimensional indexes of food security: a review of the literature and some operational proposals
Sharad Tandon	The sensitivity of food security in India to alternate estimation methods

11:00 - 12:30	Innovation in analytic techniques asking questions, giving solutions
Chair: Hartwig de Haen	
Maarten Nubé	Comparing successive anthropometric surveys: reliability and robustness of survey-results at national and sub-national level
Peter Lanjouw	Is child malnutrition a local phenomenon? Micro-level estimation of child malnutrition in rural and urban Mexico
Amanda McClellan	Testing a model for resilience: towards prevention and treatment of under-nutrition in predictable emergencies
Olivier Ecker	Advancing food security analysis: a new applied macro-micro framework
Kenneth Harttgen	Analyzing nutritional impacts of price and income related shocks in Malawi and Uganda

14:00 - 15:30	Conceptualizing food and nutrition security through different lenses: how does this affect measurement?
Chair: Tim Frankenberger	
Stefano Marta & Vito Cistulli	The territorial competitiveness index – SAM approach to support decision making for food security.
Brooke Colaiezzi	Which one to choose? Selecting food consumption measurement methods for decision-making in nutrition and food security programs
Marie-aude Even	Presenting World agriculture Watch framework: monitoring structural changes in agriculture and their impact on food security and environment, Informing policy dialogue
Sailesh Tiwari	Linking food security measures to nutritional outcomes: some evidence from Nepal
Pasquale De Muro	Food security analysis through the human development and capability approach: a proposal for field research and applications in developing countries

16:00 - 17:30	Indicators for measuring food and nutrition security: diversify or unify?
Chair: Diego Rose	
Daniel Maxwell	Capturing the “access” element of food security: the advantages of different indicators
Astrid Mathiassen	Validating the Food Consumption Score and other food security indicators using LSMS surveys
Sid Ahmed Beteik	The Sum of Terms of Trade (STOT): a new food access indicator
Siddharth Krishnaswamy	The relevance and significance of credit / debt data in household food security analysis
Marie Ruel	Simple dietary diversity indicators: how well do they reflect the micronutrient adequacy of diets?

GERMAN ROOM, FAO Headquarters

9:00 - 10:30	Institutionalizing evaluation processes: looking at government programmes in Latin America that address food security
Chair: Stefano Gavotti	
Anne W. Kepple	Policy impact of food and nutrition security program evaluation studies contracted by the Secretariat of Evaluation and Information Management of the Brazilian Ministry of Social Development and Fight Against Hunger
Pablo Parás	Food security measurement through public opinion polls: the case of ELCSA-Mexico
Eneried Jaramillo Achagua	Institutionalization of the food security and nutrition public policy in Bogotá: case study on community dining rooms

Catalina Vaca	The monitoring and evaluation system for Ecuador's national food and nutrition strategy. Its contribution to decision making
Hugo Melgar-Quinonez	Household food security measurement in Bolivia and Guatemala: generating information for public policy and program evaluation

11:00 - 12:30	**What works to improve diets?: from project design to measuring impact**
Chair: Melissa Daniels	
Julien Jacob	Improving access to nutritious food and diet diversity through fresh food vouchers in Guaranies' families (Chaco Bolivia)
Aminuzzaman Talukder	The impact of homestead food production on anemia, iron and the vitamin A status of preschool children and women in Cambodia
Dominique Roberfroid	Measuring the impact of low input gardens on the wellbeing of people living with HIV in Chipinge District, Zimbabwe
Gudrun Stallkamp	Designing the Realigning Agriculture to Improve Nutrition (RAIN) Project – from a multi-country scoping assessment to in-country project design
H. K. Biesalski	Nutrient density calculator to calculate miconutrient intake nationwide and in selected populations

14:00 - 15:30	**Assessing food security with experience based scales at individual, local and national levels**
Chair: José Valls Bedeau	
Monique Centrone Stefani	Hunger evaluation in Uganda is valid for assessing household food insecurity
Jennifer Bernal	Design and validation of experienced-based tools that measure food insecurity and hunger in vulnerable populations of children and seniors in a developing country.
Júnia Quiroga	Bringing information into action: a report of the Brazilian government experience
Rafael Pérez-Escamilla	Household food insecurity in small municipalities in Northeastern Brazil
Edward A. Frongillo	Accuracy of child report, and inaccuracy of parent report, of children's experiences of food insecurity

16:00 - 17:30	The impact of the United States' local and regional procurement of food aid pilot projects
Chair: Christopher Barrett	
Teevrat Garg	Price impacts of local and regional procurement and distribution: a multi-country analysis
Aurelie Harou	An evaluation of local and regional procurement in Guatemala
Joanna Upton	Local food for local schools: a comprehensive analysis of the impact of local procurement for a school feeding program in Burkina Faso
Erin Lentz	The timeliness and cost effectiveness of the local and regional procurement of food aid: findings from USDA's Procurement Pilot Project and USAID's Emergency Food Security Program
William Violette	Recipients' satisfaction with locally procured food aid rations: comparative evidence from a three country matched survey

IRAN ROOM, FAO Headquarters

9:00 - 10:30	Looking within the household: focusing on the individual
Chair: Jennifer Coates	
Agnes Quisumbing	Access, adoption, and diffusion: understanding the household and intra-household impacts of new agricultural technologies in Bangladesh
Sylvie Montembault	Sound assessments taking into account individual nutrition status and food security at household level in humanitarian context
Talip Kilic	Intra-household control of income and nutrition: evidence from Malawi
Claudio Daminato	Intra-household (mis-) allocation of food resources: evidence fromTajikistan
Marja Mutanen	Diet and nutritional status of adolescent girls in Central Mozambique - the Zane Study

11:00 - 12:30	Measuring food access in multiple ways: the richness of household data
Chair: Lisa C. Smith	
Jennifer Coates	Reaching for the stars? Universal measures of household food security
Antonia Trichopoulou	Dietary patterns and their socio-demographic determinants in 16 countries: data from the DAFNE-ANEMOS databank
Fatima Hachem	The Dietary Diversity Questionnaire: from informing on dietary adequacy to informing on policy – evidence from Egypt
Peter Jacobs	Household food access in rural South Africa: Lessons for emerging food security policy

14:00 - 15:30	Food security information systems: new developments on measurement, analysis, and institutions
Chair: Nicholas Haan	
Nicholas Haan	Making sense of complexity—the approach of the Integrated Food Security Phase Classification for decision support
Jenny Coneff	Scenario building for food security projections: process, experience, and lessons learned
Brian Kriz	FEWS NET Remote monitoring initiative: identifying anomalies and providing decision support in non-presence countries
Mahamadou Tanimoune	Provision of nutritional information in the System for monitoring food security in the Sahel: an example of integration of the MUAC in permanent agricultural surveys in Burkina Faso
Shukri Ahmed	The value of a regional approach- some lessons from Sub-Saharan Africa

16:00 - 17:30	Formulating good policy evidence: from the micro level to macro phenomena
Chair: Karel Callens	
Stephen Devereux	Seasonal food and nutrition insecurity: measuring and analysing seasonality for improved decision making
Ana Paula de la O Campos	Evaluating the impact of agricultural interventions using household resilience: a quasi-experimental design in the Gaza Strip
Jackeline Velazco	Quantity and quality dimensions of food Access at the individual level: identifying the triple burden of malnutrition cases
Solomon Asfaw	Market participation under transaction costs and household welfare: micro-evidence from Tanzania
Derek Headey	Measuring food security in a volatile world

PHILIPPINES ROOM, FAO Headquarters

9:00 - 10:30	Measuring impact in difficult situations
Chair: Marie-Claude Dop	
Simon Levine	Difficulties in knowing how to support livelihoods of internally displaced people and refugees: why impact assessment is proving so difficult
Erdgin Mane	The impact of humanitarian interventions on intra-household undernourishment: the case of Hurricane Mitch in Nicaragua
Evita Hanie Pangaribowo	Aid-fungibility: a lesson to learn from the impacts of a food security program in Indonesia
Brian G. Luckett	The impact of food aid on the livelihoods of HIV/AIDS-affected households in rural Kenya: an evaluation using propensity score matching
Nancy Mock	Learning from Haiti: beyond food consumption indicators

11:00 - 12:30	Converting knowledge into sound policy: lessons from far and wide
Chair: Shahla Shapouri	
Rachel Slater	What counts as high quality research and evidence? Reflections on using systematic reviews to understand the food security impacts of school feeding, social funds and public works programmes
Jose Cuesta	Food insecurity and public agricultural spending in Bolivia: putting money where your mouth is?
Stephen Devereux	Social protection for food security: evidence from Africa
Adrienne Rathert	Translating evidence into effective policy actions: insights from efforts to address obesity
Mauricio Rosales	Linking practice to policy through online consultations

14:00 - 15:30	Assessing food and nutrition security at the household level with a focus on children and their caretakers
Chair: Charlotte Dufour	
Sumantla Varman	State of household food and nutrition security at Wailea Settlement, Suva
Joanna Upton for Xi Chen	In-utero exposure to frequent social events and early child stunting
Muzi Na	Household food insecurity is directly associated with infant growth but mediated by maternal nutrition during pregnancy in Rural Bangladesh
Kathryn Ogden & Palesa Lesoli	Dietary patterns, energy intakes and micronutrient adequacy among children under 5 and their caretakers in Thaba-Tseka district, Lesotho

16:00 - 17:30	Sampling and surveillance issues in humanitarian and development contexts
Chair: Joyce Luma	
Alison Norris	Innovating the measurement of humanitarian impact: The case of coverage assessment of community-based therapeutic care (CTC) programmes
Lilly Schofield	Development of early warning indicators of urban slow-onset crises: measuring the food security dimension (urban Kenya)
Melissa C. Daniels	Mothers' dietary diversity is mirrored in their infants' diets: Important implications of a food security indicator
Yves Kameli	Food security and nutrition surveillance in urban areas for improved decision making. A case-study in Ouagadougou and Bobo-Dioulasso, Burkina Faso
Jillian L. Waid	The costs and benefits of using agro-ecological zones to define a food security and nutrition surveillance system sampling framework in Bangladesh

ANNEX II
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ANNEX IV
BIOGRAPHIES OF PANELISTS AND CHAIRS

DAY 1

Panel 1: Measures of global hunger and food insecurity, chaired by Christopher Barrett

Christopher Barrett is the Stephen B. and Janice G. Ashley Professor of Applied Economics and Management and International Professor of Agriculture in the Charles H. Dyson School of Applied Economics and Management as well as Professor in the Department of Economics at Cornell University where he also serves as the David R. Atkinson Center for a Sustainable Future's Associate Director for Economic Development Programs and the Director of the Cornell Institute for International Food, Agriculture and Development's initiative on Stimulating Agricultural and Rural Transformation. He holds degrees from Princeton (A.B., History, 1984), Oxford (M.S., Development Economics, 1985) and the University of Wisconsin-Madison (dual Ph.D., Economics and Agricultural Economics, 1994). At Cornell, he teaches undergraduate courses on *Contemporary Controversies in the Global Economy* and *Comparative Perspective on Poverty Reduction Policy*, as well as graduate courses on the *Microeconomics of International Development* and *Food Systems and Poverty Reduction* and runs a *Graduate Research Seminar in Development Microeconomics.*

Derek Headey is a research fellow in the Poverty, Health and Nutrition Division at the International Food Policy Research Institute (IFPRI), where he joined as a postdoctoral fellow in 2008. A development economist, his research mostly focuses on the nexus between agricultural development and other development processes and outcomes, such as economic growth, structural change, poverty, nutrition, demographic change, and political processes. He has published in a variety of journals, including World Development, Journal of Development Studies, World Bank Economic Review, World Bank Research Observer, Population and Development Review, Agricultural Economics, Food Policy, Journal of International Development, and the Journal of International Political Economy.

Calogero (Gero) Carletto is a Lead Economist and Manager of the Living Standards Measurement Study (LSMS) program in the Development Research Group of the World Bank. His current research interests are in the areas of food security, agriculture and rural development, as well as data collection methodology. He has extensive experience in the design, implementation and analysis of household surveys. Prior to joining the World Bank, he had worked at the International Food Policy Research Institute (IFPRI) and various UN agencies.

Carlo Cafiero leads the Food Security and Social Statistics Team of the Statistics Division in FAO and has consulted with FAO since 2002 is on training and development projects in Syria and Bangladesh. He is assistant professor of agricultural and rural economics at the University of Naples Federico II and has taught statistics at the Graduate School of the College of Agriculture at the University of Naples and econometrics at the Master in Agricultural Economics and Policy of the " Centro di Portici ", the oldest post-graduate training institution in Agricultural and Rural Development in Italy. In the fall semester 2009 he was a visiting scholar at UC Berkeley, where he worked on agricultural commodity price volatility.

Panel 2: Building the evidence base for policies and programmes – innovative approaches to analysis, chaired by Daniel Maxwell.

Daniel Maxwell is Professor at the Feinstein International Center and chair of the Department of Food and Nutrition Policy in the Friedman School of Nutrition Science and Policy at Tufts University. He joined the Feinstein Center in 2006 to lead the research program in food security and livelihoods in complex emergencies and to teach courses in food security and humanitarian studies. His recent research has focused on food security and livelihoods in protracted crises, impact assessment of livelihoods and disaster risk reduction programming, and the measurement of food security – in terms of both early warning and assessment, and the impact of programming. He is the co-author, with Chris Barrett of Cornell University, of the recent book, *Food Aid After Fifty Years: Recasting Its Role* (2005), which has already had far-ranging impacts on food aid practice and policy; and co-authored with Peter Walker *Shaping the Humanitarian World* (2009).

Agnes Quisumbing, a senior research fellow, co-leads a research program that examines how closing the gap between men's and women's ownership and control of assets may lead to better development outcomes. Her past work at IFPRI analysed the factors that enable individuals, households, and communities to move out of poverty over the long term, and on how resource allocation within households and families affects the design and outcome of development policies. Her research interests include poverty, gender, property rights, and economic mobility. She led a study on intrahousehold allocation and development policy in Bangladesh, Ethiopia, Guatemala, and South Africa. She has also worked on women's land rights in Ghana, the Philippines, and Sumatra. She has been involved in longitudinal studies in Bangladesh, Guatemala, and the Philippines, and is currently engaged in impact evaluations of agricultural development programs, focusing on their impacts on gender asset inequality, in South Asia and sub-Saharan Africa.

Nancy Mock has over 30 years experience in the Humanitarian, Food Security and Public Health fields. She has served on numerous expert advisory panels concerned with food and nutrition security information methodologies and was a co-developer of the Famine Early Warning System (now FEWSNET). She is a co-founding member of the Disaster Resilience Leadership Academy at Tulane; former director of the Newcomb College Center for Research on Women and founder of food security studies at Tulane. She is a tenured Associate Professor in International Health and International Development.

John L. Newman is currently Lead Poverty Economist in the Economic Policy & Poverty Sector, South Asia Region of the World Bank. He is working on several activities related to nutrition in Bangladesh, together with the REACH Initiative. He has held several positions in the operational and research departments of the World Bank, most recently as Lead Economist in the Poverty and Gender Group of the Latin American Region and as World Bank representative in Peru and Bolivia. In Peru he worked alongside other development partners on raising the profile of nutrition work in the political agenda. Prior to his World Bank experience he was Assistant Professor in Economics and Latin American Studies at Tulane University. He has published in the areas of impact evaluation, labor economics, and poverty analysis.

Panel 3: Food and nutrition security information – evidence generation is not enough, chaired by Marie Gaarder.

Marie Gaarder is the Director of the Evaluation Department in the Norwegian Agency for Development Cooperation (NORAD). Prior to joining NORAD she was the Deputy Executive Director of the International Initiative for Impact Evaluation, 3ie. She has extensive experience managing operational and research projects with a development focus and her publications cover areas including environmental health, conditional and unconditional cash transfer programs, the institutionalization of government evaluation, and the use of evidence in decision making.

Howard White is the Executive Director of 3ie (International Initiative for Impact Evaluation), co-chair of the Campbell International Development Coordinating Group, and Adjunct Professor, Alfred Deakin Research Institute, Geelong University. Howard has worked extensively on development-related issues in countries across Africa and Asia and has published over 60 papers in internationally refereed journals and several books, focusing on aid effectiveness and poverty reduction. He is Managing Editor of the Journal of Development Studies and the Journal of Development Effectiveness. He has taught at the Institute of Social Studies in The Hague and the Institute of Development Studies at the University of Sussex, and continues to engage worldwide via workshops and training opportunities for policymakers on topics related to development effectiveness and impact evaluation.

Ricardo Aparicio is the Deputy Director-General for Poverty Analysis, National Council for the Evaluation of Social Development Policy, Mexico. He, he is currently Director of Poverty Analysis and Measurement at the National Council for Evaluation of Social Development Policy (Coneval). He was a member of the former Technical Committee for Poverty Measurement and has also been a researcher at the Latin American Faculty of Social Sciences, evaluation consultant at the National Council of Population and Research Director of the General Directorate of Reproductive Health. Mr. Aparicio has extensive experience in research on social sciences. His current research interest is the study of poverty and social development issues based on a human rights perspective

Edoardo Masset is a Research Fellow at the Institute of Development Studies, UK. Edoardo is an agricultural and development economist with over ten years of experience in international development in Asia, Africa and Latin America. He has extensive experience in designing and conducting impact evaluations of development interventions. He has excellent statistical and econometric research skills, and considerable experience in managing local economic development programmes in Honduras and Mongolia. His is currently working on the following projects: impact evaluation of the Malian home grown school feeding programme with the Partnership for Child Development/Imperial College; randomised evaluation of a participatory monitoring programme in the Philippines by ACDI/VOCA; impact evaluation of the Millennium Village Project in Northern Ghana.

DAY 3 LOOKING FORWARD: KEY PRIORITIES FOR THE NEXT FIVE YEARS

Mary Amuyunzu-Nyamongo is currently the Executive Director and co-founder of the African Institute for Health and Development (AIHD), an organization based in Nairobi, Kenya that conducts research, training and advocacy on health and development issues. She is also the African Regional Coordinator of Health Promotion with the Global Program of Health Promotion Effectiveness, which is funded mainly by the Center for Disease Control through the International Union of Health Promotion and Education. She is also engaged in collaborative research with the International Center for Research on Women, the Swedish Agency for International Development, and the Poverty and Economic Policy Network.

Bilha Maina is a social entrepreneur with a passion to make a difference in the economic lives of people living in poverty. Since 2008, Bilha has worked consistently to introduce new and useful agriculture technologies that will reduce post harvest losses for the cereal sector. She is also building a sustainable agriculture value chain system for the commodities market across East Africa. Bilha supports farming communities so that they increase their productivity and generate sustainable incomes and that they drive the realization of the African green revolution. As a farmer, Bilha understands 1st hand the challenges and negative impacts that smallholder farmer face ranging from: lack of adequate information to enable planning, effects of climate change; lack of proper inputs; lack of appropriate farming and processing tools and skills to manage those that are locally available; poor access to credit facilities; lack of storage systems to mitigate high post harvest losses; poor financial literacy skills to employ good money management. Between 2007 and 2008, Bilha served as the private sector liaison officer for the World Bank in Kenya.

Dina Mabell Lopez Melendez is the Food Safety Officer, Division of Integrated Food Security Support Service (TCSF), Policy and Programme Development Support Division (Technical Cooperation Department) of FAO. She has vast experience in the field of rural development and food security since 1995, in the formulation and implementation of projects initially with national and international NGOs, especially in organizational strengthening and capacity building in indigenous communities, including returnee population, displaced and resistance due to internal armed conflict.

Chris Leather has over 18 years experience in development and humanitarian work. He has managed emergency food security programmes in Liberia, Kosovo, Macedonia, Tajikistan, Indonesia and throughout Southern Africa, mostly for Action Against Hunger. From 2002-2009 he worked for Oxfam GB, first as an Emergency Food Security and Livelihoods (EFSL) Adviser, and later as the EFSL team leader. He was responsible for coordinating the development and implementation of the organization's EFSL programme policy and strategy, informing global advocacy on hunger and food crisis and managing a team of specialists providing technical support to country programmes and regional offices. Between April 2009 – November 2010, Chris was been based in Rome representing all of the Oxfam affiliates and leading the confederation's international policy and advocacy work on food and agriculture in relation to the Rome based agencies. He has been the Chair of the interagency Integrated Phase Classification Steering Committee and until June 2011 was one of four civil society members of the Committee on World Food Security (CFS) Advisory Group. Chris is now an independent consultant, living in Rio de Janeiro, and is currently providing support to the International Food Security & Nutrition Civil Society Mechanism, which facilitates civil society participation in the CFS.

Haven D. Ley is a Senior Program Officer with the Bill & Melinda Gates Foundation. Haven leads a team that ensures that environmental, social and nutrition benefits of agricultural production are optimized and that risks to natural resources and household welfare are minimized. She began her work with the foundation as a Program Officer, developing and managing a portfolio of grants targeting gender constraints to pro-poor agricultural productivity; notably women farmers' disproportionate lack of access to agricultural inputs, agricultural knowledge and markets. She contributes to overall foundation learning and leadership on gender issues in development. Prior to joining the foundation, Haven worked for several years as a Senior Program Officer with the Millennium Challenge Corporation (MCC),

where she developed and led implementation of the MCC Environment and Gender Policies and conducted due diligence systems analysis and provided oversight on bilateral treaties with the Lesotho, Ghanaian and Tanzanian Ministries of Finance. She has also managed economic competitiveness programs funded by the World Bank and USAID with Chemonics International, notably in Albania, Mongolia and South Africa.

Joyce Kanyangwa Luma is the Chief of the Food Security Analysis Service, United Nations World Food Program in Rome. She has previously covered South West Asia, the Caucuses and southern Africa regions as a regional vulnerability analysis and mapping (VAM) advisor. Before joining WFP, she worked for in Zambia managing a multi-agency funded Household Food Security, Nutrition and Health Monitoring System, which included leading household food security surveys and analysis as well as the Multiple Cluster indicator Surveys (MICS) for measuring progress towards the UN children goals. Prior to that, she was a research fellow/ lecturer at the University of Zambia.

Marie Ruel is director of IFPRI's Poverty, Health and Nutrition Division since 2004. From 1996 until her current appointment, she served as Senior Research Fellow and Research Fellow in that division and led the Multi-country Program on Challenges to Urban Food and Nutrition and the Global Regional Project on Diet Quality and Diet Changes of the Poor. Prior to IFPRI, she was head of the Nutrition and Health Division at the Institute of Nutrition of Central America and Panama/Pan American Health Organization (INCAP/PAHO) in Guatemala. Dr. Ruel received her Ph.D. in International Nutrition from Cornell University and her Masters in Health Sciences from Laval University in Canada. Dr. Ruel has worked for more than 20 years on issues related to policies and programs to alleviate poverty and child malnutrition in developing countries. She has published extensively in nutrition and epidemiology journals on topics such as maternal and child nutrition, food based strategies to improve diet quality and micronutrient nutrition, urban livelihoods, food security and nutrition, and the development of indicators of child feeding and care practices. She has served on various international expert committees, including the National Academy of Sciences, the International Zinc in Nutrition Consultative Group, and scientific committees established by the Food and Agriculture Organization and the World Health Organization.

Suriyan Vichitlekarn is the Head, Agriculture Industries and Natural Resources Division (ASEAN) Secretariat. He is a marine science graduate from Faculty of Fisheries, Kasetsart University, Thailand. He continued his master study in Management of Agricultural Knowledge Systems (MAKS) at the Wageningen Agricultural University, the Netherlands. With over 18 years of services, he has served in various positions, working on various issues and areas, including marine research, fisheries extension and training, fisheries statistics and information, regional fisheries programme development, etc. Before leaving the organization, he was the Policy and Programme Coordinator, overseeing the organizational policy and programme for four years. His main responsibilities at ASEAN are to facilitate and coordinate the development and implementation of policy and cooperation related to food, agriculture and forestry sectors. He is also overseeing cross cutting issues such as food security, food safety, transboundary animal and pest diseases, etc. He has engaged in the development of a regional rice reserve, ASEAN Rice Trade Forum, ASEAN Food Security Information System (AFSIS), public-private partnership for food security, investment in food security and agriculture, enhancing productivity and profitability in agriculture, and food security impact of climate change or bioenergy practices.

ANNEX V
ACTION PLAN

ISS Action Plan
The way forward: key actions for the next five years

Rome, March 2012

Beginning with a short review of the Symposium's main themes, this brief looks at how those themes were addressed by the panel and audience during the third day. It then outlines key priority actions - informed by the Symposium's plenary, panel and audience discussions – which aim to move the Symposium's agenda towards implementation.

I. Symposium themes: review and response

Most of the Symposium's dialogue centered around three main themes:

- measuring food and nutrition security;
- generating more and better evidence; and
- linking information to decision making.

Key points which emerged from the Symposium are outlined below:

Measuring food and nutrition security: Repeated calls for a gold standard were countered with the argument that the multidimensional nature of food security makes reaching consensus on a single set of indicators difficult. The counter proposal was to acknowledge the complexity of the subject and move towards a distillation of best practices, where indicators are mapped according to when and how they should be used. There was also a general consensus that *suites* of indicators, as opposed to a single suite, might be the best solution. For example, incorporating a set of common food security indicators into nutrition surveys such as Multiple Indicator Cluster Surveys (MICS) could be extremely useful both in terms of assessing links between food security and nutrition across time and space, and in terms of capitalizing on existing methodologies. In addition to nutrition surveys, large scale household consumption and expenditure surveys (HCES) were presented as having great potential for capturing information on food and nutrition security at country level. Again, however, the challenge is to identify which information for a suite of indicators could best be collected in existing Living Standard Measurement Study surveys (LSMS) and other types of HCES surveys.

Generating better evidence: The consensus was that much progress has been made since the 2002 Symposium. In addition to more sophisticated methods of data analysis, more surveys are being conducted and a stronger focus is being placed on the household and in some cases, the individual. Data are also moving beyond averages, which can mask important variations and increasingly towards disaggregation (e.g. gender, shocks, and seasonality). However, opportunities for improvement exist. This is most evident in the area of impact evaluation, which remains an afterthought in many projects, brought in *ex post* or neglected altogether. Impact evaluation should be included in project design from the very beginning, as collecting the proper information at baseline not only allows for assessment at the close of a project, but also creates feedback loops which allow for adjustments mid course.

Linking information to decision making: It was noted repeatedly that there are not enough examples of successful linking of food and nutrition security information to decision making. Closing the gap between assessment and policy continues to be a major challenge and represents a formidable task for moving forward. A number of subthemes on this subject emerged by the third day, including:

(1) the tendency to identify policy makers as a homogenous group rather than recognizing the range of different actors and situations that contribute to policy making;
(2) the observation that policy decisions are more often political than technical, and that analysts need to take this political economy perspective into account when seeking government collaboration and commitment;
(3) capacity in many countries is so low that policy formulation and consequent implementation is severely constrained, regardless of evidence; and
(4) currently not enough evidence is demand driven, nor is the related information presented in a way that is accessible and attractive to policy makers.

II. Key actions for the next five years

Key actions for the coming five years, discussed during the final day of the Symposium, aim to address various constraints in order to ensure a causal chain which begins with accurate measurement and ends with better informed and more effective policy and programming:

Objective 1: Advance the measurement of food and nutrition security in large scale surveys
Improve the quality and relevance of food consumption and nutrition data collected in surveys, namely HCES but also possibly MICS and DHS. These surveys have great potential to increase the sheer volume of food and nutrition (FNS) data that are collected and to improve comparability of the data across time and space.

Objective 2: Develop a technical framework for assessing FNS in a variety of contexts
Create an accessible "best practices" technical framework which captures and organizes the current proliferation of FNS indicators. The framework will provide guidelines regarding which indicators and instruments to use given a specific context and purpose. It will also include guidelines on how to assess "21st century" issues such as climate change, urbanization, nutrition transition, social context, persistent food price volatility, and gender inequities. This will require shifting away from conventional and existing assessment paradigms towards others. This may include, for example, disaggregating data collection and analysis to better understand individual vulnerability to and consequences of food and nutrition insecurity.

Objective 3: Improve the link between information generation and policy making
Determining the needs of policy makers and finding mechanisms for the better translation of information is an essential step for increasing the use of demand driven data for evidence based policy formulation and implementation. Activities under this objective include facilitating South-South knowledge exchanges to share positive experiences and lessons learned and engaging the media systematically so as to improve information translation into policy change.

III. Implementation plan for key actions

Mechanisms for the implementation of the key actions were identified and discussed during the Symposium. Two principles were underlined: (1) use existing coordinating mechanisms and platforms; and (2) design the implementing global governance structure in a way that assures accountability.

The Symposium identified the nascent Food Security Information Network (FSIN)[19] as a possible host for the different technical consultations foreseen in order to carry out the key actions presented above. Other coordinating mechanisms, namely the UN Statistical Commission's Inter Agency Working Group on Food Security, Sustainable Agriculture and Rural Development, were proposed to address specific issues. Progress made on the three objectives will be reported by the Expert Committee on FNS Measurement (see below

19 The FSIN was first conceived in 2010 through consultation with the EC and USAID at a Symposium on Information Systems held in Brussels. The FSIN has three main objectives, which are to a) strengthen country and regional food security information; b) help propose and establish food security information standards, harmonize methods, share best practices; and c) advocate and raise awareness about food security information. The FSIN has been formed through joint partnership between FAO, IFPRI, and the WFP with support from a variety of stakeholders including donors (USAID and the EU/EC in particular), regional organizations and representatives from national food security information systems.

for further details) to the Committee on World Food Security (CFS) and the UN Statistical Commission, which will serve as accountability mechanisms.

It was agreed that an Expert Committee on FNS Measurement would be established to follow up on the implementation of the objectives determined at the Symposium. The Expert Committee could be hosted by the FSIN with links to the UN Statistical Commission Interagency Working Group. The latter will be responsible for developing the methodological framework (Objective 1), while the Expert Committee on food and nutrition security measurement will be responsible for its implementation. This latter committee will also be responsible for developing the Technical Framework (Objective 2). Sub Committee Working Groups will be formed to address specific topics to inform the Technical Framework. Some of these groups will provide guidelines on assessing the “21st century” issues cited above, while others will focus on cataloguing and distinguishing between existing tools. The Expert Committee on FNS Measurement, through the FSIN, is also expected to lead the work in Objective 3.

ANNEX VI
PARALLEL SESSIONS ABSTRACTS

List of sessions

Austria room (9:00 - 17:30, Room C237, 2nd floor, building C)

HOW MANY PEOPLE ARE HUNGRY IN THE WORLD?

Projecting the world food situation and policy scenarios using a long-term dynamic simulator

Osamu Koyama[20]

Introduction

Various institutions are currently making future projections of the world food situation. Many of them use medium-term econometric models, which are not necessarily suitable for reproducing long-term dynamic changes. Since the beginning of the 21st century, dynamic phenomena such as the expansion of biofuels and the worldwide economic recession have had tremendous impact on the world food market. However, existing econometric models face common limitations in estimating the effects of these issues. This study aims to introduce a tool, "a long-tem dynamic simulator", suitable to addressing this challenge. It also presents some of the tool's analytical results.

Purpose of the work

For achieving global food security, it is essential to grasp the long-term trends implicit to world food problems. Thus, simulations of various scenarios are widely conducted as practical exercises. However, current medium-term econometric models are either too detailed or too rigid for these kinds of analyses. The simulator used in this study is simply structured, easily handled and particularly capable of making long-term analyses. Using this tool, we can estimate the impact of dynamic change on productivity, consumption patterns, and demographic and economic structures as well as on related global and regional food security policies.

Methods

System dynamics methodology for long-term assessment began to be widely used in the 1970s to handle simultaneous analysis of multiple dimensions of data. To overcome the limitations of existing models, a new framework, which linked together the method of econometric models and the concept of system dynamics, was designed. The current version is basically a price equilibrium model, but is unique in the flexible application of equations and parameters. These are synthetically applied like a system dynamics model, so that long-term structural changes can be easily reflected. Although the data utilized are highly aggregated in terms of geographic regions and commodity groups, they are sufficient to provide valuable information on the nature of many global food problems.

Policy implications

Simulators of this kind are among the best tools to predict the long-term impact of policy decisions. They are especially relevant when the global coordination of national and regional policies is necessary at various international forums. Results of simple dynamic simulator scenario analyses show clearly what will happen to the global and regional food sectors in events such as continued low global GDP growth, modest growth of crop yields and expansion of biofuels. By customizing the dynamic simulator further, it can serve as a powerful tool for decision-making across a wide range of issues.

Conclusions

In order to improve on the results provided by medium-term econometric models - currently widely used to inform policy formulation - a revised version of a long-term dynamic simulator was developed. With this tool, long-term dynamic structural changes which are occurring in the global food sector of the 21st century can be concisely and properly analysed, as a result overall and long-term pictures of global food problems can be obtained by those involved in relevant policy decisions.

20 Japan International Research Center for Agricultural Sciences

Improving the responsiveness of FAO's undernourishment numbers to economic shocks

David Dawe, Solomon Asfaw, Ali Doroudian, and Cristian Morales-Opazo[21]

Introduction

FAO's undernourishment estimates rely on a parameter (known as the Coefficient of Variation, or CV) that measures the distribution of energy intake across a population. The CV is typically constant for any given country across time. However economic theory suggests that this parameter is a function of income and prices, and thus should vary over time.

Purpose of the work

The purpose of the work is to create a simple method that can be practically implemented to make the CV a function of income and prices so that it will vary over time for any given country. This will make the FAO undernourishment estimates more responsive to short-term and long-term changes in income and food prices. Making the CV a function of these variables could be particularly important in the context of countries that have experienced rapid long-term economic growth, such as many Asian economies.

Methods

The method uses widely available data on real GDP per capita and real staple food prices, and will analyse those data using basic econometric techniques.

Policy implications

Depending on the results of the estimations, use of such a method could substantially change the evolution of FAO's undernourishment estimates over time, with consequent implications for governments, development and aid agencies, advocacy groups, and other organizations which use FAO's estimates.

Conclusions

Taking account of variations in income and prices will improve the quality of FAO's undernourishment estimates.

Improving the measurement of undernourishment: estimating and accounting for the correlation between food intake and energy requirements

Gustavo Anriquez, Erdgin Mane and Natalia Merkusheva [22]

One of the main criticisms of the way FAO currently measures undernourishment is that its methodology ignores the fact that individual food consumption is correlated with the energy requirements of the individual (Svedberg, 2002). This oversight would result in a severe overestimation of undernourishment. There is certainly the potential for a large error due to the fact that food consumption and energy requirements correlate, however this issue in the literature has never gone beyond a theoretical concern. In this paper we tackle the issue upfront by estimating food consumption and individual energy requirements. This is possible thanks to a unique dataset that contains anthropometric measures for children and adults, a questionnaire on time-use, and employment and food consumption modules: the nationally representative Guatemala, LCMS survey. Knowing the physical activity level and actual weight/height of a person, as well as their gender and age, makes it possible to adequately estimate individual energy requirements; these should, on average, be higher than the minimum dietary energy requirement (MDER) traditionally used by FAO. With estimates of food consumption and energy requirements we are able to (1) provide more accurate estimates of undernourishment. However knowing that surveys as complete as the one used in this study are generally not

21 All authors are from FAO's Agricultural Development Economics Division

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available, additional to non-parametric methods, we (2) propose a parametric method to estimate undernourishment, that accounts for the correlation between food intake and energy requirements.

Multidimensional indexes of food security: a review of the literature and some operational proposals

Elisabetta Aurino[23] and Carlo Cafiero[2425]

As food insecurity is recognized as a multifaceted phenomenon, it is clear that no single measure can adequately capture its many dimension, and that a suite of indicators is needed to properly inform policy making. Nevertheless, there are occasions when it is necessary to rank regions, countries, sub-national groups, or even individual households, based on the severity of food insecurity, to, for example, target policies or to allocate funds. In these situations composite indices are called for.
The construction of composite indices, however, involves a number of subjective choices that are not always conveyed in a transparent way to interested stakeholders. The issue of value judgments is intrinsic to both the main steps involved in the construction of composite indicators: identification and aggregation. While the former relates to the choice of the informational basis, i.e. identification of relevant dimensions and selection of indicators, the latter is concerned with the selection of the aggregation procedure, i.e. weighting and aggregation methods.

Because of the subjectivity involved in their construction, doubts are often raised about the robustness of multidimensional indices and the meaningfulness of the associated policy message. For this reason, methodological soundness is required to limit the extent to which subjective choices can influence metrics, and the ensuing normative prescriptions.

In this context, the aim of the present paper is to suggest a methodological framework that can guide the process of developing a multidimensional measure of food security. In particular, we will focus on two tools that can decrease the subjectivity involved in both steps. Regarding identification, we will discuss the role of multivariate analysis for validating the theoretical framework, as well as for guiding the selection of key dimensions and indicators. With regards to the choice of aggregation method, we will focus on the use of expert panel information techniques as support tools in the identification of the relevant weighting structure. In particular, we will explore the extent to which the Analytic Hierarchy Process (AHP) – a widely employed methodology for multi-attribute decision-making – can facilitate emergence of a robust weighting structure. Moreover, AHP will also help in generating transparent public discussion and critical scrutiny over the relative importance of selected dimensions and indicators and, in turn, in identifying priority areas for food security policies.

We suggest that the joint use of variance-based techniques and expert panel opinion tools will enhance the overall robustness and transparency of a composite indicator of food security. By ensuring such methodological soundness, the robustness of the indicator, as well as the credibility of derived policy prescriptions, will be enhanced.

The sensitivity of food security in India to alternate estimation methods

Sharad Tandon and Maurice R. Landes[26]

In this study, we perform a quantitative assessment of food security in India in 2004-2005 using a large household consumer expenditure survey conducted by the Government of India's

23 Università degli Studi Roma Tre and the Statistics Division, FAO
24 Statistics Division, FAO
25 Statistics Division, FAO
26 Both authors are from the Economic Research Service, USDA

National Sample Survey Organization (NSSO). The stratified survey of approximately 125,000 households reports household expenditures and quantities purchased of 152 separate food items, allowing us to estimate household calorie consumption and extrapolate the results to the rest of the population.
Following the estimation method implemented by Deaton and Subramanian (1996), we estimate consumption of non-processed calories, processed calories, and consumption of calories in meals eaten outside the household, and find that average per capita consumption is 2225 calories per day. Based on the minimum dietary energy requirement used by the Government of India, these calorie estimates suggest 508 million people are undernourished in the country.

However, major assumptions underlie each consumption estimate. We assess sensitivity by slightly altering the assumptions required to estimate each source of calorie consumption. In particular, we use alternative sources to identify the amount of calories in non-processed foods, assume different markups of processed foods over non-processed foods, and take into account the large amount of uncertainty in the number of calories consumed in meals outside the household. Ideally, estimates of calorie consumption would be similar under a wide variety of assumptions, and the range of estimates would be small. However, each of the changes results in significant differences in calorie consumption and the number of undernourished households. The difference between the highest and lowest estimate of the number of undernourished households is approximately 17percent of the sample, which extrapolates to approximately 173 million people in the entire country. This level of uncertainty in India alone represents a sizeable share of the food-insecure population in the world.

Aside from comparing average calorie consumption and the number of undernourished people, we also demonstrate how the entire distribution of calorie consumption across the country changes under different assumptions. In particular, we demonstrate how these measurement issues differentially affect households with low and high levels of consumption, which introduce potential asymmetries in the estimated distribution of calorie consumption. Additionally, we also compare both the estimation strategy and the estimates of food insecurity in this study to those conducted by the Government of India, the International Food Policy Research Institute (IFPRI), the Food and Agriculture Organization (FAO), and the U.S.D.A.

Given the significant amount of measurement error in estimates of calories consumed, it is important to analyse not only household consumption surveys, but also qualitative assessments of food security and health surveys collecting anthropometric measures that accompany undernourishment, such as stunting. A combination of multiple types of studies is likely to produce the best assessment of food security, as well as increase the certainty with which decision makers assess efficacy of policies aimed at reducing food insecurity.

INNOVATION IN ANALYTIC TECHNIQUES: ASKING QUESTIONS, GIVING SOLUTIONS

Comparing successive anthropometric surveys: reliability and robustness of survey results at the national and sub-national level

Maarten Nubé [27] and Vasco Molini[28]

Introduction

Results from anthropometric surveys (DHS, MICS, other national surveys) are increasingly used, not only for assessing the nutritional status of populations or population segments, but also as an overall indicator of the standard of living and prevalence of poverty. While there are many studies which address quality aspects of reported results on health indicators such as infant and child mortality, the prevalence of HIV/AIDS, and coverage of vaccination programmes, there is limited information on the quality and reliability of results of anthropometric surveys.

Purpose

The objective of the present study is to compare results of successive anthropometric surveys, both at national and sub-national levels. The comparison is expected to reveal two types of information: first, comparing data from successive surveys can be used to assess the reliability of commonly available anthropometric data; second, results of successive surveys provide an opportunity to assess the robustness of within-country patterns of undernutrition.

Methods

For the assessment of reliability, comparisons are made between results of anthropometric surveys (height-for-age in children), implemented in 35 countries, with time spans between surveys of two years or less. For the assessment of robustness, the comparison is based on data from 45 countries (height-for-age and weight-for-age in children, BMI in adult women), with an average time span between surveys of approximately five years. For the analysis, simple statistical tests such as correlation index and Spearman rank index were used.

Results

Reliability: The national level comparisons revealed a mean difference in prevalence of low height-for-age in under fives between successive surveys, held less than two years apart, of 4.6percent. For 50percent of the available datasets, the difference was less than 3percent

Robustness: The comparisons at sub-national level revealed that about half of the available datasets were very similar for within-country distributional patterns of undernutrition (correlation index and Spearman rank index significant at 5percent level).

Policy implications and conclusions

Results reveal that outcomes of anthropometric surveys such as the DHS and MICS surveys are generally of reasonable to good quality, with error margins in the order of magnitude of a few percentage points. Furthermore, results for intra-country geographical patterns of undernutrition tend to be remarkably robust. For a meaningful interpretation of anthropometric outcomes at national and sub-national levels, it is recommended to consider results of at least two successive surveys reporting on national and sub-national undernutrition prevalence rates in children and adults.

Is child malnutrition a local phenomenon? Micro-level estimation of child malnutrition in rural and urban Mexico

Peter Lanjouw[29] and Ericka Rascon [30]

27 Centre for World Food Studies (SOW–VU) VU–University, Amsterdam, Netherlands
28 World Bank (Mozambique)
29 DECRG
30 University of Essex

This paper presents estimates of child malnutrition at the local level in Mexico based on an adaption of the small-area estimation methodology introduced in Elbers, Lanjouw and Lanjouw (2002) and explored further in Fujii (2011). Drawing on data from the National Survey of Health and Nutrition 2006 and the Second Count of Population and Dwellings of 2005, anthropometric indicators were imputed into census records and analysed to estimate child malnutrition outcomes at the municipality level in Mexico. The results confirm the value of scrutinizing anthropometric indicators alongside poverty indicators to better comprehend the heterogeneity of welfare outcomes at the municipality level, and to improve targeting of programmes aimed at enhancing early childhood development. Comparing the joint spatial dispersion of poverty and stunting measures reveals that municipalities in Mexico's poorest states tend to display high rates of both poverty and malnutrition. At the same time, however, a non-negligible number of municipalities in states with moderate poverty also display similarly high rates of malnutrition. Although national and state level analysis has tended to find that the highest incidence of malnutrition in Mexico occurs in rural areas, the analysis in this paper reveals that malnutrition is also a pressing concern in urban areas – particularly in small and medium sized towns ranging in size from 15,000 to 500,000 inhabitants.

Testing a model for resilience: towards prevention and treatment of undernutrition in predictable emergencies

Gabrielle Smith, Anne Marie Mayer and Amanda McClelland[31]

Introduction

This paper presents an overview of the rationale, objectives and components of Concern Worldwide's Resilience Model, developed to support the adoption of new approaches to dealing with the problem of undernutrition in predictable emergencies.

Traditional humanitarian responses to food security and nutrition start after prevalence of global acute child malnutrition passes emergency thresholds. This causes high mortality, whilst pushing poor households further into poverty and increasing their vulnerability to future shocks. Lack of timely response to early warning signs was noted in the Sahelian nutritional crisis in 2005.

Purpose

Based on lessons learned from the 2005 crisis, in 2009 Concern Worldwide responded to information on sporadic rainfall and estimated cereal deficits in Niger. Through review of the causal framework of malnutrition and indicators of risk factors in the region, Concern designed an early, multi-sectoral, preventative response to reduce the impact of poor harvests in 2010 on food and nutrition security. The response was implemented before global acute malnutrition (GAM) reached critical thresholds. Partnership with Tufts University enabled evaluation of the approach. Changes in household nutrition indicators were reported but the challenges of research in a complex emergency setting did not permit assessment of causality.

Building on lessons learned from Niger, Concern, in partnership with Tufts University, has developed a "Resilience Model", for deployment and testing. Concern is using this approach to address deficiencies in emergency response to food insecurity and malnutrition. The approach is a multi-sectoral response to causal factors that move a country from endemic to crisis levels of malnutrition. It aims to shift programming from treatment only towards disaster risk reduction, enabling staff to identify early warning indicators, plan and deliver a timely response that addresses multiple causes of spikes in under-nutrition simultaneously.

Methods

The model centres on building long-term resilience through integrated development programmes, through which the regular surveillance of critical indicators by Concern staff and partners is realized. Early indicators of a potential food insecurity crisis, above an agreed threshold, act as "triggers" leading to early response. This response comprises planned surge

31 All authors are from Concern Worldwide

capacity of nutrition treatment alongside targeted interventions designed to limit impact of underlying causes of malnutrition.

The research is focused on developing standard indicators and funding mechanisms which can be used to signal and support a true early response at scale. The partnership with Tufts University is supporting the development and testing of a surveillance system, including identification of appropriate indicators from available sources and establishment of trigger thresholds. The paper details challenges to be addressed in implementing this approach and generating evidence of impact.

Policy implications

The paper presents Concern's strategy for policy influence through dissemination of findings to practitioner and policy audiences in country and globally. Evidence building and engagement with governments and other stakeholders are needed to ensure that this model, when proven, can be taken to scale.

Conclusions

A new way of working has been developed within Concern to respond to identified limitations of the conventional approach to nutrition emergency response.

Advancing food security analysis: a new applied macro-micro framework

Olivier Ecker and Clemens Breisinger [32]

Most commonly used food security measures refer to either the macro-economy or the household level. In addition, the computation of many indicators relies on extensive data collection (which can be challenging in times of crisis and conflict) and focuses on the status quo rather than offering projections for the future.

To address these challenges and contribute to a more integrated approach for assessing food security and designing related development strategies, we propose a new applied analytical framework.

Conceptually, this food security framework extends existing frameworks (1) by incorporating macroeconomic aspects of food security; considering external shocks including economic crises, natural disasters, and conflicts as well as interventions in the form of policies, investments, and programmes at different levels; and (2) by emphasizing the importance of nutrition for economic and social development at the national and household level. In accordance with the World Food Summit definition of food security, the proposed framework treats nutrition as an integral part of food security and links the concepts of poverty and food security.

We argue that nutrition outcome indicators such as child anthropometric measurements provide robust and reliable measures for assessing food security at (intra-)household level, and that an expanded version of the ratio of food imports to total exports provides a good proxy for food security at macro level.

We apply the framework by linking dynamic-recursive computable general equilibrium (DCGE) models and household survey-based nutrition models to simulate and project the nutrition outcomes of specific policies and external shocks.

To demonstrate the usefulness of our macro-micro simulation approach for impact assessment in the absence of other data and for forward looking food security strategy evaluation, we present examples of simulation results of selected economic policies using data from Yemen. The results show that growth in "promising" industry and service sectors is more beneficial for reducing hunger in Yemen than agricultural growth. Yet neither agricultural nor non-agricultural growth is sufficient to reduce child malnutrition significantly.

32 Both authors are from the International Food Policy Research Institute

Analyzing the nutritional impacts of price and income related shocks in Malawi and Uganda

Kenneth Harttgen[33] and Stephan Klasen

The recent food price crisis and the following global economic recession have led to a large increase in the number of people suffering from hunger. In this paper we adopt a very simple simulation approach to analyse how negative short-term income shocks on households and changes in the price of specific foods (maize) and food groups (staples) affect calorie consumption of individuals and food poverty. We illustrate our approach using household survey data from Malawi and Uganda. We find large variations within countries in food poverty. We also find that price shocks for staple foods have a very large impact on food security in both countries while the impact of income shocks is considerably smaller. Moreover, we find that the food security impacts of price shocks are substantially larger in Malawi than Uganda as people in this country rely much more on staple foods for their calorie consumption. This paper demonstrates that it is possible to estimate the food security impact of price and income shocks using a relatively straight-forward method that can be used for quick cross-country assessments of the impact of exogenous shocks on food security.

33 Both authors are from the University of Göttingen

CONCEPTUALIZING FOOD AND NUTRITION SECURITY THROUGH DIFFERENT LENSES: HOW DOES THIS AFFECT MEASUREMENT?

The territorial competitiveness index: the SAM approach to support decision making for food security

P. Annoni [34], L.G. Bellù [35], V. Cistulli, S. Marta, A. Saltelli and F. Timpano[36]

Hunger and poverty are multidimensional problems that include low incomes, inequalities in access to productive assets, unemployment, low health education and nutrition status, natural resource degradation, vulnerability to risk and weak political power. In addition to agriculture, several other sectors play a vital role in food insecurity reduction.
The rationale for using a territorial perspective when assessing food and nutrition security (FNS) policies and strategies is that FNS is a complex socio-economic development issue that cannot be addressed through a single sectoral approach but rather must be tackled through a multi-sectoral and multi-level approach that captures all the determinants of FNS and that integrates farm and off-farm activities in rural and urban areas.

The introduction of the territorial perspective of food security policies and strategies offers an effective framework to measure and monitor the dimensions of food security, assess vulnerability and resilience to food security shocks, address geographic socio-economic inequalities and disparities, and understand the territorial dynamics and their policy implications.

The purpose of this paper is to illustrate the food security policy implications of a combined approach based on the Territorial Competitiveness Index (TCI) and the Social Accounting Matrix (SAM). The approach integrates assessment of territorial tangible and intangible assets affecting food security (TCI), with assessment of economic flows among households and institutions within and among geographic areas.

The TCI is a livelihood-based composite index that provides a synthetic measure of the productive, human, and natural resources and social/institutional assets contributing to the food security and overall development of an area. By highlighting the relative strengths of various assets within and among territorial spaces, the TCI allows for mapping and benchmarking of food security situations and helps identify opportunities for improvement.

While TCI assesses the stock of territorial assets, SAM provides a framework for mapping the use and destination of local assets and assessing transactions (flows) and income distribution among households and economic agents. Integration of these “stock and flows” measurement tools will enhance capacity to measure the multiplier effect of investments and policies. It will therefore help decision-makers better target policy and investments for food security.

The proposed TCI-SAM approach provides the basis for a benchmarking system that ranks the territories in terms of their endogenous strengths and weaknesses and consequent ability to improve FNS and promote overall development.

An application of this approach has been tested in the Al-Ghab area of Syria. The area has been subdivided into five agro-ecological zones and a household survey complemented by secondary qualitative and quantitative data has been used to collect information on various economic indicators, household living standards, food security, and social capital, such as formal and informal social safety nets.

A comparative study of the surveyed areas reveals a strong relationship between territorial capital endowment and food security. The study also highlights key determinants of food security within each agro-ecological zone, providing insight into area-specific strategies to improve FNS.

One general major conclusion of the study is that food security is strongly dependent on investments in non-farm activities that have strong linkages with the agricultural sector, such as agro-processing and projects which promote environmental sustainability. These types of investments have considerable employment generation potential and contribute to increased FSN through higher and more stable incomes.

34 P. Annoni and A. Saltelli are from the European Commission JRC
35 L.G. Bellù, V. Cistulli, and S. Marta are from FAO's Policy and Programme Development Support Division
36 Catholic University of Piacenza

Which one to choose? Selecting food consumption measurement methods for decision-making in nutrition and food security programmes

Jennifer Coates[37], Brooke Colaiezzi, Jack Fiedler[38], James Wirth[39], Keith Lividini, and Beatrice Rogers

Food consumption and dietary intake data are critical inputs into the design, implementation and evaluation of large-scale nutrition and food security programmes.
Food consumption measurement methods vary widely in terms of how validly they can be used to meet different programme information requirements throughout the programme cycle. Similarly, these methods range widely in terms of the time, cost, and expertise needed to undertake them. Because the implicit assumptions, trade-offs, and practical implications of relying on one method over another have not always been clear, nutrition and food security programmes are often designed and implemented without appropriate, context-specific data to inform them. In many situations, this lack of clarity may result in suboptimal effectiveness of food security and nutrition interventions.

This paper strives to fill this gap in two ways. First, it presents a conceptual framework of the types of food and nutrient consumption information required by several categories of food security and nutrition interventions during each phase of the programme cycle. Second, the paper summarizes the characteristics of the food consumption measurement (FCM) methods, including their potential for quantification and disaggregation, their validity and accuracy in measuring specific indicators, and the resources required to do so.

A review of the peer-reviewed and gray literature and semi-structured interviews with 25 internationally recognized experts were conducted to assess the characteristics of 24-hour Recall (24HR), Food Frequency Questionnaires (FFQ), Food Balance Sheets (FBS), Dietary Diversity Indices, and Household Consumption and Expenditure Surveys (HCES). Each method was rated in terms of its resource requirements, validity, and accuracy for meeting each type of programme information need.

In weighing these characteristics against the data needs described in the framework, the paper concludes with a decision-tree to guide the selection of the most appropriate FCM for different types of programming decisions within given resource constraints. The review found that each food consumption method has strengths and weaknesses that vary according to purpose and context, and should be used complementarily to answer different questions and to triangulate results.

Presenting the World agriculture Watch framework: monitoring structural changes in agriculture and their impact on food security and environment, Informing policy dialogue

Marie-Aude Even[40], Hubert George, Paolo Groppo, Jean-francois Belieres, Ibrahima Bocoum, Pierre-marie Bosc and Sandrine Dury[41]

The objective of the presentation is to show how we intend to integrate food security in a systemic approach to document the process of structural changes in production units. The aim is to feed the debate through improved data sets linking evolution in structures, production dynamics and food security.

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Introduction

Agriculture is at the nexus of global challenges: these include new issues such as climate change and threats to biodiversity, as well as pending challenges such as food security. Different forms of farming organizations (ranging from small-scale family farms to large-scale enterprises) with dissimilar access to markets and resources, experience different social, economic and environmental realities and respond differently to global challenges. The current wave of agricultural investment and rapid structural change (for instance land holding size, use of hired labour, market integration) has also triggered further policy debates on the relevance and effects of different forms of farming organizations. Better access to information and analysis of these variables and their impacts is crucial for all concerned stakeholders, including farmers, and helps support inclusive policies.

Purpose of the work

The World Agriculture Watch (WAW) initiative is currently being set up and supported by FAO, with additional help from CIRAD, France and IFAD, to support inclusive policy debate on the diversity and dynamics of different forms of agriculture. It will build a multi-stakeholder platform for knowledge generation and exchange, based on a network of local observation centers anchored in existing institutions and located in areas undergoing significant structural transformations.

Methods

We shall here present the common framework WAW proposes to better understand and monitor the links between structural change, food security and the environment, within a country at the farm and territorial level and between countries. A common typology of farms (based on structural indicators related to labour, capital etc.) will be drawn up and characterized with key indicators related to food insecurity, poverty and natural resources, spanning three scales: agricultural production units, territories and markets (food chain and food systems, land and labor). We propose framing food security as a performance of production units (farms) at the household level (encompassing production and consumption) through the livelihood framework. This framework makes it possible to bring together non-market exchanges (including self consumption of agricultural production according to local diets) as well as non-farm activities contributing to income generation.

Our objective is to define a common set of indicators describing food security and analyse the effects of the types of farm structures and production dynamics on food security. The hypothesis is however that linkages between those different dimensions are not linear. For example, higher levels of production are not necessary linked with better nutrition of children, higher expenditures do not always mean higher energy intake (Bocoum, 2011).

We discuss the possibility of dealing with simple sets of data to deal with both the evolution of food security and farm structure, the availability of data at these levels and possible synergies to be drawn with existing information systems.

Linking food security measures to nutritional outcomes: some evidence from Nepal

Emmanuel Skoufias and Sailesh Tiwari[42]

A confluence of food, fuel and financial crises in the last few years has increased hunger and malnutrition in a large number of low-income countries. These events have also heightened global attention paid to food security, which remains focused primarily on the production and consumption of calories and pays limited attention to nutritional outcomes as critical determinants of future human capital. While food security is an important input into good nutrition, it is certainly not the only one. Health – which determines the capacity to absorb nutrients – and appropriate child care practices are also essential inputs. Despite a general

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agreement on this framework however, the concepts of food security and nutrition are often conflated, leading to misguided policies that assume improved nutrition outcomes will follow automatically from improved food security.

Objectives

In this paper we attempt to establish and make explicit the link between some popular measures of food security and malnutrition. Our objectives are two-fold. First, we want assess the degree to which some of these measures are correlated with nutritional outcomes, conditional on other proximate correlates of nutrition. Second, we want to propose and test the validity of an alternate measure of hunger and food security.

Methods

We use data from the recently completed survey of household living standards in Nepal (Nepal Living Standards Survey-III, 2011). The survey is nationally representative and contains a detailed module on food consumption. What is uniquely desirable about this survey is that it also collects information on child anthropometrics and subjective assessment of the incidence as well as severity of hunger within the household.

The alternative food security measure we present is based on the share of calories derived from starchy staples as proposed by Jensen and Miller (2010). This is a novel way of measuring food security and is based on the idea that at levels below subsistence, individuals have high marginal utility for calories and are likely to choose cheap sources of calories such as rice, wheat, cassava, and other high carbohydrate staples. Once subsistence thresholds are passed, marginal utility of calories begin to decline and individuals begin to value other non-nutritional attributes of food such as taste. At this point dietary diversification increases. While the actual subsistence threshold is unobserved, this “dietary transition” is and can be used as a proxy for whether or not an individual has crossed the food security threshold. By relying directly on consumption behaviour to elicit information on hunger and food security, this method obviates the need to impose caloric norms and thresholds, a source of much of the controversy in measurement of food security and hunger.

In addition to validating this methodology in terms of how well it correlates with malnutrition, we also test how well it performs vis-a-vis other conventional measures of hunger and food security.

Policy implications and Conclusion

Our work introduces and validates a novel measure of hunger and food security. The simplicity of this measure in conjunction with its ability to capture not just quantity of calories consumed but also quality, makes it very appealing. Our results will (a) enrich the menu of metrics available to measure hunger and food security, (b) enable policymakers to better identify who the food insecure and vulnerable groups are, and (c) provide evidence for policies geared not just toward bolstering caloric intakes but also towards improving dietary diversity and improved nutrition outcomes.

Food security analysis through the human development and capability approach: a proposal for field research and applications in developing countries

Francesco Burchi, Pasquale De Muro and Elena Rovaris[43]

Introduction

It is generally acknowledged that scarce food availability at the national level is not a good predictor of the prevalence of food insecurity. This is because many dimensions constitute the concept of food security and it has many potential determinants. While the literature has provided an immense contribution to the development of new definitions and indicators of food

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security, we believe that a theoretical framework guiding food security assessment in the field is missing.

Purpose of the work

In this paper we intend to use the human development and capability approach originated by the economist Amartya Sen during the 1980s in order to use it for the analysis of food security. We also draw on work carried out by Burchi and De Muro in the forthcoming background paper for the first UNDP African Human Development Report on "Food Security for Human Development". Our paper has a twofold objective: (1) to provide broad guidelines to policy makers and project/programme designers on how to operationalize the capability approach in the field; (2) to analyse two examples of this procedure where primary data were collected. The latter exercise concerns both food security monitoring and the evaluation of programmes.

Methods

First, we discuss how the capability approach can be operationalized in the field of food security and its value-added compared to other approaches such as livelihoods, entitlements, and income-based approaches. In particular, we propose a methodology of analysis of food security entailing three steps: (1) analysis of food entitlements; (2) analysis of basic nutritional capabilities; (3) analysis of the capability to be food secure. We will then be able to identify the root causes of food insecurity: such as lack of knowledge, health or other basic capabilities that constitute people's wellbeing. In so doing, it is possible to situate the study within the broader topics of wellbeing and development.

We will then analyse data collected in the field in Uganda based on this framework and examine how it contributes to the understanding of food insecurity in Uganda.

Policy implications

This research has relevant policy implications. It proposes a broad theoretical framework which helps to monitor food security in the field, and can guide data collection. This framework – which increases coherence with a multidimensional idea of food security - could be used by international organizations and NGOs. We also show through empirical analyses the potential of this framework for food security monitoring and evaluation. Although it may require a broader informational base, it is a flexible approach that can be adapted to many different contexts and situations of food insecurity.

INDICATORS FOR MEASURING FOOD AND NUTRITION SECURITY: DIVERSIFY OR UNIFY?

Capturing the "access" element of food security: the advantages of different indicators

Daniel Maxwell, Jennifer Coates[44] and Bapu Vaitla[45]

Three different indicators are now widely used to capture the household "access" element of food security: the Coping Strategies Index (CSI), the Food Consumption Score (a type of dietary diversity index), and the Household Food Insecurity Access Scale (HFIAS). The Coping Strategies Index (CSI) was developed as an indicator of food insecurity that measures coping behaviors at the household level, primarily for application in humanitarian contexts where there is a need for a simple, rapid indicator of context-specific changes. The FCS is a specific type of dietary diversity index used primarily by the World Food Programme, while other dietary diversity indices are widely promoted by FAO and USAID. The HFIAS was designed to capture household behaviors signifying insufficient quality, quantity, and anxiety over insecure access.

Recent work on the CSI has identified a more "universal" sub-set of coping behaviors found to be relevant in 14 different context-specific CSI instruments (Maxwell et al. 2008). Similarly, 8 applications of HFIAS data have been subjected to psychometric techniques to identify a cross-culturally valid scale, called the Household Hunger Scale (HHS). Since 2002, there has been a burgeoning literature scientifically validating these three methods and a concurrent groundswell in their use as simple, yet valid measures of household food insecurity. Versions of the CSI have been widely adopted by WFP/VAM, FAO/FSNAU, and the Global IPC team, among others. USAID, FAO, and others have adopted the HFIAS and HHI. And the FCS is widely used by the World Food Programme and has been adopted by many other organizations.

In practice, these indicators are often used interchangeably or one or another is favoured for reasons related more to their evolution within institutions rather than to some characteristic of the method itself. Hence while there is strong evidence that these measures are all capturing something about the multi-dimensional nature of food security, there have been few direct comparisons of these measures to answer the following questions: 1) How differently are households classified by each of the three indicators? 2) Which elements of food insecurity are captured by which of the three indicators? And 3) If these measures actually represent different elements of access, can they be combined to construct a more multi-dimensional measure?

This paper seeks to investigate these questions by analyzing data from the first round of a panel survey in Ethiopia in which all three measures (CSI, full and reduced, HFIAS and its variant the HHS, and the FCS) were collected from the same household survey. Quintile comparisons and bivariate correlations are used to understand agreement among the three (or five) indicators in identifying food insecure households. Multivariate analysis and principal components analysis are used to assess the dimensions captured by each measure to understand whether they detect the same or different dimensions of the complex phenomenon of food insecurity. Finally, combination variables are developed and tested for their ability to better capture multiple dimensions of the construct of food insecurity.

All five of these indicators are reasonably well correlated to each other (r=0.3-0.6) and to self-assessed measures of food and livelihood security. However, they are also clearly picking up different dimensions of food insecurity. Combining two indicators (for example CSI and FCS) more clearly distinguishes between food secure and food insecure groups, and highlights some of the characteristics of households falling into an intermediate category that is less easily captured by a single indicator. These findings have application in attempts to assess and categorize household level food access for humanitarian programmes, transitional programmes and social protection.

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Validating the food consumption score and other food security indicators using LSMS surveys

Astrid Mathiassen [46]

The Food Consumption Score indicator, FCS, developed by World Food Programme, is a frequency weighted diet diversity score, used in WFP's monitoring and baseline surveys, and emergency assessments. This indicator is used as a proxy for caloric intake and diet quality. Poor, borderline and acceptable food consumption groups are defined by "universal" cut-off points developed after more than 10 years some years of experience applying the FCS in Southern Africa, and should reflect thirty and zero percent shortfalls respectively from a dietary requirement of about 2100 kcal per day. However, it has been questioned whether these cut-off points in fact reflect a lower caloric threshold.

The FCS is now extensively used in Southern Africa, as well as in other areas of Africa, Asia and South America, and there is a need to validate how it mimics the caloric consumption variable and to refine the cut-off points. An IFPRI study from 2009 has done this for three countries (Burundi, Haiti and Sri Lanka). The study finds that the FCS is positively associated with caloric consumption. The analyses also show that the "universal" cut-off points are indeed (way) too low and that the true cut-off points corresponding to the caloric thresholds differ in the three countries.

The first objective of this paper is to further investigate whether having universal cut-off points is possible and if not, whether national or even sub-national cut-off points are necessary. Secondly, the analysis looks further into how the Food Consumption Score correlates with caloric intake as well as with the value of food consumed in the households and examines seasonal sensitivity of these indicators.

New LSMS-ISA (Integrated Surveys on Agriculture) surveys including the FCS will be used for the validation analyses. The large samples in the LSMS surveys allow for assessing food security indicators against each other at regional and sub-group level, in particular urban and rural. The fact that the surveys cover an entire year allows us to examine the variation in the FCS throughout the year, to assess how this indicator captures seasonality and whether the FCS cut-off points are stable throughout the year. The validation will use new survey data, from 2010-2011 from Malawi, Nepal, Nigeria and possibly also Tanzania and Uganda (depending on availability). We will employ descriptive analyses, correlation and multivariate regressions as well as sensitivity-specificity analyses for validating the cut-off points. Preliminary findings are in line with the results from the IFPRI study; the FCS is correlated with caloric consumption and the standard FCS cutoff points seem too low to reflect the true caloric thresholds. The correlation is, however, low, and pre-set criteria for suitable cutoff points benchmarked in caloric consumption shortfall are not met. Thus we argue that it is not advisable to use this variable for benchmarking. The preliminary results show that the FCS tends to be more strongly associated with the monetary value of food consumed, and consequently, that the incidence of food poverty (households with value of food consumption below food poverty line) is a more promising benchmark for identifying cutoff points.

The Sum of Terms of Trade (STOT): a new food access indicator

Sid Ahmed Hassan Beteik [47]

Introduction

The food consumption score (FCS) is widely used by the World Food Programme (WFP) to measure household food consumption. However, there is no standard and simple indicator used to measure food access. Most proxy indicators used for this purpose are either derived

46 World Food Programmeme (WFP)
47 World Food Programme (WFP)

from qualitative data (reliability and sustainability of food sources) or from using expenditure and/or asset data. The lack of a simple tool to measure food access has been an ongoing challenge for many humanitarian organizations.

Purpose of the work

The objective is to develop a simple tool that utilizes market data to measure household food access. The proposed indicator is known as “sum of terms of trade” (STOT).

Methodology

Within the context of food security, the terms of trade (TOT) is the price ratio of two commodities. It is a proxy measure of households’ purchasing power. In this paper, the TOT- with a slight modification- is used to measure food access from markets.

Firstly, TOTs of main income sources and main staple food are derived at household level.

Secondly, each TOT (income/staple) is multiplied by its respective income frequency over a recall period of 30 days, producing a new set of TOTs.

Thirdly, the sum of the new set of TOTs (known as STOT) is compared with a threshold and accordingly households are then categorized into three main groups: good, borderline and poor access.

Example

If a household has generated its cash income over a 30 day period from (1) casual labour for 10 days and (2) selling 15 bundles of firewood, the STOT could be calculated in the following way:

$STOT = 10 * TOT_1$ (labour/ sorghum) $+ 15 * TOT_2$ (firewood/ sorghum)

The above STOT could then be compared with a threshold. Possible thresholds include the cost of a food basket, the national poverty line, or the standard per capita cost of cereal per FAO. Consequently, one of the following outputs is expected:

- Good access if STOT is greater than the upper limit of the threshold;
- Poor access if STOT is less than the lower limit of the threshold; or
- Borderline access if STOT is within the limits of the threshold.

Results

The first piloting of this indictor took place in the year 2010, as part of a rapid food security assessment in Blue Nile State in the Republic of Sudan. In the following year, the second piloting of STOT was carried out in the Darfur region of western Sudan. In addition to the STOT, expenditure data (a standard food security indicator used as a proxy for food access) were used in the pilots.

Results of the Blue Nile assessment show 338 households out of a total 1,317 households to be extreme cases; the new access indicator classifies some of these households as having poor food access while the standard indicator classifies the same households as having good access or vice versa. The in-depth analysis of most extreme cases indicates the superiority of STOT over the standard indicator. Similar results were obtained from the Darfur assessment when both indicators were used to classify households that neither adopted coping strategies nor received food assistance.

Conclusion

This paper proposes a new indicator to standardize measurement of food access during crisis, the STOT. This indicator provides a basis for predicting the impact of change in staple food prices on food access and produces comparable results in different regions within a country or between countries.

The relevance & significance of credit / debit data in household food security analysis

Siddharth Krishnaswamy[48]

Introduction

Currently, when analyzing household food security, the most commonly studied food access indicators are household income and expenditure. Larger studies such as WFP's CFSVA do take into account other indices such as credit and employment. But these are baseline studies and by definition are conducted infrequently. Food security analysis for access is usually dedicated to analyzing income and expenditure indicators.

Purpose

This paper argues that along with income and expenditure, credit and debt information should be collected so that an accurate analysis of household food security (and in particular) food access can be determined. The lack of routine collection and analysis of this information means that there is often a "masking" of the actual situation; a household's food access and food availability patterns may be adequate mainly as a result of borrowing and may even be due to a long-term dependency (a debt-cycle). In other words, such a household is, in reality, worse off than it appears - a factor masked by its performance on standard access indicators.

Methods

Existing food security data sets collected in Myanmar(2010) and Azerbaijan (2005) were used to support the theory. These data depict food consumption patterns across groups of households and then relate these patterns to the extent of dependency on credit, i.e. households borrowing money in order to meet food needs.

Policy implications

While there are no direct policy implications suggested by this paper; this extra dimension could help policy makers understand if adequate or borderline food security levels are due to a real improvement in the food security situation or if, in reality, households remain at risk.

Conclusions

The purpose of this work was to see if existing methods of household food security assessment can be improved. It is hoped that food security analysts will collect household level information on credit and debit and analyse them against income, expenditure and consumption patterns. This will help determine if a household's food access and availability are dependent on unsustainable strategies such as borrowing money for food or undertaking sustained debts.

Simple dietary diversity indicators: how well do they reflect the micronutrient adequacy of diets in developing countries?

Marie T. Ruel [49]

A review of dietary diversity (DD) indicators (Ruel 2003) concluded that individual level DD indicators were promising tools for assessing dietary quality in developing countries, but that more research was needed to understand their real potential, and to harmonize measurement approaches and indicators. A substantial amount of research has been carried out since then and this presentation summarizes key highlights from this new body of evidence.

1. **Dietary diversity is a strong predictor of the micronutrient adequacy (MNA) of the diet both in children and women in developing countries.** Two multi-country validation

48 FAO's Agricultural Development Economics Division

49 Food Consumption and Nutrition Division, International Food Policy Research Institute (IFPRI)

studies, one in children and one in women of reproductive age, showed that DD indicators were strongly and consistently associated with the micronutrient density (children) and adequacy (women) of the diet across all countries included in the studies. The results of these studies and a few additional ones support the use of DD as a useful indicator of dietary quality defined as a diet that provides adequate micronutrient content and/or density.

2. **No single cut-off point could be identified to accurately predict low vs. adequate dietary quality.** In both women and children, the multi-country studies were unsuccessful at identifying a cut-off point that could be used universally to accurately differentiate between individuals (children or women) with poor or adequate MNA. Best cut-off points differed between contexts and between age groups in the children study and thus need to be defined locally. Similarly, of the 8 DD indicators compared in the women's multi-country study, none performed best in all countries and no single cut-off point could be identified, suggesting that site- or country-specific DD and cut-off points should be developed.

3. **New studies confirm a positive association between DD indicators and child anthropometry and women's body mass index (BMI)**. Several new studies, including a multi-country analysis of 11 DHS surveys, confirm the positive association between DD indicators and child anthropometry, after controlling for confounding factors at the child, maternal and household level. In rural Burkina Faso, a positive association was also found between women's BMI and DD.

4. **Measurement issues have been examined in several new studies.** Recent studies have looked at DD indicators that vary the foods, food groupings, minimum quantity, or recall period; and at the use of DD indicators in urban versus rural areas with different consumption patterns and use of fortified and ready-to-eat foods. Again, the conclusion was that there was no *one-size-fits-all* solution and that context-specific DD indicators should be developed and validated locally to maximize their performance at predicting MNA.

This body of evidence confirms that DD indicators are a useful tool for measuring diet quality (MNA) in developing countries where resources to collect detailed dietary data in large samples are limited; existing guidance to develop and adapt context- specific indicators should be used (e.g. FAO, 2011).

INSTITUTIONALIZING EVALUATION PROCESSES: LOOKING AT GOVERNMENT PROGRAMMES IN LATIN AMERICA THAT ADDRESS FOOD SECURITY

The policy impact of food and nutrition security programme evaluation studies contracted by the Secretariat of Evaluation and Information Management of the Brazilian Ministry of Social Development and Fight Against Hunger

Anne W. Kepple[50] and Daniela Sherring Siqueira[51]

Decades of research regarding the impact of programme evaluation studies have shed light on the conditions that promote the use of these research findings by policy makers. The intersectoral Zero Hunger strategy launched by the Brazilian government in 2004 is characterized by two institutional arrangements that favor this research-policy link: an institutionalized National Council on Food and Nutrition Security with a direct link to the Executive Branch; and an evaluation unit located within the Ministry of Social Development and Fight Against Hunger (MDS), the ministry mainly responsible for food and nutrition security programmes and policy. The former is an advisory council composed of representatives from social movements, NGOs, and research institutions, together with government decision makers responsible for food security programmes and policy; it functions as an effective network of policy communities where diverse interests are negotiated, and plays an important role in guiding policy and mobilizing civil society. The latter, the Secretariat of Evaluation and Information Management (SAGI), oversees systematic evaluation of the hunger and poverty alleviation programmes under the responsibility of the MDS.

Purpose

The present study was contracted by SAGI to (1) analyse how their evaluations of food and nutrition security programmes carried out by the MDS have contributed to programme development, and (2) identify strategies for improving the relevance and use of research findings by decision makers responsible for the programmes.

Methods

Thirteen evaluation studies of five different food and nutrition security programmes, carried out between 2004 and 2009, were analysed. The programmes were the Family Farming Food Acquisition Programme, Rainwater Cisterns, Popular Restaurants, Community Kitchens, and Food Banks. Following elaboration of a synthesis and critical analysis of the objectives, methods, and principle findings of the studies, semi-structured interviews were conducted with twenty-one national-level decision makers. These included directors of the programmes analysed, directors and technicians of SAGI, and the President and Executive Secretary of the National Council on Food and Nutrition Security. All interviews took place in Brasília between June and December of 2010 and were transcribed for interpretive analysis based on identification of themes and sub-themes that emerged from the interviews. Numerous programme documents were also reviewed.

Policy implications

While the information sources cited as being most useful and influential varied among decision-makers, the analysis revealed a clear overall impact of the evaluation studies on programme management. Research findings informed specific programme decisions and were used to legitimate and defend the programmes. Longer-term impacts were also identified, as studies served as sources for consultation and influenced the conceptual thinking of policymakers over time.

The following priority actions were recommended to overcome challenges identified in the study and improve the relevance and utilization of evaluation studies promoted by SAGI: improved short and medium-term strategic planning of an agenda of programme evaluation studies; increased integration and participation of SAGI in the National Council on Food and Nutrition Security; and definition of a conceptual framework of food and nutrition security to guide and improve conceptual consistency of the evaluation studies and increase SAGI´s leadership with respect to monitoring and evaluation activities inside as well as outside the MDS.

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Conclusions

All of these actions reflect the double role of internal evaluation units like SAGI: applying technical and scientific expertise while simultaneously coordinating actions that involve diverse partners in a highly political environment.

Food security measurement through public opinion polls: the case of ELCSA-Mexico

Rafael Pérez-Escamilla[52], Pablo Parás[53] and Rodrigo Vianna [54]

There have been five household food security measurement waves in Mexico using cross-sectional public opinion polls (POPs). The Latin American and Caribbean Food Security Scale (ELCSA) was administered by our team in 2004 in Mexico City, in 2006 in a National sample, in 2007 in the State of Guanajuato, in 2008 in a National sample, and in 2011 in the metropolitan area of Guadalajara. The ELCSA-POPs experience in Mexico has led to: (i) the strategic use and diffusion of household food insecurity (HFI) data given that POPs can generate valid, reliable, and representative data in a relatively short period of time; (ii) a replication in Uruguay and strong interest from pollsters and academics to include ELCSA in POPs throughout the Latin American and Caribbean Region (LAC); (iii) the adoption of ELCSA as an official household food insecurity measure in Mexico; (iv) a high level of interest among policy makers and politicians regarding the association between HFI and public opinion; (v) a successful cross-fertilization and collaboration across disciplines and research agendas. This presentation highlights findings from the most recent ELCSA-POP survey, administered by the "Quality of Life Observatory" in Guadalajara. The Observatory is an NGO whose mission is to monitor and improve the quality of life of people living in the state of Jalisco. Guadalajara is the capital of Jalisco and the second largest metropolis in Mexico.

Previous studies have examined the association between HFI and different physical and mental health outcomes. However, the relationship between HFI and quality of life (QOL), a multi-dimensional construct, has not been previously examined in a single study. A short version of ELCSA comprised of the 8 household/adult items included in the full 15-item scale was administered in June 2011 to 2,375 households sampled from the six municipalities of Guadalajara via a face-to-face QOL questionnaire. The 8 items assessed the following food insecurity dimensions: worried about food, lack of access to healthy and nutritious foods, low dietary variety, eating less, meal skipping, running out of food and hunger (2 items). Rasch modeling confirmed the psychometric properties of the short-ELCSA, while associations with socio-economic indicators and food frequency questionnaire data demonstrated predictive and convergence validity of the scale. Principal component analyses based on 26 QOL items yielded 7 factors with en Eigen value >1 which collectively explained about 50percent of the QOL variance. These included poor health, no leisure time activities, discrimination and lack of access to public services. Multivariate logistic regression analyses were conducted to find out if moderate/severe HFI (vs. food secure/mild HFI) is an independent risk factor for experiencing low QOL (i.e., < median factor score) across the different QOL dimensions. Covariates included respondent's age, gender, education level, social class, and municipality. Respondents who lived in households that were more food insecure were found to be at higher risk of reporting: (i) worse physical and mental health (Factor 1) [Odds Ratio (OR): 1.81; 95percent CI: 1.37-2.39]; (ii) no engagement in leisure time/recreational/social activities (reading, going to the park, meeting with friends/relatives, practicing sport(s)) (Factor 3) [1.85; 1.38-2.47]; (iii) being treated unfairly (less work opportunities, less opportunities in life, less security than others in the city) (Factor 4) (1.65; 1.25-2.18); and (iv) not having access to adequate healthcare, sanitation, and community facilities (Factor 5) (1.71; 1.30-2.25). In addition, moderate/severe HFI was also found to be an independent risk factor for having a global QOL score below the median [1.73;

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1.29-2.30]. HFI was unrelated to paid leisure activities (Factor 2), home leisure activities (Factor 6), and Happiness (Factor 7).

These findings demonstrate that moderate/severe HFI is an independent risk factor for low overall QOL and its multiple dimensions in Guadalajara, after adjusting for socio-economic and demographic confounders. This suggests that social policies/programmes that are effective at improving HFI are also likely to improve perceived QOL among the socio-economically disadvantaged. Based on this study and previous ELCSA-POP experiences in Mexico we recommend this innovative measurement approach be considered by LAC countries and beyond for inclusion in POPs assessing health, nutrition and social welfare.

Institutionalization of food security and nutrition public policy in Bogotá: a case study of community dining rooms

Eneried Jaramillo Achagua, Nancy Montoya, Farley Rojas[55], Edwin Buenhombre and Kelly Vargas[56]

Introduction and purpose of the work

The Food and Nutrition Security Public Policy in Bogota (2007-2015) is centered on guaranteeing the right to food. In order to achieve this goal, municipal leaders developed the "Well-fed Bogotá" programme, which includes a mandate to improve access to food and drinking water. Implementation is supported through "Project 515" of the Social Integration Office of the Mayor of Bogotá's Office (SDIS). Project 515 provides food through various social services, including community dining rooms. On average, 74,937 people per year are served in 136 dining rooms in Bogotá.

The main eligibility requirements for participants are residency in Bogotá and limited access to food in quantity, quality and safety due to physical constraints and cultural patterns. Additional criteria are defined by other external factors such as age, poor health, or being a single mother.

To review progress made in policy implementation and to improve social services management, the SDIS conducted a research project to evaluate the SDIS' community dining room service and its implications for institutionalization of food and nutrition security policy in Bogota.

Methods

Analyses were conducted using a combination of quantitative and qualitative methods. Theoretical approaches to policy design and implementation as well as data from the project were collected, consolidated and analysed. Focus groups, surveys and interviews were conducted with participants and key stakeholders responsible for planning and monitoring of the service. Finally, methodological triangulation was used to improve validity of all information gained during the research process.

The following indicators were considered by the study:

Indicators of Social Service Management
- Coverage of offered meals and budgets
- Distribution of population served by age group and sex
- Evaluation of sanitary and hygienic conditions in dining rooms

Nutritional indicators
- Number of children who receive meals and who have nutrition surveillance control every six months (anthropometric measurements levels of height and weight, based on the 2007 WHO Child Growth Standards).
- Reduction in number of underweight children under 5 (baseline from SIRBE database, Bogotá)

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- Number of meals consumed by participants before and after attending the dining room
- Number of participants who said that their eating habits improved through the dining room

Social inclusion indicators
- Percentage of participants trained in social rights issues
- Percentage of participants with access to other social services due to referrers conducted through service

Results and Policy Implications

SDIS has achieved the targets defined in the district development plan. Between 98percent and 99.9percent of the daily meal targets between 2007 and 2010 were met. The service has succeeded in adopting and implementing quality standards and coordinated efforts to provide more comprehensive care to residents of Bogota.

Every participant has nutritional monitoring every six months. Based on three sets of measurements taken in February and September 2010 and February 2011, a decrease in acute malnutrition was observed in participants younger than 13. Equally significant, 99percent of participants stated that their eating habits had changed through consumption of healthier food and daily lunch. 53.16percent of the participants now regularly eat 3 meals a day.

Improved access to other social services via referrals made by the service was high. Altogether approximately 67percent of participants reported increased access (with 23percent citing improved health care, 22percent improved recreation, and 22percent better education). About 6percent of the participants stated that they were completely dependent on the community dining room.

Conclusions

The policy's institutionalization process has been expressed through two dimensions: (1) via better organizational capacity (i.e. strengthened formulation of plans, programmes and projects; improved financial resource allocation), and (2) via widespread acceptance and recognition of the policy's importance by the service's participants. Through this social legitimization, participants have helped make the right to food higher priority on the national policy agenda.

Analysis of the results of the SDIS evaluation has led to recommendations regarding possible adjustment of the structure of the Food and Nutrition Security Policy, especially in regards to implementation of "Well Fed Bogotá". These recommendations will be useful in maintaining the service's continuity, especially given pending changes in local government.

The monitoring and evaluation system for Ecuador's national food and nutrition strategy: its contribution to decision-making

Catalina Vaca[57] and Jorge Samaniego[58]

Introduction

"Acción Nutrición," Ecuador's national strategy for the sustainable reduction of child malnutrition, was built around the concept of intersectoral coordination, which requires the active participation of numerous public and private institutions as well as non-governmental organizations. Acción Nutrición's interventions focus on resolving major health and nutrition concerns, and involve several programmes and projects.

The strategy, in operation since 2008, seeks to avoid programme redundancy and incoherence caused by institutions working in isolation, and encourages cooperation through the

57 Manager of the "Acción Nutrición" Strategy of the Coordinating Ministry for Social Development (MCDS), Government of Ecuador

58 FAO Representation of Ecuador

articulation of national and local-level policies aimed at tackling nutrition problems in priority communities. In order to increase the efficiency of the strategy, a monitoring and evaluation (M&E) system was designed and put into operation.

Purpose of the work

The M&E system was developed to oversee implementation of the strategy's programmes. These programmes are run by various public institutions (Ministries of Public Health, Social and Economic Inclusion, Agriculture, Household Development, Education, and the Childhood Council), which are also directly involved in the programming and monitoring process.

Methods

The M&E system was developed according to a logic frame matrix including the following impact indicators: number of children suffering from undernutrition (stunted) and anaemia; food security within the household, and food quality and diversity. An extensive baseline was initially established. The system requires territorial meetings where government technicians from different sectors together with local leaders define goals and allocate resources according to baseline and current data. Data are updated by the Health Ministry team.

National and local-level working teams analyse the data and determine the tasks each institution will be responsible for. These action items are recorded in the coordinated plans. Given the shortage of resources, priorities are assigned according to the territories' needs and where there is a higher prevalence of malnourished children. The programming cycle is repeated every year; however, actions are monitored and adjusted every four months, thus ensuring that human resources are correctly and efficiently used, and material resources better distributed.

Results

The way the system operates ensures greater efficiency in the distribution of existing (and often scarce) resources.

At a national level, the data obtained on the number and location of children suffering from chronic malnutrition (stunted) and anaemia has facilitated the prioritization of territories (counties) and households where intersectoral action is required with a focus on food and nutrition security (FNS).

Furthermore, malnourished children are identified at local level, allowing for timely and consistent follow-up by specialists.

Policy implications

The M&E system has provided objective information about the progress and results of Acción Nutrición's interventions. Although not common practice in the region, this experience has demonstrated the importance of conducting such a process.

Conclusions

The success of the M&E system developed for Ecuador's "Acción Nutrición" strategy is due to its participatory nature since it uses local findings to facilitate and enhance the decision making process at a national level. This has greatly contributed to the improved management of coordinated policies within social sector institutions. In effect, this system fosters capacity-building, promotes social learning and improves accountability.

Household Food Security Measurement in Bolivia and Guatemala: Generating Information for Public Policy and Programme Evaluation

Hugo Melgar-Quinonez[59], Jorge Ortega[60], Ciro Kopp Valdivia[61], Gonzalo Adolfo Hernandez Escobar[62], Luisa Fernanda Samayoa Figueroa[13]

According to the 2010 FAO report "The State of Food Insecurity in the World", among the countries located in South America and North-Central America, Bolivia and Guatemala have the highest proportions of undernourished people in their populations (27percent and 21percent in 2005-2007, respectively). In the last decade, both countries developed governmental food and social assistance programmes aimed at reducing these numbers. In that regard, for the first time in history Bolivia and Guatemala have legislative frameworks that support such programmes and official units in charge of coordinating national efforts against hunger, namely the National Council for Food and Nutrition (CONAN) in Bolivia, and the National Secretariat for Food Security and Nutrition (SESAN) in Guatemala. In close collaboration with national and international ministries and agencies CONAN and SESAN promote and support opportunities to reduce food insecurity in a multisectoral manner.

One of the most important gaps in these two entities' capacity is the lack of valid and reliable instruments to measure food security at the household level. In 2010 and 2011, with the support of the Food and Agriculture Organization (Rome, regional and country offices) Bolivian and Guatemalan food security professionals participated in two major sub-regional workshops where they received training in the validation, application, and analysis of a regional tool previously developed and tested in other Latin American countries (e.g., Colombia, Ecuador, Haiti, Mexico, Paraguay, and Uruguay): the Latin American and Caribbean Food Security Scale (ELCSA). Subsequently, national workshops where conducted in Bolivia and Guatemala, where a larger group of local professionals were trained in the use of the tool. In all the workshops, ELCSA data showed consistency across several Latin American countries, as well as within pilot studies conducted in Bolivia and Guatemala.

Given the encouraging results, officers at CONAN and SESAN in collaboration with FAO national representatives and academicians promoted the use of ELCSA within surveys at a wide range of levels: municipal food security assessments, national food assistant programme evaluations, and nationally representative household and living conditions surveys. The information gathered by these surveys is proving extremely useful to Bolivia and Guatemala in their efforts 1) to better identify the populations at highest risk of food insecurity, their location and social-demographic characteristics, and 2) to evaluate the impact of their national and local food security programmes.

ELCSA data are to be integrated into national information systems by CONAN and SESAN supporting the generation of policies, programmes and projects designed to reduce the historically high rates of food insecurity and hunger in these two countries. Comparison analysis on the performance of ELCSA showed no psychometric differences. Thus, these country-based experiences can be applied across the Central and South American regions, strengthening common efforts to meet the World Food Summit and Millennium Development Goal targets. Close collaboration between local institutions, FAO offices, and academic units have been able to advance a nationally acknowledged household food security measurement system.

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61 Comité Técnico del Consejo Nacional de Alimentación y Nutrición, Bolivia
62 Secretaría de Seguridad Alimentaria y Nutrición, Guatemala

WHAT WORKS TO IMPROVE DIETS? FROM PROJECT DESIGN TO MEASURING IMPACT

Improving access to nutritious food and diet diversity through Fresh Food Vouchers in Guaranies' families (Chaco, Bolivia)

Maria Bernárdez, Jimena Peroni, Elisa Dominguez and Julien Jacob[63]

Acción Contra el Hambre (ACF) is working in the Chaco region of Bolivia, an area vulnerable to recurrent crises and characterized by high food insecurity rates (UDAPE 2008), severe environmental degradation, exposure to climate change-induced hazards and low coverage in water and sanitation. Prevalence of stunting (22.3percent - ACF SMART survey 2011), coupled with high rates of micronutrient deficiencies (71.9 percent prevalence of anaemia in children under two years old - ACF SMART survey 2011) justify the ACF nutritional approach towards improving diet quality and food habits using "Fresh Food Vouchers" and complementary interventions.

In order to increase access to nutritious foods, generally out of reach for indigenous *Guarani* families, ACF implemented a pilot voucher project aimed at improving intake of micronutrient-rich fresh food (e.g. fruit, vegetables, milk, poultry, eggs). To promote access to these products, vouchers were designed according to three distinct categories: fruits, vegetables, and animal-source food. Monthly amounts delivered per household varied between 150 Bs. (US$ 22) and 250 Bs. (US$ 36), depending on household size and composition. The voucher intervention was accompanied by complementary sensitization activities and community demonstration workshops to promote good practices for food preparation and the set-up of "Nutritional Gardens" (backyard vegetable gardening). The pilot was implemented for three months.

By the pilot's close, the average Individual Dietary Diversity Score (IDDS) for children under 5 increased by 2.1 points, from 4.3 to 6.4 out of 14 food groups in total, showing an important positive impact on diet diversity. The percentage of improvement in IDDS has been greater in communities with easier access to the local markets.

This intervention also reduced micronutrient deficiency among children, as shown by an increase in haemoglobin concentration for 63.4 percent of under five year olds (n=112, $p<0.001$). No significant impact was measured for pregnant and lactating women.

Intake of micronutrient rich foods improved: Consumption of beta-carotene rich foods (carrots, tomatoes, pumpkins) increased from 41.1percent to 83.6percent, consumption of vitamin A-rich foods (eggs) increased from 38.3percent to 56.6percent, and consumption of iron-rich foods increased from 48percent to 59.8percent (poultry).

In addition, there was an improvement in the level of interest in good practices: beneficiaries actively requested cooking advice and recipes to use to improve their dietary habits. The participative evaluation conducted at the end of the pilot showed a high degree of satisfaction among beneficiaries, who recognised the nutrition benefits provided by the combined implementation of activities. In addition to direct nutrition benefits, 92.3percent of participants highlighted the freedom of choice that the voucher system provided, as compared to direct food distributions. This freedom of choice empowered Guarani women; 90 percent of adult female beneficiaries managed the vouchers at household level, allowing a larger number of these women to go to market than had prior to the pilot (84percent compared to 57 percent).

In conclusion, introducing Fresh Food Vouchers had a short-term positive impact by increasing access to and consumption of micronutrients. Meanwhile, recognition of the nutritional value of fresh food through the sensitization and valorisation of local food and cooking practices and implementation of "Nutritional Gardens" connects the intervention towards medium and longer term impact.

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The impact of homestead food production on anaemia, iron and vitamin a status of preschool children and women in Cambodia

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Introduction

Micronutrient deficiencies are highly prevalent among preschool children and women in Cambodia; often the diet of rural Cambodians lacks micronutrients and diversity due to low access and limited availability of both the plant and animal source foods needed to meet nutritional requirements. An estimated 69percent of the average total daily energy intake is from cereals, with meat and fish each contributing only 4percent and vegetables and fruits together contributing 4percent. This consumption pattern indicates very low dietary diversity and a strong reliance on cereals by Cambodian families, especially food insecure households. The objective of this research is to assess the impact of homestead food production on the anemia, iron and vitamin A status of children aged 6-59 months and their mothers in the Rolea Pha'ear district of Cambodia.

Methods

In this prospective cluster randomized controlled study, 252 households in Rolea Pha'ear were randomly assigned to receive either a homestead food production intervention (intervention group) or no homestead food production (control group). In each selected household, a mother-child pair was selected for assessment. Baseline data collection was completed in February 2010 and the end-line survey was conducted in February 2011. Demographic, morbidity and dietary intake information were collected through interviews with the mother. Height and weight were measured and venous blood was drawn for assessment of hemoglobin, hematocrit, complete blood cell count and serum concentrations of ferritin, soluble transferrin receptor (sTfR), retinol binding protein (RBP), C-reactive protein and α-1-acid glycoprotein.

Results

Comparison of baseline and end-line data in the intervention group indicates declines in micronutrient deficiencies among both children and mothers. Decreases were noted among children in anemia (84.6percent vs. 67percent), iron deficiency anemia (19.7percent vs. 18.7percent), low RBP (45.9percent vs. 39.6percent), elevated sTfR (68percent vs. 31.9percent) and TBI deficiency (31.1percent to 23.1percent). Among intervention mothers, decreases occurred in anemia (63.2percent vs. 52.9percent), iron deficiency anemia (15.5percent vs. 14.1percent), elevated sTfR (26.7percent vs. 12.9percent) and TBI deficiency (13.8percent to 9.4percent). Among control children, anemia decreased (77.1percent vs. 65percent), iron deficiency anemia increased (13percent vs. 17.5percent), and low serum ferritin also increased (13.8 vs 20.6). Though decreases in micronutrient deficiencies occurred among control mothers, decreases were greater among mothers in the intervention group.

Conclusion and Policy Implications

Anemia, iron and vitamin A deficiencies are highly prevalent among children in Rolea Pha'ear district of Cambodia, in addition to other food and nutrition insecure regions across the country. Homestead food production of fruits, vegetables and small animals has been shown to increase production and consumption of micronutrient-rich foods, and results from this study indicate that introduction of homestead food production can be associated with reducing micronutrient deficiencies. Links between homestead food production and improved nutritional status can help guide nutrition and agricultural programme planning for both governmental and non-governmental organizations. The evidence of impact provided by this study contributes to the evidence base which will allow for a more effective and strategic allocation of resources by the Cambodian government and their partners.

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Measuring the impact of low input gardens on the wellbeing of people living with HIV in Chipinge district, Zimbabwe

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Background

Interventions which aim to improve the nutritional status and food security of people living with HIV (PLHIV) are crucial. However, evidence of such interventions' impact is scanty, hampering firm programmatic recommendations. Between 2008 and early 2011, 1120 PLHIV participated in an Action Against Hunger (ACF) project using low-input gardens (LIG) to improve nutrition and food security in Chipinge district, Zimbabwe. LIGs use locally available inputs and rely on biological control for diseases and pests.

Purpose of the study

We assessed whether PLHIV with access to LIGs had better dietary diversity, food security, and nutritional status than those PLHIV who were in the same wards but not involved in the LIGs.

Methodology

We carried out a cross-sectional impact survey at the end of the project, with inclusion of 280 randomly selected PLHIV with access to LIGs and an equivalent number of controls with no access matched on habitation location. Dietary diversity, food consumption, food insecurity, and quality of life were assessed by validated questionnaires (HDDS, FCS, HFIA and WHOQOL – HIV BREF) administered to both selected treatment and control groups. We also measured BMI and mid-upper arm circumference in all survey participants. In-depth interviews with a sub-sample (n=16) of the treatment group yielded insights on perceptions and experiences with LIGs.

We used multivariate logistic regression to measure the effect of having access to LIGs on dietary diversity, food security and nutritional status. Each regression was adjusted for the following covariates: socio-economic status, school achievement, sex and age of the respondent, and food aid received by the respondent's household.

Results

Treatment and control groups were similar in regards to sex ratio, age, marital status, education, socio-economic score and employment status. The treatment group had been infected longer than the controls and had received food assistance more often (72percent vs. 40percent; $p<0.001$).

Dietary diversity was higher in the treatment group (HDDS of 6.6 vs. 5.7, $p=0.0042$) and remained so after multivariate logistic regression adjusted for food aid, socio-economic status, school achievement and age (OR=1.50; 95percentCI: 1.01, 2.22). More individuals in the treatment group than controls had a Food Consumption Score considered acceptable (FCS>35; 59percent versus 42percent, $P<0.001$). Food security was significantly better in the treatment group (12.1 vs. 13.6; $P=0.016$), though not after adjustment for food aid.

No difference in nutritional status between treatment and control groups was observed. Quality of life was slightly higher for the treatment group. More than 89percent of these individuals declared themselves satisfied or very satisfied with the LIG programme. Ninety-eight percent felt that it improved their well-being by increasing access to better food (97.50percent), by being part of a group (72.14percent) by being better accepted by others (45.71percent); and by getting money (64.29percent).

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Discussion and recommendations

LIGs resulted in greater dietary diversity of PLHIV, and particularly in greater consumption of micronutrient-rich foods. The well-being of PLHIV with access to LIGs was also affected through other pathways, such as income generation, improved social status and feeling like part of a group. Finally LIGs generated a high level of satisfaction. The replication of such an intervention is thus warranted. However, in settings where food security is low, LIGs alone might be insufficient to provide PLHIV with optimal nutrition and should be combined with other strategies to ensure sufficient macronutrient intake.

Realigning agriculture to improve nutrition (RAIN) project in Mumbwa district, Zambia: early stage assessments and use of information to influence the thinking of cross-sectoral stakeholders

Gudrun Stallkamp, Rahul Rawat[69], Scott Drimie[70], Kate Golden and Ros Tamming [71]

Introduction

Conclusive evidence for effective pathways from agriculture to nutrition is scarce. This is due in large part to poor quality assessments rather than clear lack of impact. In theory, improving access to and availability of affordable, diverse, micronutrient-rich plant and animal source foods should result in improved nutritional status of populations.

Purpose of the work

To design an integrated agriculture and nutrition project in Mumbwa District of Zambia that considers proven approaches, that explores the best model for how to align the agriculture and health sectors to address the problem of stunting, and that has robust process & impact evaluation systems.

Methods

Various assessments were conducted to inform the project design. First, a scoping assessment in early 2010 by Concern Worldwide and the International Food Policy Research Institute (IFPRI) in Zambia, Ethiopia and Uganda led to the selection of Zambia as the implementing country based on information about the agriculture, food and nutrition situation, the social and economic development contexts, and the project environment. We also looked at how nutrition was perceived and approached across the health and agriculture sectors. Secondly, contextual analysis and formative research by Concern and IFPRI, respectively, were conducted to gain an in-depth, qualitative understanding of the nutrition, food, agriculture and poverty situations and issues within the implementation area. Topics related to standard indicators within the different disciplines were used to guide the qualitative assessments.

Results

The scoping study provided information related to standard indicators around development, nutrition, health and agriculture. This and insights from the district-level assessments confirmed the need for a project aimed at preventing child stunting and identified opportunities for agriculture-based interventions. Findings from both the scoping assessment and the formative research and contextual analyses were used to fine-tune the nutrition/health and agricultural component of the project. Furthermore, interactions with numerous national, district and sub-district level stakeholders (e.g., government; UN; NGOs; communities) during the assessment phase provided insights regarding sector-specific terminology and language of the nutrition-relevant sectors: nutrition from a health sector perspective was seen to be concerned with treatment of acute malnutrition, stunting, micronutrient deficiencies, and the promotion of

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good feeding practices. From an agricultural perspective, nutrition was associated with food production, harvesting, processing, preparation, preservation and storage.

Policy implications

These different perspectives result in different approaches to address malnutrition and are important to recognize in cross-sectoral programming. Continuous dialogue with multiple stakeholders in the agriculture and health sector at district and national level initiated a shift in thinking towards, and enthusiasm for, more integrated agriculture-nutrition programming. Joint working meetings improved understanding of the importance of collaborating cross-sectorally to address stunting. Similarly, within Concern, the extended design phase supported an internal shift in thinking towards more integrated programming to prevent stunting: Concern's new organizational strategy, drafted at the same time, reflects this new thinking by including the prevention of undernutrition, as opposed to a treatment only approach.

Conclusions

Going through a prolonged, interactive design process can trigger important thought processes that support change among different actors involved in cross sectoral work, even before a project starts. Moreover, careful planning of robust process and impact evaluation methods, including selection of sensitive indicators, is essential at the start of the project to evaluate impact. Results then can provide a strong advocacy tool to influence stakeholders across sectors.

Nutrient density calculator to calculate micronutrient intake nationwide and in selected populations

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Introduction

Adequacy of nutrition is often calculated on a quantitative basis. However, that approach overlooks food quality with respect to essential micronutrients. As a consequence low intake of some micronutrients is not registered before real signs of deficiency occur. This hidden hunger, in particular related to vitamin A, zinc, iron and iodine, is to a significant degree responsible for morbidity and mortality of children under 5 and maternal mortality. However to prove that a micronutrient deficiency exists within a population prior to it becoming a major health concern (when individuals may present with observable symptoms) is difficult, as definitive early diagnosis requires use of biomarkers which are usually costly and difficult to administer, especially under field conditions. One way to address this problem is via an easy-to-complete and comprehensive dietary intake survey which can be adapted to include typical food items in different national diets. However, nutrition intake surveys require trained enumerators and a lot of time to administer. In addition data on micronutrient gaps are often not calculated (e.g. food balance sheet/FAOSTAT). Our programme reevaluates nutrition surveys with respect to (1) capturing data indicative of micronutrient malnutrition and (2) determining if intake of micronutrient rich foods is adequate. (It is important to note that intake surveys should not be considered equivalent to biomarkers as the former are highly subject to measurement error. Nevertheless given the latter's cost and impracticality, intake surveys are often the preferred choice.)

Purpose of the work

The purpose of our work was to develop a simple computer-based dietary intake questionnaire called CIMIP (calculator for identification of micronutrient inadequacy on population-level) to calculate nutrient intake. The programme was developed by day-med-concept GmbH (Berlin) and the Institute of Biological Chemistry and Nutrition at the University of Hohenheim. Two different versions are already available: one for Germany and one for Indonesia. A further for Ethiopia is in progress.

72 All authors are from the University of Hohenheim

Methods

The questionnaire in html format estimates nutrient density either within a population or on an individual basis via reported intake of starchy staples, dairy products, vegetables, fruits, eggs, fish, meat, meat derived products and specific foods rich in selected nutrients. Data entry can be done by nutritionists, medical staff or administrative personnel. The programme includes a database of all the food groups/foods listed in the questionnaire (typical for the population) including their energy, protein, fat and micronutrient content. The choice of the foods/food groups in the questionnaire is based on the quantity of their consumption for the population in question. Quantity can be extracted from national surveys (cf. national food balance sheet) or nutritional assessment data of individuals. In addition, the supply of specific micronutrients via food fortification or supplementation programmes is requested in the questionnaire.
On the basis of these data, nutrient intake is calculated and compared to the WHO/FAO recommendations. Because of its simple structure, the programme can be adapted to different eating patterns (national, local, religious etc.) improving its world-wide applicability. Twenty-four hour recall data from 118 children in West Timor province, Indonesia were used to validate the questionnaire. The positive predictive value to identify malnutrition (defined as < 90percent of recommendation) was 0,93 for energy, 0,88 for iron, 0,80 for zinc and 0,77 for vitamin A.

Policy implications

The programme allows policy makers to adapt nutrition recommendations for improving micronutrient supply on the basis of the available food sources or to implement food fortification or supplementation programmes. To sustainably reduce malnutrition, the gap between actual and recommended nutrient intake has to be closed with nutrient rich foods. For the next development step, CIMIP is able to suggest such foods. This information can be used for nutrition programmes and to inform planning of “nutrition sensitive” agricultural development programmes.

Conclusion

The computer-based questionnaire offers a simple, timesaving and cheap tool to estimate nutrient intake. It is easily adapted to specific population groups because the database allows modification of the queried foods/food groups and their associated nutrient values.

ASSESSING FOOD SECURITY WITH EXPERIENCE BASED SCALES AT INDIVIDUAL, LOCAL AND NATIONAL LEVELS

Hunger Evaluation in Uganda is Valid for Assessing Household Food Insecurity

Monique Centrone Stefani[73], Debbie Humphries[74], Eden Garber[75], Dustin Charles[76], Dorothy Masinde[77] and Robert Mazur[78]

Introduction

A household food security assessment tool was used to screen participants and evaluate programme effectiveness for an agriculture and economic development project implemented by Volunteer Efforts for Development Concerns (VEDCO) in Kamuli District, eastern Uganda.

Purpose

This study examines the validity of The Latin American and Caribbean Household Food Security Measurement Scale (ELCSA) for use in an African region.

Methods

Stratified random sampling was used to select 70 households with children under the age of 6 yrs within six geographic parishes. Female caregivers (n = 70) in each household were interviewed for one to two hours.

Results

The 16-item instrument is valid for this region (Cronbach's alpha= 0.94). However, a much smaller subset of questions, the "hunger" domain consisting of four questions from the survey, achieves a comparable level of validity (Cronbach's alpha= 0.90) in identifying households at risk of food insecurity. Factor analysis of the 16-item assessment tool confirms the hunger items as having core importance in the survey, in line with other recent literature.

Policy implications

While more refined categories of food insecurity risk assessment may be desirable for both overall understanding and long-term planning for food security, the relationship between low to moderate household food insecurity and long-term health outcomes remains unclear. Hunger assessment is both theoretically and empirically a reliable approach to understanding current risk and is therefore more valuable for near-term interventions.

Conclusions

The use of an abbreviated measurement tool, in particular, the "hunger" domain set of questions, would reduce participant burden in food security assessment and more precisely identify a target population for intervention.-

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Design and validation of experienced-based tools that measure food insecurity and hunger in vulnerable populations of children and seniors in a developing country

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Introduction

The development of tools that capture food insecurity and hunger (FIH) experiences in specific populations such as children and seniors is important for recognition of the problem and targeting solutions. Tools based on people's experience have been frequently used since the 1990´s, beginning with the Radimer/Cornell tool to assess household-level FIH. Since then, adaptations of specific tools designed for use at the individual level have emerged. To be considered valid, these tools must consider the perceptions, language, behavior and knowledge of the target population; they must also be easy to apply in communities, precise, dependable, and accurate.

Purpose of the work

Design and validate specific tools using mixed-methods that capture FIH situations in children and seniors in Venezuela.

Methods

Design and validation studies were conducted in a semi-rural area of Miranda state in Venezuela. The first phase was qualitative. From in-depth-interviews (n=15 children and n=20 seniors), and focus groups (n=42 children), many dimensions were identified which provided the basis for construction of the tools. Specific items were derived from language used by participants during the focus groups and interviews to describe FIH and food vulnerability experiences. Once completed, the preliminary instruments were reviewed by experts. In a second quantitative phase, the tools were tested in two samples (children n=131, seniors n= 100), and refined using factor analysis and reliability methods. The tools measure dimensions at household and individual levels of food insecurity, vulnerability, and hunger.

Results

Three themes emerged related to FIH situations reported by children: (1) lack of and uncertainty about food in the household, (2) alteration of food preferences, monotony and lack of satisfaction regarding diet, and (3) direct hunger experiences. Interviews and focus groups also shed light on strategies used by children to manage FIH: actions taken to obtain food or to forget about hunger, search for and use of financial and agricultural resources, and support from social and family networks.

From the seniors emerged seven dimensions which were: food insecurity, lack of food autonomy, insufficiency of cognitive skills, psychosocial factors, socio-cultural factors, other priorities different from food (e.g., medicines), sharing food, and lack of energy.

From the children's experiences, we developed two tools. They were composed of ten items that identify FIH directly, and nine items that identify management strategies. Each tool represents three factors which explain 58percent of the variance, with reliability of 0.74. The tool for seniors contained 19 items, with seven factors explaining 74percent of the variance and with reliability of 0.87.

Policy implications and conclusions

These specific well-grounded tools provide useful information to complement data provided by other instruments for the ex-post assessment and evaluation of public-nutrition policy and programmes. They could also be used with other quantitative measures such as food consumption and anthropometrics to provide an integrated ex-ante diagnosis of the FIH

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environment. These tools are applicable in communities, schools, and day-care centers. However, it remains necessary to convince stakeholders to use these tools to develop, monitor and evaluate programmes that aim to alleviate poverty, food insecurity and hunger in children and seniors.

Bringing information into action: a report of the Brazilian government experience

Alexandro Rodrigues Pinto, Cristiane Pereira, Júlio César Borges, Júnia Quiroga, Marina Pereira Novo and Rovane Ritzi[82]

In 2003, the Brazilian federal government set a goal to eradicate malnutrition and hunger through the Fome Zero (Zero Hunger) programme. Since then, there have been broad efforts to bring together civil society and government to ensure access of the whole population, in particular vulnerable groups, to at least three meals a day. Monitoring and evaluation of government food security and nutrition initiatives have also developed under the Zero Hunger Programme.

Food and nutrition security is a multidimensional phenomenon and its assessment requires a holistic approach. This paper aims to describe the experience of the Ministry of Social Development and the Fight against Hunger (MDS) in institutionalizing regular assessment of food and nutrition security using two different methods: the Brazilian Scale of Food Insecurity (EBIA), an index based on 15 self reported questions on household food adequacy, and anthropometric indicators of nutritional status in children under five. Since 2004 these methods have been used regularly in national representative surveys as well as surveys of vulnerable populations (beneficiaries of social programmes and/or specific population groups such as ethnic minorities).

The most recent survey of vulnerable populations was focused on Quilombola communities. Brazilian Quilombolas are characterized by black ancestry with a historic resistance to slavery, and their communities are mostly located in rural areas. Data were collected in 177 territories that hold the land title and all households in each community were interviewed. Anthropometric data were collected from children under five and their mothers. In addition, household food insecurity was measured using the EBIA. Food consumption, income and access to public services and government programmes were also assessed. For the first time, geographic coordinates were collected of every school, health clinic, and other source of community public service. Geographic coordinates of households were also collected. The idea is to compose in the near future a Geographic Information System (GIS) from which thematic maps will display each household and community according to their social status, access to public services, and food security.

Systematic collection of food insecurity and nutrition data has been providing strategic information for formulation and improvement of public policies. Moreover, GIS maps and other data increase government accountability to the Quilombolas and other vulnerable groups. Monitoring and evaluation helps identify vulnerable populations that need to be reached by services and programme; this is a key objective of the current Brazilian strategy to end extreme poverty.

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Household food insecurity in small municipalities in Northeastern Brazil

Rodrigo Pinheiro de Toledo Vianna[83], Amber J. Hromi-Fiedler, Ana Maria Segall Correa [84]and Rafael Pérez-Escamilla [85]

Background

A national survey conducted in 2004 documented that whereas 34percent of Brazilian households were food insecure, this was true for 46percent of households in the Northeast, with a similar prevalence found in Paraiba State. National surveys provide important information about the food insecurity situation at the national and regional levels. However, they may mask disparities at municipal level.

Purpose

The objectives of this study are (1) to conduct a psychometric validation of the Brazilian Household Food Insecurity Scale (EBIA) at municipal level, (2) to assess household food insecurity (HFI) prevalence by area of residence and conditional cash transfer programme (CCT) enrolment status, and (3) to identify associations between HFI, poverty and dietary intake in a representative sample of Paraiba's 14 poorest municipalities (N=4533).

Methods

Proportional sampling was stratified by area of residence (urban vs. rural) in each municipality and households were selected randomly. A geographic information system was used to select the households within each stratum per municipality. Data were collected between May and September 2005 via face-to-face home interviews with household respondents. All municipalities included had less than 50,000 inhabitants and the data were representative at the municipality level. Statistical analysis was done with SPSS for Windows®, version 19; a 2-sided p value <0.05 was used as criterion of statistical significance for the association tests. Rasch model analyses were conducted with WINSTEPS version 3.72.

Results

EBIA had strong internal consistency and Rasch modelling indicated that: a) scale items' severities followed theoretical expectations, b) all items had an adequate fit to the scale confirming its unidimensionality, and c) items "functioned" similarly across key subpopulation characteristics including: urban/rural; men/women; younger/older; poor/less poor; Bolsa Familia CCT enrolment (yes/no). HFI prevalence was higher in rural than in urban areas (55.5percent vs 49.9percent, p<0.0005) and severe food insecurity was substantially higher in rural areas (14.0percent vs 9.0percent, p<0.0005). HFI severity was inversely associated with household income. Families with a monthly income less than 0.25 minimum wage per capita were less likely to be food secure (28.9percent vs. 87.2percent) and more likely to be severely food insecure (21.2percent vs. 1.0percent) compared to households earning more than 1 minimum wage per capita. The prevalence of severe food insecurity in rural households enrolled (vs. not enrolled) in the Bolsa Familia CCT was 33.3percent and 24.8percent, respectively. The corresponding figures for households in urban areas were 28.6percent vs. 26percent. HFI severity was also positively associated with daily sugar consumption and inversely associated with daily consumption of bread and nutrient dense foods (fruits, vegetables, and dairy).

Conclusions

This study demonstrates that EBIA is a highly valid scale that can be reliably applied in a relatively short period of time by well trained paraprofessionals living in the target areas. Confirming the psychometric validity of EBIA in small municipalities and its predictive power justifies its inclusion in local food security monitoring systems and programme evaluation projects. Validation findings are also highly relevant for other countries in the Region. In many of them, as in Brazil, the great majority of municipalities have less than 50,000 inhabitants.

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Findings strongly support the need for a better understanding of the reasons behind the higher levels of severe food insecurity in rural vs. urban areas. Paraiba's Bolsa Familia CCT is adequately targeted as it is indeed focusing strongly on very low-income households at very high risk of severe food insecurity.

Accuracy of children's reports, and inaccuracy of parent's reports, of children's experiences of food insecurity

Edward A. Frongillo[86], Maryah S. Fram[87], Carrie Draper[88] and Eliza Fishbein

Introduction

Household food insecurity is associated with deficits in children's physical, psycho-social, and educational development. Reducing these deficits depends on accurate assessment of what children experience within food-insecure households. Assessment of child food insecurity has relied on parent report of child experiences, which is problematic because parents cannot fully know what their children experience. Our previous qualitative research revealed that children in food-insecure households have unique worries, stresses, discomforts, and food management strategies; parents were often unaware of how their children felt or what children did to try to make food last (Fram et al., J Nutr, 2011). The limitations of parent proxy measurement are well known, and have led to the development and validation of child-report measures of quality of life, pain, and exposure to intimate partner violence.

Purpose

We aimed to develop, field-test, and validate a new child-report instrument to assess child food insecurity, and to compare the performance of this instrument with parent report of child food insecurity.

Methods

In step 1, we used rich qualitative data previously collected from Caucasian, African-American, and Latino children and parents to inform the development of questionnaire items and responses. The domains from these data were children's awareness of household food insecurity (cognitive, emotional, and physical awareness), and children taking responsibility for managing household food challenges (through participation, initiation, and resource generation). In step 2, we refined the items through cognitive interviewing with a small diverse sample of children. In step 3, using the refined items, we surveyed 90 children aged 6 to 15 years in South Carolina on their experiences of food insecurity to field-test the items, and also surveyed one parent or household caregiver per child using the U.S. national instrument. In step 4, contemporaneous with step 3, we did 10-15 minute in-depth interviews with each child to create a definitive classification of each domain of child food insecurity. Using a semi-structured interview guide, open-ended questions directed discussion to the domains of childhood food insecurity. On the basis of these interviews, children were classified independently by three investigators as to whether or not they experienced each of the six domains. In step 5, the accuracy of child and parent reports of child food insecurity was obtained by comparing indicators from the questionnaires to the definitive classification using sensitivity and specificity analysis.

Results

For four of the six domains (cognitive, emotional, and physical awareness, and initiation), indicators based on one or two child-report items had high accuracy when compared to the definitive classification; for the other two domains, accuracy was moderate. Indicators based on parent-report items had poor accuracy.

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Policy implications

Prevalence of child food insecurity is substantially underestimated when based on parent report as parents often inaccurately assess their children's experiences of food insecurity. In contrast, a short instrument administered directly to children can more accurately assess child experiences of food insecurity. These results do not mean that parent reports are not the best way to assess food insecurity at the household level, as is being done in several countries. But assessments intending to identify food-insecure children specifically should be based on children's own reporting of their experiences. This instrument will be useful to researchers, policy makers, and practitioners in providing more accurate assessments of child food insecurity prevalence rates and in helping to tailor interventions to the specific domain(s) of food insecurity a child is experiencing.

THE IMPACT OF THE UNITED STATES' LOCAL AND REGIONAL PROCUREMENT OF FOOD AID PILOT PROJECTS

Price Impacts of Local and Regional Procurement and Distribution: A Multi-Country Analysis

Teevrat Garg[89], Christopher B. Barrett, Miguel Gomez, Erin C. Lentz, and William Violette

U.S. food aid Local and Regional Procurement (LRP) programmes are required to meet the "do no harm" condition established by the U.S. Department of Agriculture. A key concern is that LRP could affect retail food prices and their volatility in countries where U.S. food aid is distributed. However, little research has been conducted to rigorously address such impacts due to insufficient data on and analysis of local procurement and delivery of food aid from U.S. Private Voluntary Organizations (PVOs). To fill this gap, we assembled a data set of spatially disaggregated monthly retail prices, food aid procurement and distribution volumes, and a suite of other variables that may affect retail prices. We use these data to specify an econometric model to identify the contemporaneous and lagged market price impacts of LRP procurement and distribution in seven food aid-recipient countries (Burkina Faso, Guatemala, Kenya, Kyrgyzstan, Niger, Uganda and Zambia), covering a wide range of commodities (e.g., maize, cowpeas, millet, wheat and processed products). We find that, in most cases, LRP procurement and distribution activities have no impact on local retail price levels and volatility. However, our results suggest that in some cases LRPs can have modest effects on local retail prices, which tend to be transitory and not economically meaningful. While our results indicate that LRPs meet the "do not harm" condition, donors and PVOs must develop a rigorous strategy to monitor potential impacts of these programmes on local food price levels and volatility.

An evaluation of local and regional procurement in Guatemala

Aurélie P. Harou[90], Miguel I. Gómez, Christopher B. Barrett, Erin C. Lentz and Teevrat Garg

The United States' 2008 Farm Bill allocated funds for pilot projects to procure food aid locally and regionally rather than being shipped from the United States (US). This paper evaluates the experience of a private voluntary organization (PVO) in Guatemala having received such funds to procure food aid locally. Under the programme, the PVO distributed locally purchased maize, black beans, and a fortified corn soy blend (CSB) to 3000 families in the department of Santa Rosa. A quantitative evaluation was conducted with the PVO to test the following: a) the effect of local procurement (LP) on prices and price volatility; b) the comparison of costs and timeliness of food procured locally rather than shipped from the US; and c) the satisfaction of recipients with the local varieties received relative to those commodities/varieties received from the US. We supplemented the quantitative analyses with a qualitative case study analysis of the procurement contracting process.

Different data and methods of analysis were used for each component of the study. Both the price monitoring and the timeliness and costliness analyses rely on secondary data collected from a host of organizations as well as data collected by the PVO. A seemingly unrelated regression (SUR) model is estimated to measure the price effects. Preliminary results show that local purchases of the three commodities by the PVO reduced delivery times by almost seven weeks, or 35 percent, relative to delivery from the United States. Local purchase had no economic or statistically significant effect on retail food prices or price volatility in Guatemala or in the procurement and distribution regions. Cost results are not yet available at this time. The recipient satisfaction analysis relies on primary data collected at the household level. An ordered logit regression allows us to determine which recipients, those receiving LRP food aid or those receiving food aid shipped from the US, most preferred the commodities they received. Preliminary results indicate that among virtually all of attributes elicited (such as quality, taste, storability, non-contamination), LRP recipients were statistically significantly more satisfied, although almost all food aid recipients were satisfied with the products they received.

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The policy recommendations that emerge from this study are to support the use of LRP in specific situations but also underscore the difficulty of LRP contracting and the importance of on-going market monitoring. Relatively small quantities of commodities procured locally by a PVO can be expected to cause no price or price volatility effects on the market. However, larger quantities or aggregate quantities procured locally or regionally by multiple PVOs and the World Food Programme could induce price effects. Recipients tend to be more satisfied with the local commodities received and hence are more likely to consume them and thereby achieve the programme objectives of decreasing hunger and malnutrition. Proper quality control mechanisms must exist, however, to ensure the standards of the goods being distributed. Using LRP as a stimulus to local smallholder growers is challenging due to the difficulties of verifying and enforcing sourcing criteria among suppliers.

Local food for local schools: a comprehensive analysis of the impact of local procurement for a school feeding programme in Burkina Faso

Joanna B. Upton[91], Erin C. Lentz, Christopher B. Barrett and Teevrat Garg

The food assistance toolbox has been expanding in recent years beyond “traditional” food aid or provision of foods shipped from donor countries. One key alternative is local and regional procurement (LRP), purchase of foods in the affected country or in a third country. There has been much asserted about the potential benefits of LRP, including cost savings, timeliness, meeting recipients’ preferences or achieving benefits for smallholder suppliers. There are likewise concerns that purchases could lead to increased prices, potentially harming poor consumers. However, the evidence is thin, in particular comparative evidence, as to the nature and degree of these impacts in different contexts. This paper contributes to answering these questions through a comprehensive comparative analysis of the impacts of locally procuring foods through smallholders in Burkina Faso.
Under pilot funding from the United States Department of Agriculture (USDA), Catholic Relief Services in Burkina Faso (CRS/Burkina) developed a project to integrate local procurement into its school feeding programming. Simultaneous provision of U.S.-sourced food aid commodities to schools in close proximity to the schools provided with LRP commodities provided an ideal counterfactual against which to assess the relative merits of LRP.

The local purchases were compared in cost and timeliness to a number of transoceanic U.S. commodity deliveries. Local food procurement cost slightly over half that of U.S. originated foods and took slightly over half the time to deliver. Impacts on prices were modeled econometrically using secondary price data and controlling for several key confounding variables and the time series properties of the underlying commodity price data. While LRP commodity purchases had no economically or statistically significant impact on prices, millet distribution had an economically and statistically significant downward impact on millet prices in the distribution region.

Recipient and farmer impacts were assessed through post-distribution and post-procurement surveys, respectively. We find robust results that the locally procured commodities are preferred across a range of attributes, including taste, appearance, and storability, while the U.S.-sourced commodities have distinct advantages with respect to preparation time and effort. Benefits identified for smallholder cowpea suppliers included decreased travel distance and time, a higher price received (due to sales later in the season, allowing growers to take advantage of predictable seasonal price increases), and learning about cowpea quality standards and improved storage practices.

These results have significant implications for food assistance programming. Cost and timeliness savings can be considerable. The lack of local market price impacts from local procurement reassure that LRP can be undertaken without causing harm to poor food consumers in the procurement region. However, the negative effect of millet distribution on local market prices are a caution, especially when not matched with procurements, as would be equally true of the monetization of imported food aid. The potential for price effects

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underscores the importance of conducting proper response analysis prior to programming. The results also support claims about preferences for local commodities, and benefits received by smallholder suppliers indicate that it can be not only feasible but beneficial to work with small-scale suppliers.

The Timeliness and Cost Effectiveness of the Local and Regional Procurement of Food Aid: Findings from the United States Department of Agriculture's Procurement Pilot Project and United States Agency for International Development's Emergency Food Security Programme.

Erin Lentz, Simone Passarelli and Christopher Barrett[92]

With budgets tight, food prices high, and global food aid volumes at modern historical lows, making efficient use of limited resources is essential. Likewise, time is of the essence in emergency response. Advocates of local and regional procurement (LRP) of food aid, cash and vouchers often argue that sourcing food nearer to distribution sites will be both faster and more cost effective than transoceanic food aid. The assertion that LRP is both cheaper and faster was a crucial part of the argument in favor of LRP during Congressional authorization of the LRP pilot programme in the United States' 2008 Farm Bill. Some reasonable evidence exists to support these claims, but the data come largely from WFP operations (rather than from US NGO deliveries), and are often compared broadly against shipments from donor countries, without careful control for matching the timing and location of LRP actions. Past timeliness estimates have relied largely on comparisons with hypothetical shipments or with broad programme averages that do not match by destination, time period and commodity very well.

We find that, in our sample, LRP is almost always considerably faster and is often much cheaper than transoceanic food aid. We generate timeliness estimates by comparing at least eight LRP activities against carefully matched in-kind, transoceanic US food aid shipments. Our preliminary findings indicate that procuring food locally or distributing cash or vouchers results in a time-savings of over fourteen weeks; a 59percent percent gain in timeliness. While all LRP pilots reached recipients faster than our matched transoceanic food aid projects, the difference varies by country. Not surprisingly, landlocked countries tend to receive transoceanic shipments more slowly than coastal countries, indicating that the timeliness benefits vary spatially.

As with the timeliness estimates, we estimate cost-effectiveness by comparing LRP activities against carefully matched, in-kind, transoceanic US food aid shipments. Our preliminary findings indicate that cost-effectiveness varies by country and commodity. Procuring grains and some pulses locally seems to result in significant cost savings (a cost savings of over 50 percent, on average) while locally procuring vegetable oil, beans, and corn soy blend may or may not be cost-effective relative to transoceanic shipments.

A better understanding of the prospective time and cost savings of LRP can help inform the 2012 US Farm Bill debates. The appropriateness of LRP relative to transoceanic food aid often depends on the objectives of the projects. Our findings do not indicate that LRP is always superior to transoceanic food aid. However, where markets can adequately meet increased demand generated through LRP, LRP can afford valuable cost and time savings, potentially allowing donors to reach more recipients and/or reach them faster.

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Recipients' Satisfaction with Locally Procured Food Aid Rations: Comparative Evidence From A Three Country Matched Survey

William Violette, Aurélie P. Harou, Joanna B. Upton, Samuel D. Bell, Christopher B. Barrett, Miguel I. Gómez and Erin C. Lentz[93]

Local and regional procurement has become widespread in food aid operations worldwide. There is a common perception that locally sourced foods are preferred over imported versions of the same commodities because target recipient populations are often more familiar with the taste, texture and preparation requirements of locally grown varieties than imported food aid commodities. Also, these recipients may perceive local commodities to be more nutritious and require less fuel or complementary foods (such as cooking oil) than imported commodities. If true, these preferences for and ancillary benefits of locally sourced foods should factor into programming decisions. Since there is no published research of which we are aware that directly compares recipients' preferences for foods sourced locally or in donor countries, these claims remain largely untested hypotheses.
This paper reports findings from a novel survey-based study in which food aid recipients of locally procured food aid rations were matched with other recipients in the same country who received food aid rations shipped from the United States (US). A common questionnaire was developed to assess food aid recipients' satisfaction with the commodities they received, according to several different dimensions, as well as the costs of meal preparation using those rations. We elicited stated preferences using an ordinal scale. The survey instruments were fielded among randomly sampled food aid recipients in Burkina Faso, Guatemala and Zambia, three countries where directly comparable US food aid programmes were being fielded by the same operational agencies. By stratifying our sample based on the sourcing of the food aid rations – locally procured or shipped from the US – the research design controls for temporal, macroeconomic, donor and operational agency effects that might otherwise affect recipients' preferences for one type of commodity over another.

We establish recipients' relative satisfaction with locally procured food aid using ordered logit multivariate regression models to control for other attributes of recipients and programmes that might be correlated with both local sourcing of rations and recipient preferences. We find that recipients routinely prefer locally sourced commodities over equivalent commodities shipped from the US along quality, quantity, taste, texture, appearance, storability and general satisfaction dimensions. Recipients' perceptions of the nutritional quality of the commodities is divided, with some favouring locally procured and others favouring donor-sourced rations. Likewise, we find mixed results with respect to preparation time and expenses, with some commodity and country combinations favouring locally sourced foods and others favouring rations shipped from the US.

A better understanding of food aid recipients' preferences and the effect of different ration sourcing models can inform response analysis and help guide the design of food assistance programmes. It may also influence policymakers, as with the upcoming Farm Bill debates in the US Congress, which authorized a small LRP pilot programme in 2008 and must soon decide whether to turn LRP into a permanently authorized and mainstreamed method of sourcing food aid commodities.

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LOOKING WITHIN THE HOUSEHOLD: FOCUSING ON THE INDIVIDUAL

Access, adoption, and diffusion: understanding the household and intrahousehold impacts of new agricultural technologies in Bangladesh

Neha Kumar and Agnes Quisumbing [94]

Introduction

Malnutrition remains a serious problem in Bangladesh. Rice-based diets consumed by the rural poor do not provide all the necessary micronutrients; children and women are especially vulnerable because of their relatively higher requirements for growth and reproduction. Interventions to improve nutritional status include food-based strategies to alleviate micronutrient malnutrition, such as promotion of polyculture fish and vegetable production. However, relatively little is known about the long-term impact of these interventions.

Purpose of the work

This study estimates the impact of early versus late adoption of improved vegetable and polyculture fish technologies on (1) household consumption, expenditures and assets; (2) food consumption and nutrient intake; and (3) nutritional status, particularly of women and children. Finally, it investigates the factors underlying the differential impact of the interventions on household- and individual-level outcomes.

Methods

In 1996-97 and 2006/07, about 1,000 households were surveyed in three sites where NGOs and specialized extension programmes disseminated new vegetable and fish technologies. These were: (1) the "improved vegetables" site, where new seed varieties were disseminated to women NGO members; (2) a "group fishponds" site, where poor women's groups jointly cultivated a fishpond using polyculture fish technology; and (3) an "individual fishponds" site, where a similar polyculture fish technology was disseminated to households. Using nearest neighbour matching and difference-in-difference techniques, we compared the impact of early versus late adoption of the technologies on household level outcomes (per capita consumption, household assets, household nutrient adequacies) and individual level outcomes (anthropometrics for boys and girls; BMI for men and women; calorie, protein, iron, vitamin A intake and adequacy for all household members; and haemoglobin status for adult women).

Results

Differences in initial conditions across sites, differences in targeting modalities, and differences in the types of technologies introduced underlie the results of the long-term impact evaluation. At baseline, there were marked gender disparities with respect to asset ownership, intrahousehold food allocation, and nutritional status, which were biased against females. Early adopting households in the individual fishponds sites were also considerably wealthier than those in the improved vegetables and group fishponds sites, because ownership of a pond (or the land to excavate a pond) was a requirement for participating in the programme. The vegetables programme also involved lower fixed costs compared to the fishponds programmes, which involved large up-front investments to establish a pond and stock it with fish. Thus, the improved vegetables technology was more easily disseminated to later adopters, who obtained the technology (seeds) and learned from the early adopters, than the fishponds technologies. Adopters of the fishpond technologies in the individual fishpond sites were able to take advantage of "quasi-rents" from the ponds, whereas those in the group fishpond sites had to distribute the gains among many families. Owing to different targeting modalities, the programmes reached women and men in different ways, with the improved vegetables and the group fishpond technologies deliberately targeted to women by the implementing NGOs. The individual fishpond programme, which was targeted to households, ended up involving husbands more than wives.

Reflecting these differences in implementation modality and technology, the biggest monetary returns to early adoption were in the "individual fishponds" site, where household consumption

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expenditures increased by 25percent. In contrast, early adopters of the vegetables technology had 23percent lower monthly food expenditures (including the value of home consumption) and 29.5percent lower household assets compared to late adopters. Impacts in the group fishpond site were insignificant. Because vegetable technologies are easy to disseminate, initial advantages of early adopters disappeared once vegetables were widely disseminated. Despite minimal gains in terms of household assets and household consumption, early adopters of improved vegetables achieved sustained improvements in nutritional status. The proportion of stunted girls decreased differentially by 28 percentage points, while the proportion of thin boys decreased differentially by 43 percentage points. It is possible that the targeting modality—working through women's groups that emphasize women's empowerment, and disseminating vegetables rich in vitamin A and iron, which are most consumed by women—may have had a positive net impact on nutritional status, despite the insignificant impacts on household-level outcomes. In contrast, in the individual fishponds sites, while the proportion of thin girls declined, the proportion of stunted girls increased—indicating that sustained impacts on long-term nutritional status did not occur, despite the large positive impacts on household assets and consumption.

Policy implications

Targeting new technologies to households without paying attention to gender disparities and intrahousehold allocation may result in improved household level outcomes, but no improvement in individual nutritional status.

Conclusions

The impact of agricultural technologies on household incomes and individual well-being depends on: (1) differences in dissemination and targeting mechanisms; (2) initial differences between early and late adopters; (3) whether a technology is divisible and easily disseminated; and (4) intrahousehold allocation processes. These processes result in long-term impacts that may be quite different across interventions, and that differ significantly from short-term estimates of those impacts.

Sound assessments taking into account individual nutrition status and food security at household level in humanitarian contexts

Sylvie Montembault[95] and Kathryn Ogden[96]

Introduction

Over the last few years WFP has renewed its focus on nutrition and its commitment to effectively prevent and treat undernutrition in children up to 24 months of age[97]. WFP policies since 2004 have provided an enabling environment for giving greater emphasis to and mainstreaming nutrition in WFP programmes. In addition to treatment of acute malnutrition, which remains a key concern for WFP, the approach to nutrition formalized in the 2012 Nutrition Policy[98], emphasizes prevention and a focus on nutrition through the life cycle.

Whether in emergency or development contexts, operational success in terms of positive impact on nutrition outcomes depends partly on effective use of nutrition data – information that helps identify and define the problem, to design appropriate responses, to follow changes in nutrition over time and to allow for reporting on effectiveness. In this light the food security analysis service of WFP has to strengthen nutrition information when assessing needs of vulnerable populations and determining programme priorities and specifications.

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97 Scientific research published in the Lancet Series in January and February 2008 highlighted the "window of opportunity" to prevent undernutrition as that from conception to 23 months.

98 Consultation document presented to the Executive Board for approval in February 2012.

Purpose of the Work

This operational research aims at strengthening methodologies and tools to allow combined food security and nutrition assessments to identify the most appropriate nutrition programmes for a particular context. WFP already measures household access to food, actual household food consumption and the nutrition status of individuals. However this research will emphasize the role of limited economic access to food as a key causal factor in undernutrition and provide evidence to support the argument that household food security is essential to reducing risk of malnutrition even when the other key contributors to good nutrition outcomes (adequate knowledge and care) are already present.

Methods

WFP will incorporate questions and measurements into food security and nutrition assessments (including female adult anthropometry, infant and young child feeding practices, etc.) to improve understanding of a given population's nutritional status and food-related underlying causes of malnutrition. Emphasis is put on the interpretation of nutrition information, using the WFP Food and Nutrition Security Framework that highlights the association between household access to food (as an underlying cause), individual dietary intake (as an immediate cause) and nutritional status (as an outcome) with analyses focusing on the household level and on exploration of the linkages between household food consumption (as a proxy for food access) and nutrition status. The research will further investigate how well certain specific indicators may reflect the adequacy of food intake at household and individual level, as well as the degree to which those indicators are associated with nutritional status. Selected priority countries will be supported to analyse data from WFP combined Nutrition and Food security assessments and to present the analysis in a way that gives additional weight to the information required for nutrition programming.

Policy implication and conclusions

As the UN food assistance agency, WFP plays a key role in helping to address the threat and consequences of hunger and undernutrition. Through its assessments, WFP needs to have the tools necessary to assess the importance of household access to food in nutrition outcomes. Evidence gathered by these tools is essential to presenting strong arguments to partners in government, the UN and civil society to prioritize this element of the complex causes of undernutrition.

Intra-Household Control of Income and Nutrition: Evidence from Malawi

Calogero Carletto[99], Talip Kilic and Amparo Patacios López[100]

A sizeable literature claims to offer causal evidence on the positive relationship between women's control of household income and a number of food security and nutrition outcomes. The primary shortcoming of these studies is that they either (i) focus on a specific component of household income or (ii) compute a total household income aggregate but assign the control of each income component among individuals based on questionable assumptions. Our study revisits the evidence on the relationship between women's control of income and child anthropometric outcomes. Our contribution derives primarily from the use of an innovative data set that contains detailed information on intra-household control of resources. Specifically, we use the Malawi Third Integrated Household Survey (IHS3) 2010/11 data, covering 12,271 households. The data are representative at the national-, rural/urban-, and district-level.

All surveyed households were administered a Household Questionnaire that collects information on demographics, child anthropometrics, wage- and non-farm self-employment, household food and non-food consumption, and durable assets, among other topics. In particular, (i) the Time Use and Labour module collects individual-level information on returns to main, secondary, and casual wage-employment in the last 12 months, (ii) the Household

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Enterprises module identifies, for each enterprise owned by the household in the last 12 months, owners and managers, collects information on revenues and costs in the last month of operation and provides an overview of enterprise earnings over the last 12 months, (iii) the Social Safety Nets module is at the programme level, identifying beneficiaries and individuals that decide on the use of the associated income, and (iv) the Other Income module identifies individuals that decide on the use of each miscellaneous income source received during the last 12 months.

Farming households were also given an Agriculture Questionnaire that allows for, among other things, plot-level analysis of agricultural productivity, and labor/non-labor input use and expenditures. The questionnaire identifies (i) the manager and owners on each plot owned and/or cultivated, and (ii) for each type of crop produced, individuals who decide on the use of income from sales. Additionally, for each type of livestock and livestock product, we know (i) individuals who own the animal(s), and (ii) individuals who decide on the use of earnings from sales, respectively.

Our primary objective is to estimate the impact of women's share of household income on preschoolers' anthropometric outcomes, also differentiating between boys and girls in the same cohort. The main outcome variables are z-scores of height-for-age, weight-for-age, and weight-for-height. The linear regression models control for child-specific, parental and community-level variables as well as household-fixed effects. To assess the benefits of collecting highly disaggregated individual-level income data, we contrast our results with those that would be obtained by assigning control of income among household members based on assumptions that are commonly found in the literature.

Intrahousehold (mis-)allocation of food resources: evidence from Tajikistan

Erich Battistin[101], Claudio Daminato and Michele De Nadai

Introduction

This paper considers intra-household allocation of resources using data from the Tajikistan Living Standards Survey (LSS) for 2007, shedding light on the determinants of possible inequalities in the well-being of children and older members. The issue is of considerable policy relevance for the country, where it is documented that children have the highest material poverty in a variety of dimensions compared to the adults and, at the same time, represent a sizable proportion of the total population. If the youngest household members were differentially positioned with regard to access to resources, and in particular those related to food, this could seriously impair their cognitive development, subsequently reducing accumulation of human capital and, in the long run, slowing national economic growth

Purpose of the work

LSSs typically collect information on household spending and nutrient acquisitions without distinguishing how consumption differs between household members. While on the one hand this allows one to study inequality across households, on the other hand it may conceal an important source of inequality that comes from within the household. In order to assess intra-household inequality and child poverty, one would also need to measure resource shares for children. This paper employs a method that allows one to disentangle the expenditure shares allocated to adult members from those allocated to children. The analysis considers the key socio-economic determinants of this dimension of inequality, and their interplay with perceived food insecurity as reported by household members.

Methods

Our strategy for the identification of resource shares for children relies on the availability of measurements of household nutrient acquisitions. Household caloric intakes are exactly the

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sum of caloric intakes of household members, because nutrients cannot be shared. It follows that the household acquisitions of nutrients recorded in the data can be written as equal to the sum of intakes of household members of different ages, plus an error term capturing deviations from average intakes and measurement error in recorded acquisitions. Starting from this idea, we show that standard regression methods allow estimation of age specific nutrient intakes of household members. We use estimated coefficients to plot age profiles of nutrient acquisitions, separately for food secure and food insecure households.

Policy implications and conclusions

Our results are consistent with the idea that the youngest members of the household are discriminated against in terms of access to resources, offering important insights to the design of social policies in Tajikistan. We find that discrimination is more pronounced in food insecure households, and for those food items with the highest nutritional value. This evidence provides support to policies targeting children instead of households, and to those which ensure that a sizable share of household expenditure is allocated to children. Our results also allow policy makers to gain insights into the measurement of inequality in the country, since commonly employed indicators are built upon the assumption that each member of the household gets an equal share of total resources.

Diet and nutritional status of adolescent girls in Central Mozambique – the Zane study

Freese R, Korkalo L, Fidalgo L, Alfthan G, Hauta-alus H, Selvester K, Ismael C, Mutanen M[102]

Introduction

Diets in Africa are often high in carbohydrates and low in fat and protein. Unbalanced diets contribute to poor nutritional status with life-long consequences, especially in vulnerable adolescent girls who are still growing but likely to become pregnant.

Purpose of the work

The aim of the ZANE study was to produce in-depth information on the diet and nutritional status of adolescent girls in Zambezia province, Mozambique.

Design and methods

A cross-sectional study was carried out in January-February 2010 and May-June 2010. Subjects were recruited from Quelimane city and two districts using a cluster sampling approach. Information on background, 7 day food frequency, and 24 hour dietary recall data was collected by interviews. Dietary intakes were calculated using NutriSurvey programme and a food composition database# was compiled for the study. Blood hemoglobin (HemoCue), HIV and malaria status and fecal parasites were tested from samples of compliant subjects. Nutritional status was assessed via anthropometric and biochemical measurement.

Results

Altogether 511 girls, aged 14 to 19 years, were studied. The main staple foods consumed were maize porridge, cassava porridge and rice. Fish was consumed frequently (62 percent of the subjects) in the 24-hour recall, but often in only small amounts. Poultry (14 percent), meat (8 percent) and egg (6 percent) use was less common. The median energy intake (5.6 MJ/day) and median proportions of energy from protein (10 E percent), fat (18 Epercent) and linoleic acid (2.8 Epercent) were low. The median nutrient densities of zinc (0.9 mg/MJ) and vitamin A (31 µg RAE/MJ) were also low.

From those tested, 11percent were pregnant, 8percent were HIV positive, 9 percent had malaria and 15 percent had fecal helminths. Height-for-age indicated that 18percent of the

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girls were moderately or severely stunted. However, only 2.2 percent of the non-pregnant girls were classified as thin while 5.4 percent were overweight and thus the low energy intakes suggest underreporting. Blood hemoglobin [mean (SD)] was 119 (16) g/l and 18 percent were moderately or severely anemic. Serum zinc was 9.57 (2.34) µmol/l and 36percent were zinc deficient. Vitamin A deficiency (serum retinol <0.70 µmol/l) was found in 19 percent of the girls. Median iodine concentration in spot urine samples was 69.7 µg/l and 35 percent of the values were below 50 µg/l indicating iodine insufficiency. The results indicated differences in diet as well as health and nutritional status of adolescent girls in different locations and seasons.

Policy implications

Micronutrient deficiencies are common and dietary diversity needs to be increased to improve the nutritional status of adolescent girls in Zambezia. Diets could be improved by increasing intake of animal-based foods, beans, nuts and vegetable oils high in linoleic acid. The use of iodized salt should be strongly promoted. This type of a study provides in-depth information on the differences created by residential environment and seasonality in diet and nutritional status. It may also indicate ways to mitigate the problem of micronutrient deficiency in this vulnerable group. Preliminary results were presented to Mozambican authorities in November 2011 and can be used to strengthen the multisectoral plan for scaling up nutrition in Mozambique between 2011 and 2020.

[#] http://www.helsinki.fi/food-and-environment/research/groups/nutrition_research.html

MEASURING FOOD ACCESS IN MULTIPLE WAYS: THE RICHNESS OF HOUSEHOLD DATA

REACHING FOR THE STARS? UNIVERSAL MEASURES OF HOUSEHOLD FOOD SECURITY

Jennifer Coates and Daniel Maxwell[103]

In 2002 a pressing challenge was to identify simple yet scientifically rigorous measures of insecure household food access for use in targeting resources and in monitoring and evaluating programmes. Over the past decade, a trio of household food security measures – the Household Food Insecurity Access Scale (HFIAS), the Coping Strategies Index (CSI), and various dietary diversity indexes, have been developed, validated, and are now in widespread use by operational agencies. While these indicators measure food insecurity accurately and reliably when adapted to a local context, a limitation has been that results cannot always be validly compared from one location to another. In response to a growing demand for standardized household food security measures to track the magnitude and severity of food security across different geographic settings, the developers of these measures have sought to establish culturally-invariant versions that can be used comparatively across both space and time – the holy grail of food security measurement.

This paper describes a conceptual framework and six criteria, derived from a review of the psychometrics and measurement literature, for assessing the universality (or "cross-cultural equivalence") of the Reduced Coping Strategies Index (derived from the CSI), the Household Hunger Scale (derived from the HFIAS), and a set of dietary diversity indexes that include the WFP Food Consumption Score. The criteria are as follows: 1) construct definition and relevance, 2) expression of concepts and language, 3) severity, importance, or priority of scale elements 4) relationship between the measure and other meaningful variables, and 5) thresholds. The sixth criterion examined whether the cross-cultural versions of the measures sacrificed measurement range, reliability and content in order to meet the five criteria above. The results of recent published and unpublished research to identify standardized HHFS indicators were evaluated against each of the criteria in order to judge the extent to which empirical evidence supports the identification of a universal household food security indicator.

Results suggest that all 3 of the indicators evaluated meet many, but not all, criteria for cultural equivalence. The most significant challenge in each case has been the identification of a "universal cut-off" to meaningfully categorize household food security status consistently across different contexts. In all cases the more culturally invariant measures sacrificed some degree of measurement range, content validity, and other desirable aspects of the context-specific measures in order to achieve comparability.

Great progress has been made since 2002 in developing HHFS indicators yielding results that can be compared across widely varied contexts, though more work remains. Because these standardized indicators sacrifice important contextual information they should be used primarily when the situation demands comparability and, ideally, together with context specific data to inform programme and policy decisions.

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Dietary patterns and their socio-demographic determinants in 16 countries: data from the DAFNE-ANEMOS databank

Eleni Oikonomou, Konstantinos Tsiotas, Androniki Naska, Antonia Trichopoulou [104] for the DAFNE-ANEMOS network *

Introduction

Worldwide data for nutrition monitoring and surveillance are commonly derived from Food Balance Sheets and Household Budget Surveys (HBS). The data collection in HBS is accomplished on a regular basis and within one year so as to capture seasonal variation in food intake. Information on demographic and socio-economic characteristics of household members is also collected, creating an opportunity for exploratory analysis of the effect of socio-economic determinants on dietary indicators.

Purpose of the work

To identify and monitor dietary patterns in 16 countries based on comparable data and to explore possible effects of socio-demographic characteristics on food choices.

Methods

Data collected in nationally representative HBS undertaken between 2000 and 2007 in 16 countries, covering Central, Eastern and South Europe, including the Balkan and Baltic region as well as Armenia, were harmonized and analysed. The process of harmonization includes: management and processing of the raw data; documentation of the variables used in the analysis; harmonization of the food and socio-demographic information (namely the household's locality and composition, as well as the education and occupation of the household head).

Results

The pattern of a plant-based diet is recorded more in South than in North Europe. The highest daily mean availability of fresh fruits was reported in Greece (2004) and of fresh vegetables in Albania (2006). Populations in Malta (2000) and Armenia (2004) reported the highest daily mean availability of processed vegetables. High consumption of fish and seafood was also noted more in the South than in Central or North Europe (the Portuguese population reported the highest daily mean availability). In terms of meat, Greece and Cyprus reported the highest daily mean availability, whereas in central European and Baltic processed meat products were reported to be consumed more than fresh meat. Interestingly, the availability of added lipids in household appears to follow a social gradient. Households of lower educated heads generally report more added lipids (of animal or vegetable origin) in comparison to the highly educated ones. An exception holds for olive oil in Central Europe, which is consumed more in households of highly educated members.

Policy implications

In the absence of regular and comparable individual-based surveys across countries, HBS are likely to remain valuable sources of information about long-term nutrition trends, their socio-demographic determinants and their likely health implications.

Conclusions

Data collected in national samples of 16 countries showed disparities on food availability among countries and socio-economic strata.

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The Dietary Diversity Questionnaire: From informing on dietary adequacy to informing on policy – evidence from Egypt

Fatima Hachem[105], Akila Saleh, Rasha Shalaby[106]

Introduction

In the past few years, policy advisors in Egypt have shown an increasing interest in rapid assessment methods for measuring household food and nutrition security. This interest is due in large part to a series of successive shocks - devaluation of the Egyptian Pound in 2004, onset of Avian Influenza in 2006, soaring food prices in 2007, the financial crisis in 2008 and the revolution of January 2011 – that have created an unprecedented need to know in a timely manner the impact of shocks on household food and nutrition security.

Purpose of the work

A household survey was conducted in 2010 and 2011 in four governorates in Upper Egypt, each classified among the poorest in the country, with the objective of rapidly assessing household food and nutrition security to inform the Ministry of Agriculture of appropriate community based interventions that could be implemented to address the identified challenges.

Methods

Interviewed households were randomly selected from twenty villages in the four governorates. A questionnaire was developed for the survey which included a modified version of the Household Dietary Diversity Questionnaire (HDDQ). This version contained 14 food categories and each category contained the most frequently consumed foods in the surveyed governorates (categories were chosen after field testing a more expanded version of the HDDQ). Interviewees were asked about the foods that the household had consumed the day before as well as the frequency of their consumption. All interviewees were adult women.

Results

Data were collected from 769 households. Analysis showed that the frequency of consumption of cereals, oils, sugar and vegetables was high while that of the other food groups ranged from moderate to low according to the governorate. The expansion of HDDQ made it possible to see that within-group diversity was low especially for cereals and vegetables. The high consumption of cereals was attributed to the high consumption of subsidized bread, and that of vegetables to the high consumption of tomatoes. Such dependency on one commodity does not only have nutritional implications but also highlights the vulnerability of household consumption to shocks. The HDDQ also showed the dependency of households on eggs, especially free-range *Baladi* eggs, as a main source of animal protein.

Policy Implications

In September 2010, the tomato crop in Egypt was hit by a virus that pushed the prices of tomatoes beyond the affordability of most consumers. Policy makers in the Ministry of Agriculture were presented with the findings of the survey and were advised of the necessity of introducing policies to diversify the food available for consumption through extension campaigns targeting farmers, and through nutrition education campaigns targeting consumers. They were also advised of the necessity of revisiting policies related to the ban of backyard poultry that had been in place since 2006 in order to curb the spread of avian influenza.

Conclusions

The case study of Egypt proves that an expanded Household Dietary Diversity Questionnaire could be used not only to assess dietary adequacy but also as a food and agriculture policy tool.

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Household food access in rural South Africa: Lessons for emerging food security policy

Peter Jacobs [107]

Introduction

The nature and extent of food insecurity in post-apartheid South Africa attracts increasing attention from policymakers, developmental advocacy groups and researchers. Lack of reliable data to comprehensively measure and monitor the multiple dimensions of food security, ranging from food production to household food access and nutrition, impedes a clear view of the country's food insecurity challenge. Altman et al (2009) assembled a "status report" from a large body of available evidence leading them to underscore two crucial points: (1) while the country might appear to be nationally food secure, significant numbers of households cannot afford nutritious food; (2) while household food insecurity is largely a rural problem, extreme hunger also exists among poor households in urban (informal) areas.

Purpose of the work

In the context of an incomplete picture of the food security status of South African households and government's efforts to rethink policies to assist food insecure households, this paper examines food access trends among rural households. This analysis helps to:

- better understand how rural households access food given some evidence that households have been switching from subsistence farming to purchased foods;
- expand policy relevant evidence on the food security status of poor rural households based on primary livelihood strategies (farm households and farm workers); and
- draw meaningful lessons for emerging food security policy.

Methods

The General Household Survey (GHS) is a nationally representative survey which is conducted annually by South Africa's official statistics agency. In addition to a "household food security question", this survey collects information on a number of variables to profile the livelihood strategies of rural households. This study compares evidence from the 2007 and 2009 GHS; both rounds allow for a focus on rural households but used slightly different questions to measure household food security status. Focusing on subsistence farming and food purchases, we use these datasets to analyse ways in which farm households and farm worker households access food.

Policy implications

The right to food is entrenched in the country's 1996 Constitution but appropriate policies to give real-life effect to this overarching constitutional right must still be implemented. In 2002 the state adopted an Integrated Food Security Strategy (IFSS) yet institutional coordination inside government around the IFSS has been weak. Furthermore, the IFSS lacked a clear analysis of the nature of rural and urban food insecurity. More recently, government has invested efforts to develop a "Zero Hunger Policy"- drawing on the Brazilian "Fome Zero" or "Zero Hunger" programme. Whether the South African version of "Zero Hunger" will bridge all the gaps in the IFSS is a question yet to be properly answered. However, what cannot be disputed is that food security policy stands to benefit from a better analysis of available data.

This paper highlights the implications for social safety nets (cash grants), agricultural support packages and how agro-food market policies might impact access to food.

Conclusions

Evidence on the food access patterns among (poor) rural households in South Africa suggests that they are mainly net food buyers. Such households are particularly vulnerable to rapid food price inflation, calling for food security policy that matches their situation.

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FOOD SECURITY INFORMATION SYSTEMS: NEW DEVELOPMENTS ON MEASUREMENT, ANALYSIS, AND INSTITUTIONS

Making sense of complexity—the approach of the integrated food security phase classification for decision support

Nicholas Haan, Luca Russo, Zoe Druilhe, Siddharth Krishnaswamy, Oriane Turot[108], Justus Liku[109], Kaija Korpi[110], and Chris Hillbruner [111]

Real-time, action-oriented food security analysis is inherently complex. It involves wide-ranging and ever-shifting data sources, methodologies, and stakeholders. Making sense of this complexity is essential for effective decision making. The Integrated Food Security Phase Classification (IPC) addresses this challenge with an innovative approach to situation analysis that is designed around the needs of decision makers.

The IPC includes protocols to classify the severity of food insecurity situations at the sub-national level. It consolidates evidence on food insecure people to provide answers to core questions of: How severe?, Where?, How Many?, Who?, Why?. The IPC reference tables, tools and procedures ensure these questions are answered—as best as possible--in a comparable, transparent, reliable, relevant, and consensus-based manner. The IPC is not an assessment methodology or data collection tool. Rather, the IPC approach utilizes available information in a "convergence of evidence" manner to classify the nature and severity of a food security situation.

The IPC includes four functions: (1) Building Technical Consensus, (2) Classifying Severity and Causes, (3) Communicating for Action, and (4) Quality Assurance. The IPC is designed to be applicable in any context irrespective of the type of food insecurity, hazard, socio-economic, livelihood, institutional, or data context.

Nearly 30 countries in Africa, Asia, and Latin America are at varying stages of implementing the IPC. It has been endorsed by the World Conference on Food Security and is managed by an inter-agency steering committee that includes: CARE, FAO, the European Joint Research Centre, FEWSNET, Oxfam GB, Save the Children UK/US, and WFP.

This paper provides an overview of the IPC and demonstrates how the approach contributes to making interventions more effective, needs-based, strategic, and timely. Country case studies illustrate IPC usage in varying institutional, economic, and environmental contexts. Further research is warranted to objectively demonstrate the validity of the approach in terms of comparability of the analysis and its relevance for decision making.

Scenario Building for Food Security Projections: Process, Experience, and Lessons Learned

Jenny Coneff [112], Chris Hillbruner, and Anne Speca

Introduction

Early warning of food insecurity is the primary mandate of the Famine Early Warning Systems Network (FEWS NET). Providing timely and actionable early warning information requires the estimation of future food security outcomes many months in advance. However, definitively predicting the future is almost impossible given the complex web of factors that shape food security. FEWS NET has reconciled the need to provide early warning information with the inherent uncertainty about future events through a scenario building process, implemented quarterly in every FEWS NET country since July 2010.

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Purpose

The need to formalize scenario development evolved out of donor demand for more detailed early warning information; a desire to better communicate the logic behind FEWS NET's food insecurity severity mapping, particularly at a sub-national level; and a need for a standard early warning method that could be applied across all FEWS NET countries.

Methods

Based on these needs, FEWS NET developed a process that synthesizes information about current conditions, typical livelihood patterns, and assumptions about the future to project future food security outcomes. The process uses specific assumptions about future events, their effects, and the likely responses of various actors; these assumptions are based on evidence from current and historical price trends, satellite imagery, typical livelihood patterns, etc. For these reasons, scenario development is a key pillar of FEWS NET's work, and is the basis for the FEWS NET Outlook products developed for all FEWS NET countries on a quarterly basis.

FEWS NET published the first version of its scenario development guidance in 2007 and has made several modifications since based on lessons learned from its application in several different contexts. The most recent version of the scenario development guidance as of publication of this abstract is available via www.fews.net[113].

In its simplest form, FEWS NET's scenario development method has the following general steps:

- Identifying the type, duration, and geographic area of the scenario
- Describing the typical sources of food and income over the scenario period
- Describing current food security drivers and classifying current outcomes
- Establishing assumptions about key future events, including a logical chain of events illustrating the link between these and impacts on household food and income sources
- Describing future household, community, national, or other responses
- Summarizing the net impact on household food and income sources after response and classifying the evolution of future food security outcomes
- Identifying assumptions for which uncertainty is relatively high or alternative possible events that could have a significant impact on food security and briefly describing the alternative scenario.

Scenario development responds to decision-makers' needs for more forward-looking analysis, greater transparency in assumptions about the future. It also facilitates a systematic incorporation of local livelihoods and clarification between indirect causes of food insecurity (like production or prices) and food security outcomes (food consumption, livelihood change, malnutrition, and mortality).

FEWS NET's standard most likely scenarios that are communicated in quarterly Outlook products help decision-makers focus response analysis on a relatively narrow range of necessary options. However, the scenario development method is flexible enough to use in more complex situations. When uncertainty is extremely high (as in the case of the Sudan referendum) or when the food security outcomes are potentially most dire, the development of several possible scenarios or an alternative worst case scenario facilitates a broader range of inputs to contingency planning. When scenario development is done with partners, as was the case for the eastern Horn of Africa Emergency in 2011, it helps to facilitate high levels of technical consensus.

Conclusion

FEWS NET's experience has demonstrated that scenario development can be a flexible, dynamic tool to support projection analysis and build technical consensus. This is particularly

113 http://www.fews.net/docs/Publications/Stepspercent20topercent20Scenariopercent20development_082410_highres.pdf

important in the context of the new version of the Integrated Phase Classification (IPC) Acute Food Insecurity Scale (Version 2.0), which now involves projection analysis.

As a growing number of organizations begin to carry out projection analysis, FEWS NET's experience and lessons learned can provide a useful contribution to the discussion and knowledge on scenario development.

FEWS NET Remote Monitoring Initiative: identifying anomalies and providing decision support in non-presence countries

Brian Kriz [114]

Following the 2008 food price crisis, there has been increased demand for the Famine Early Warning Systems Network (FEWS NET) to provide decision makers with independent and evidence-based food security analysis for a large number of countries where FEWS NET does not have an office without a significant increase in resources. In order to effectively respond to these information needs without expanding in-country presence, FEWS NET developed and operationalized the remote monitoring initiative – a non-presence approach to food security early warning analysis – in 2009.

In order to successfully collect relevant food security information and provide meaningful analyses to decision makers in non-presence countries, FEWS NET designed and implemented replicable start-up activities. The process consists of two workshops, field verification, and developing a monitoring framework. The purpose of the two workshops is to develop a suite of livelihood products (including a livelihood map, zone descriptions, and seasonal calendars) and commodity network maps. Participants in the workshop are explicitly chosen because of their sub-national expertise in livelihoods and trade. Typically this includes district level agricultural extension officers, national FAO or WFP staff, and national NGO staff. Following the workshops, a technical team travels to select areas of the country to verify and expand on information collected during the workshop. In addition to giving FEWS NET the bare minimum of tools required for effective food security analysis, this process also builds a network of partners for future information collection and monitoring. The final step is to develop a monitoring plan that identifies areas of the country that are most at-risk to acute food insecurity, either because of recurrent hazards (e.g. floods and erratic rainfall) or inherent vulnerabilities. In addition to developing a monitoring plan, this activity identifies key variables to monitor on a seasonal basis.

During the development of the remote monitoring initiative, FEWS NET aimed to maintain a balance between information that is available through partner organizations and information that is most important for food security early warning analysis. This effective, low-resource approach can identify anomalies in key, pre-identified food security related variables that suggest that households are at increased risk of acute food insecurity. When anomalies are identified or there is low confidence in the information available, FEWS NET has developed a protocol to conduct field assessments, though lack of permanent local staff in non-presence countries presents a challenge to conduct more in-depth analysis.

A reporting format and system of symbols, in the form of flags and arrows, were specifically developed to communicate an anomaly's typology, severity, and its likely future trend to decision makers. These communication tools are commensurate with the level of information gathering and analysis that FEWS NET can perform remotely, and it is harmonized with IPC version 2.0 acute food insecurity phases.

FEWS NET's remote monitoring initiative demonstrates the potential to measure and analyse food security conditions and estimate food security outcomes in more countries in response to the growing demand from decision makes to obtain more information in a cost-efficient manner.

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Provision of nutritional information to the food security monitoring system of Burkina Faso: an example of integration of MUAC measurements in permanent agricultural surveys in the Sahel

Mahamadou Tanimoune[115], Bernard Dembélé[116], Sitegnè Hien[117], Yves Martin-Prével[118]

Purpose of the work

In 2004 measurement of Mid Upper Arm Circumference (MUAC) was integrated into Burkina Faso's Permanent Agricultural Survey (PAS). PAS is conducted annually though MUAC data are collected twice yearly, during the lean season and post-harvest. This study was conducted in 2008 to determine whether MUAC data collected between 2004 and 2007 added value to the decision-making process within the national food security monitoring system in Burkina Faso.

Methods

The study used two methods. The first was a retrospective analysis of MUAC data of children aged 6-59 months, carried out to study the trends in MUAC values at both national and regional levels. This analysis was performed using both MUAC-for-age z-score (MUACZ) values, with a cut-off point of -2 Z-scores to define malnutrition, and the raw MUAC values in cm, with a cut-off of 12.5 cm. The second method was a qualitative investigation carried out through interviews conducted with various key players in the food security monitoring system of Burkina Faso. The interviews gathered views on the system itself as well as opinions regarding integration of nutrition information into the system.

Results

The examination of age distributions revealed high frequency of reported ages that were multiples of 6 and 12 months (heaping). There was also some heaping for MUAC measurements, but less pronounced and highly dependent on the type of tape used. Over seven rounds of MUAC data (both rounds in 2004-2006, first round in 2007), quality increased, as shown by a decreasing value of the standard deviation of the distribution of MUACZ (from 1.26 to 1.06 SD). External validity of these data was shown through the clear and significant relationships between MUACZ mean values and morbidity (lower mean z-score when the child was sick before the survey), the child's sex (lower mean z-score for boys) and the economic status of the household (lower mean z-score for children living in poor households).

The observed trend in MUAC data over the seven rounds was coherent with what was known of the nutritional situation at country level from other surveys. At the regional level, some downward trends could be retrospectively related to temporary or longer-term situations; for example, chronic food shortages in certain regions, poverty, or exposure to shocks such as flooding.

Through the qualitative study, we found that many stakeholders and decision makers were not aware that nutrition data were being collected within PAS. This lack of awareness limited the usefulness of the nutrition information in the decision making process. Stakeholders and decision makers, however, acknowledged that collection of MUAC data could be easily integrated in the PAS to provide data on the trends of nutritional status of young children, an important aspect of food security which has neglected in the past.

Policy implications

In addition to the use of MUAC as a screening tool at the individual level (to identify malnourished children needing treatment), regularly collected MUAC data can also be analysed in depth at the population level to identify regional and national trends. Overall, MUAC information can facilitate better targeting of vulnerable areas for intervention.

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116 Comité Inter Etat de Lutte Contre la Sécheresse au Sahel CILSS
117 Direction Générale des Prévision et des Statistiques Agricoles (DGPSA)
118 Institut de Recherche pour le développement IRD

This experience in Burkina Faso raised interest in nutrition at the policy level; nutrition is also becoming more of a policy priority in many other Sahelian countries such as Niger and Mali. However, in regards to the relevance and usefulness of MUAC data collected by PAS for food security decision making, communication and information dissemination should be reassessed to ensure clear understanding and effective use.

A regional approach to food security information: lessons from Sub-Saharan Africa

Shukri Ahmed and Mario Zappacosta [119]

This work reviews the advantages of adopting a regional approach to food security information over a set of country based strategies or over regional monitoring done by non-regional actors. It also identifies critical requirements or pre-requisites for effective replication.

The regional approach to food security monitoring, early warning and response has been taken by the CILSS, SADC, and IGAD organizations; experience from each has shown that there are advantages in the technical as well as governance domains.

Technical advantages include shared data management and conceptual frameworks for standardized, comparable data and analysis across countries; economies of scale in funding only one large regional facility; and broader monitoring capacity, data acquisition, processing and interpretation. The latter allows each country's analysis and plans to include and address external factors which might affect food security.

Governance-related advantages include bringing national institutions to a common technical level; allowing for joint review of national data; reducing political interference and strengthening output credibility; and providing a common platform for data collection and analysis, facilitating movement from information to action as well as encouraging broader policy discussions at regional level.

An important lesson is that successful regional organizations build institutions and technical tools based upon a strong existing base of shared political consensus. A regional approach based mainly on technical tools may generate political tensions within a regional organization and be removed or weakened to the point where the technical capacity of the organization is compromised. However, if the organization is predominantly politically based, it will have the means and ability to resolve political tensions which might otherwise hamstring technical capacity.

Another important lesson pertains to relations between an organization and its members and external partners. Member states may give up a small amount of national sovereignty by setting up a regional organization, such a loss is only acceptable if the organization is clearly perceived as working in their interests. Member states are often reluctant to let their regional organization accept outside funding and assistance unless the regional organization remains clearly "in charge". Moreover, a regional organization can only be strengthened by external financial and technical assistance if its governance is clear, transparent and strongly supported by member states. If the regional organization is weak, external partners may prefer to set up a separate regional food security monitoring system run by non-regional actors.

To realize the advantages of a regional approach to food security information, the conditions inherent in these lessons must be met. These conditions pertain to the primacy of the political over the technical domain and to the nature of relations between the monitoring organization and its constituent states and external partners. These political, institutional and governance requirements are demanding. Constituent states and their external partners must recognize that there are no short-cuts; that it is a long and arduous undertaking.

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FORMULATING GOOD POLICY EVIDENCE: FROM THE MICRO LEVEL TO MACRO PHENOMENA

Seasonal food and nutrition insecurity: Measuring and analysing seasonality for improved decision making

Stephen Devereux [120]

Seasonality is a major source of food insecurity and hunger in tropical countries of Africa and Asia, but it remains under-recognised both analytically and in policy responses. Seasonality attracted much academic and policy interest in the 1980s, following the publication of a seminal book – "Seasonal Dimensions to Rural Poverty" (edited by Chambers, Longhurst and Pacey, 1981) – which documented systematic variability in livelihoods and wellbeing outcomes in rural areas of tropical countries. But seasonality subsequently disappeared from the policy agenda, despite the emergence of several factors – such as structural adjustment programmes, HIV and AIDS, climate change, the global food and financial crises – which all have important seasonal dimensions or implications.

This paper will draw on findings and presentations made at a conference titled "Seasonality Revisited", held at the Institute of Development Studies in July 2009, which aimed to revive academic and policy interest in seasonality as a source of food and nutrition insecurity. An edited collection of papers from this conference – "Seasonality, Rural Livelihoods and Development" (edited by Devereux, Sabates-Wheeler and Longhurst) will be published by Earthscan in November 2011.

This paper draws specifically on the "methods" theme of the "Seasonality Revisited" conference, which introduced a number of innovative methodologies for monitoring and analysing seasonal food insecurity, and challenged "seasonal blindness" in poverty research and food security analysis. The methodologies include: seasonal "Livelihood Impact Analysis"; a "Hunger Monitoring System"; monitoring seasonal living costs through the "Rural Basket"; participatory farm budgets; analysing seasonality in household poverty surveys; modelling seasonality using the "Household Economy Approach"; conceptualising seasonal financial market failures in rural household models. These methodologies are applied to several African countries, including Ethiopia, Ghana, Malawi, Zambia and Zimbabwe.

By drawing attention to seasonality as a source of food insecurity and undernutrition, this paper aims to contribute to the objective of ensuring that seasonality is factored into the design and implementation of rural development projects and food security programmes, and developing appropriate counter-seasonal responses.

Evaluating the Impact of Agricultural Interventions using Household Resilience: A Quasi-Experimental Design in the Gaza Strip

Erdgin Mane, Ana Paula de la O Campos[121] and Rana Hannoun[122]

Background

We evaluated the impacts on food security of a DFID-funded agricultural project, implemented by the FAO to support farming households with destroyed lands in the Gaza Strip. Through providing land rehabilitation, agricultural inputs distribution and training, farmers' food security had significantly improved after a year after of the intervention.

Purpose

The purpose of the impact assessment was two-fold: 1) provide enough evidence to the donors regarding effectiveness of this programme; 2) test a new approach of impact assessment using the resilience framework developed by Alinovi *et al.* (2010) for the selection of impact indicators. Resilience – the ability of a household to keep within a certain level of

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well-being withstanding stress and shocks – depends on the livelihood options that households have available and their ability to manage risks. This holistic approach is extremely useful for determining the kind of interventions needed in acute food shortages; for designing long-term interventions; and for providing solid analytical basis for inter-agency joint programming.

Methods

We measured the effectiveness of the intervention using the household resilience framework in order to provide a comprehensive picture of direct and indirect effects generated by the intervention. The framework is based on eight components of household resilience: income and food access, access to basic services, agricultural and non-agricultural assets, agricultural practices and technologies, social safety nets, stability and adaptive capacity.

The study included ad hoc household surveys conducted ex-ante and ex-post to obtain the data needed to run the resilience analysis and for creation of a counterfactual to measure attribution of impacts. We used propensity score matching to control for selection bias. Then, the average treatment effect on the treated (ATT) was estimated using the radius matching. Focus groups were also used to understand the gendered impacts of the project.

Results

The project resulted in significant gains in food security, in general, and specifically in the components of income and food access, agricultural assets, agricultural practices, and social safety-nets. Gains were also observed in the components of non-agricultural assets (durables etc…), adaptive capacity and stability but the results were not statistically significant. No impact was observed in terms of access to basic services, which of course goes beyond the scope of the project. Overall, the ATT estimates showed a significant improvement in the household resiliency index. Beyond findings specific to the project, the study also provides evidence that quasi-experimental impact evaluation can be conducted even in conflict-affected areas, as the research team was able to carry on with the data collection needed for this analysis, despite the insecure situation.

Policy Implications

The additional five percent of the project's cost spent to conduct robust impact assessment is low given the returns to investment, namely sound evidence of lessons learned for future interventions, better targeting and accountability.

Quantity and Quality Dimensions of Food Access at an Individual Level: Identifying the Triple Burden of Malnutrition Cases

Jackeline Velazco [123]

Introduction

The triple burden of malnutrition cases (energy deficiency, micronutrient deficiency and excessive energy intake) affect both developed and developing countries (Pinstrup-Andersen, 2006). Adequate identification of an individual's nutrition status is needed in order to properly analyse the extent of malnutrition at country level as well as to plan the most effective public policy intervention.

Purpose of the work

Calorie availability, a widely accepted indicator of food security, does not incorporate nutritional adequacy. However it is recognized that micronutrient deficiencies can persist in an individual independent of caloric intake. This paper proposes a new classification aimed at overcoming this shortcoming. This classification includes all the components of malnutrition and defines what a balanced diet is, taking into account both quantity and quality dimensions of food access at an individual level.

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Methods

It is proposed to draw on data collected using a food frequency questionnaire. The classification uses several indicators to represent the quantity and quality dimensions of food access. Regarding food quantity, calorie intake data are compared against a definition of energy needs given by biological factors of the population such as age, sex, weight and activity levels, among others. Minimum and maximum dietary energy requirements (MDER and XDER, respectively) are used as cut-off points to identify insufficient, sufficient and excessive energy intake scenarios.

Recommended intake of macronutrients (proteins, carbohydrates and fats) and micronutrients (e.g. vitamin A, iron and iodine) are used to assess the food quality dimension (WHO, 1985). Adequacy in both intakes indicates a balanced diet, while inadequacy in any single intake indicates an unbalanced diet.

Results

Using the above-mentioned indicators, the classification system cross-tabulates dietary quantity and quality so as to identify individuals suffering from energy deficiency resulting in hunger or excessive energy intake causing overweight and obesity, as well as individuals suffering from specific micronutrient deficiencies.

Policy implications

Knowing the type of malnutrition faced by individuals will provide valuable information for the effectiveness of food and nutrition security projects and interventions when targeting vulnerable groups. For instance, findings from this classification system will identify where public health and nutrition initiatives might be planned, and can provide information about the nature of which micronutrient deficiencies are prevalent in a given area.

Conclusions

Quantity and quality dimensions of food access should be considered simultaneously. A detailed account of energy and nutrient intake is recommended in order to properly assess individual malnutrition status. This approach could be extended to analysis of household intake typologies or to specific groups facing vulnerability to food insecurity.

Market participation under transaction costs and household welfare: micro-evidence from Tanzania

Solomon Asfaw[124], Mulubrhan Amare [125], Leslie Lipper and Benjamin Davis

Improving market participation of smallholder farmers has been increasingly recognized as an important strategy in efforts to bring about agricultural transformation and poverty alleviation in sub-Saharan Africa (SSA). Market participation allows farmers to focus on production of those goods in which they are skilled and to trade the surplus for other goods and services they desire but for which they do not hold a comparative advantage in production. Nonetheless, smallholder farmers in SSA (as in other poor regions) face barriers that make it difficult for them to participate in markets and enjoy the benefit.

Using farm-level data collected from a random cross-section sample of 613 farmers in Tanzania, this paper assesses the effects of transaction costs and price and non-price factors on farmers' input and output market participation. It also evaluates the causal impact of market participation on household welfare, as measured by total income and consumption expenditure. A selectivity model is used to estimate output and input market participation determinants. Welfare implications of market participation are analysed by a simultaneous equations model with switching regression and propensity score matching technique, taking into account at least two challenges: unobserved heterogeneity and possible endogeneity.

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Results show that market participation is strongly related to wealth related variables such as asset holdings, land and non-livestock holdings, suggesting the presence of household asset-related barriers to market participation. The difference in transaction costs, improved production technology, financing and price are also among the main factors underlying heterogeneous market participation among smallholders. Impact model results suggest that both output and input market participation appears to have a positive and significant role in enhancing household income and consumption expenditure. That is, market participation matters for improving welfare of the rural people. However it is important to note that the impact appears to be heterogeneous when households are categorized based on farm size and education.

Based on the analysis, three major policy interventions can be formulated to promote output and input market participation by smallholder so that they can enjoy the benefit. First, the results revel that transaction costs of selling farm output and purchasing modern inputs have a negative impact on market participation and marketed surplus. These transaction costs can be reduced through promotion of institutional innovations such as producer marketing groups, mechanisms for improved price information communication, and transportation infrastructure. The second policy implication is associated with households' insufficient access to productive assets and financing with which to generate adequate marketable surplus to make market participation feasible and worthwhile. The strong positive relationship between market participation and proxies of household wealth underscores how important these endowments are to understanding patterns of market participation. Thus it is imperative to build up smallholders' assets and break down barriers to market access by investing in roads, communications, and other types of local infrastructure. A final recommendation is to facilitate uptake of technologies and technology transfer that increase productivity among smallholders. Promoting technological advance is essential to inducing broader-based market participation and aggregate supply response to price-based policy instruments.

Measuring Food Security in a Volatile World

Derek Headey and Olivier Ecker [126]

The 2007/08 food crisis revealed major shortcomings in our capacity to monitor the impacts of higher food prices on vulnerable populations. These shortcomings warrant a rethinking of the concepts and empirics of food security. Food insecurity indicators need to serve multiple purposes, such as measuring differences between populations over time or space (the "long run"), as well as gauging the impacts of shocks such as droughts, price surges, or seasonality (the "short run").

Most existing research into measurement issues has tended to focus on the long run by exploring the validity of cross-country comparisons for a particular indicator, or by looking at how indicators correlate with each other. There has been much criticism of both poverty and calorie measurement and their comparability across populations, as well as some debate over whether anthropometric indicators have universal benchmarks.

Our analyses show that poverty and calorie-based indicators tend to be highly correlated with each other and moderately correlated with anthropometric and dietary diversity indicators. Self-reported wellbeing indicators seem to be very weakly correlated with all these quantitative measures. But while our correlation results suggest that self-reported indicators can perhaps be ruled out as valid measures of food insecurity, they reveal very little about which of the quantitative indicators should be preferred.

In terms of gauging the impacts of shocks on food security, we use the Indonesian financial crisis as a quasi-natural experiment on the grounds that the crisis involved a rapid and major price and income shock that ought to have had significant impacts on some food security indicators, the crisis was unusually well-documented, and Indonesia possesses a rich source of household survey data suitable for assessing changes in various food security indicators.

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We find that poverty rates rose substantially, that calorie intake declined very little, that child and maternal wasting rose moderately, and that dietary diversity and micronutrient intake declined massively. In other words, as rice prices increased and disposable income fell, Indonesians continued to consume rice since it was still the cheapest source of calories, but cut back on more expensive, micronutrient-rich foods. This suggests that the measurement of calories may be a highly unreliable indicator to detect shocks and determine their impacts, while income, biophysical, and dietary diversity measures are much more relevant. However, unless they are measured continuously, none of these indicators will be very adept at picking up seasonality effects and tracking adaptation and recovery processes.

Finally, we look at the issue of measurement costs. We argue that the benefit-cost ratio of scaling up income/poverty measurement is not very high chiefly because of the expense involved. A more cost-effective approach would involve scaling up the measurement of dietary diversity and biophysical indicators. One possible avenue is for national governments and international development agencies to pool and coordinate resources to achieve higher frequency of nutrition surveys. A more ambitious plan would involve encouraging developing countries to monitor child and maternal malnutrition at the community level on a continuous basis. This would serve the dual purpose of encouraging communities to identify and treat the most vulnerable while simultaneously informing policymakers and donors about where and when resources need to be allocated. Given the demonstrated benefits that improved infant nutrition outcomes have on lifelong economic performance, this ambitious approach may actually yield the highest ratio of benefits to costs.

MEASURING IMPACT IN DIFFICULT SITUATIONS

Difficulties in knowing how to support livelihoods for internally displaced people and refugees: why impact assessment is proving so difficult

S. Levine [127]and S. Haysom, with N. Harild[128], A. Christensen, M. Puerto Gomez and Y. Araya

Many livelihood programmes are supporting significant caseloads of internally displaced persons (IDPs) or returnees from displacement, whether this is explicit in the programme design or not. Although there has been increasing attention paid to the way in which the political economy both shapes the problems being addressed by interventions and influences how interventions play out in reality, most livelihood programming for the displaced has taken place without considering how actual intervention impact (i.e. the quantified contribution to livelihood outcomes) differs according to various political economy contexts. (Political economy can be defined as how the distribution of power and power dynamics in a given country affects decision-making for public policy and provision of public goods and services.)

This study reviewed all the available evidence for criteria that could be used to guide future programme design according to different political economy contexts. It involved a thorough review of all documentation relating to 39 World Bank funded livelihood support programmes implemented in areas with large displaced or returnee populations. Study aims were (1) to identify which key variables (together with their indicators) characterise a given political economy context, and (2) to identify critical indicators for measuring livelihood outcomes. The study looked for cases where some measurement of impact had been made, enabling conclusions to be drawn linking livelihood outcomes, intervention types and contextual features.

The study found that there were two significant barriers to knowing what works and when. First, any attempt to correlate livelihood outcomes to intervention type had was muddled by (1) enormous variability in individual life trajectories, (2) a multitude of other variables (change processes) occurring simultaneously, and (3) variability in intervention implementation. Finding statistically significant correlations under these circumstances would demand unrealistically large beneficiary and project sample sizes. As a result, understanding impact had to rest on assessing how each intervention had affected people's livelihood strategies, either directly or via the various factors that shape livelihood choices and outcomes (institutions, policies, power relations, market access, etc.).

Secondly, there was almost no evidence which could be analysed in this way to understand impact. There was an almost complete absence of any analysis of existing livelihoods, and no cases of a political economy analysis of constraints to livelihoods. In all cases, there was little or no documentation of the programme theory or logic behind the interventions. Furthermore, there was little attempt to measure and describe changes in livelihood outcomes as a result of the interventions. The few impact assessments which were undertaken did not show how the interventions in question improved livelihoods.

Current practice in supporting the livelihoods of refugees, IDPs and returnees will continue to be guided by assumption, because it is not building up a body of evidence about what works, when and why. The paper proposes a small set of livelihood indicators that could be the basis for programme monitoring, and proposes a practical methodology for collecting information to answer specific research questions critical in managing livelihood support for the displaced.

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The impact of humanitarian interventions on intra-household undernourishment: the case of Hurricane Mitch in Nicaragua

Erdgin Mane[129]

Previous studies of Hurricane Mitch's impact at household level have focused on short and medium-term average effects on different welfare outcomes [household consumption growth (Premand, 2008), child wellbeing (Baez and Santos, 2007), household budget and schooling (Ureta, 2005)]. These evaluations used 1998, 1999 and 2001 Living Standards Measurement Survey (LSMS) panel data for Nicaraguan households. In this study, longer term effects are analysed by adding the 2005 survey to this well-known dataset.

This analysis considers the hurricane as a natural experiment, where the treatment is a dummy variable indicating households "affected" by the hurricane. Average treatment on the treated effect (ATT) estimates show that the negative impact of the hurricane on caloric adequacy was not statistically significant in the short-term (1998-2001). This is mainly because the immediate humanitarian response mitigated short-term food insecurity caused by Mitch. However, the longer term analysis (1998-2005) discovers a negative impact of Mitch on caloric adequacy as ATT estimates become statistically significant. A deeper analysis conducted by including control variables in the regressions shows that this change occurred because humanitarian response reduced drastically in the long-run. This finding evidences that livelihood and infrastructure recovery should be continued once humanitarian projects have closed.

In addition to assessing impact in the longer-term, the original contribution of this research is that it goes beyond average effects by analyzing the hurricane's impact on intra-household energy intake when only household-level data are available. The semi-parametric methodology introduced by Chesher (1997) - which allows estimation of average energy intakes disaggregated by age and gender - was used to estimate age- and gender- specific effects within households.

The scope of this methodology is wide enough that further investigations into short- and longer-term effectiveness of humanitarian response on nutritional status of individuals within a household setting were also possible: The estimated caloric intake-age curves showed that the humanitarian response was more effective for the young (under-20) and elderly (over-60). These populations suffered least in terms of caloric intake. In fact, these two population groups were the main target of the humanitarian assistance (WFP, 1999). Moreover, the curves show that the long-term negative effects of Mitch were more relevant for women, suggesting that men were able to cope better without humanitarian assistance. This result is partially explained by the fact that the reconstruction process generates more employment for men than for women. This issue is often underscored in the debate on aid effectiveness.

The main policy implication derived from this study is that the response to natural disasters should include not only short-term interventions but also long-term initiatives for infrastructural and livelihood recovery. Another policy implication is that gender aspects should be taken into consideration in the design of humanitarian interventions. Women need not only food or cash aid but also more sustainable income generation capacity.

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Aid-fungibility: a lesson to learn from the impacts of the "Rice for the Poor" programme in Indonesia

Evita Pangaribowo [130]and Janice Meerman[131]

As the Asian Financial Crisis spread across South-East Asia in 1997, the Indonesian economy was severely affected. Dramatic increases in the price of most commodities, particularly micronutrient rich foods such as meat, dairy products, vegetables and fruits reduced the nutritional welfare of Indonesian households. In response, the Indonesian government introduced a "Rice for the Poor" programme as part of a larger Social Safety Net (SSN) package in 1998. The general aim of the programme was to reduce the risks of food insecurity and malnutrition posed by the economic crisis. "Rice for the Poor" gave poor households improved access to rice though highly subsidized prices. Eligible households were selected based on welfare criteria of Indonesia's National Family Planning Agency.

This study aims to investigate the impact of the "Rice for the Poor" programme. Since the SSN programme was non-existent before the crisis and the financial crisis needed an immediate response, baseline data were not collected and evaluating the programme under an experimental setting is not possible. Given the consequent observational study setting, programme evaluation must consider the issue of non-random selection. Using the rich longitudinal datasets provided by the Indonesian Family Life Survey, this study uses propensity score matching (PSM) estimators combined with difference in difference (DID) to mimic the experimental setting. With sound data and ample knowledge of the programme in question, PSM and DID have been shown to produce reasonably robust results. In this case, the matching estimators showed that households residing in rural and Java areas and characterized by low quality housing and low education were most likely to participate in the "Rice for the Poor" programme. Notwithstanding, the programme has also been shown to be subject to leakage; almost ten percent of the highest income quintile households in Indonesia have benefited. Geographical bias was also evident in programme implementation.

This study found that "Rice for the Poor" had a positive impact on selected food and non-food expenditures. In particular, the programme enabled beneficiaries to increase expenditures on nutrient-rich, animal source foods. The programme also was found to have a positive impact on health expenditures. However, aid-fungibility, which occurs when aid flows move in an unintended direction, was also evident. Extra income resulting from the programme was spent on adult goods (alcohol and tobacco); indeed the impact of "Rice for the Poor" on alcohol and tobacco expenditures was even more substantial than on expenditures for animal source foods.

These findings suggest that applying conditionality might mitigate unintended effects resulting from the programme. Target households could receive a subsidy or income transfer in exchange for nutritional meeting attendance. Under this conditionality, beneficiaries might experience multiplier effects. Programme conditionality might also reduce the targeting problem.

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The impact of food aid on the livelihoods of hiv/aids-affected households in rural kenya: an evaluation using propensity score matching

Brian G. Luckett[132], Ben Watkins[133], Denis Tiren[134], Laura Murphy[135] and Diego Rose

Introduction

Policies to improve the food security and livelihood sustainability of HIV/AIDS-affected households should be informed by the best empirical evidence available. However, post hoc cross-sectional surveys typical of rapid field evaluations often do not include comparison groups reflective of the target population; resulting in biased estimates of the programme effect.

Purpose

This study employs an analytic approach - propensity score matching (PSM) - that improves the quality of programme evaluation in situations where randomized control design is precluded. We use this approach to test the influence of a food aid intervention on labor employment and household assets. Intervention beneficiaries were food insecure households, a portion were also HIV/AIDS-affected.

Methods

The World Food Programme conducted monthly food aid distribution from 2003 to 2004 to households in an area of high HIV/AIDS prevalence in western Kenya. Participating households were identified and enrolled at community meetings based on a set of targeting criteria as well as the community's perception of households' needs. After eight months of operation, 900 randomly sampled households, regardless of programme participation, were surveyed in 30 villages. Information was collected on household assets (goods and livestock), time use (including on- and off-farm labor, and time off due to illness - "sick time"), and demographic characteristics of household members. Chronic illness of a prime-age adult in the household was used as a proxy for HIV/AIDS-affectedness.

PSM was used to identify a control group of non-participating households otherwise similar in terms of observed household characteristics to those receiving programme benefits. Propensity scores are the probability of programme participation given observed characteristics, such as household assets, used in targeting. Multivariate regression was then used to estimate the association of programme participation with key outcomes.

Results

While there was no difference in on-farm labor time by prime-age adults, those from participating households spent more time in off-farm employment: about 1.4 days per week. The value of household goods among HIV/AIDS-affected non-participating households declined by 2416 Kenyan Shillings (KS) over the previous year, while food programme participants had a net increase of 1547 KS.

Conclusions

The monthly receipt of rations may have allowed residents of beneficiary households to diversify their livelihoods to include more off-farm labor opportunities by using income that would have gone to food purchases to fund small enterprise or transportation to work sites. Additionally, assurance of future monthly rations may have enabled households to engage in livelihood strategies that would have otherwise entailed more risk to their food security.

PSM does not control for unobserved factors associated with participation, such as those that influence perceived neediness by stakeholders in a community-run targeting scheme. Programme effects from this analysis may thus be biased downwards if participants actually had greater need than matched non-participants, and this differential was not captured by

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survey responses. Participation could also have been influenced by social-connectedness: an unobserved characteristic that might cause the programme effects reported here to be overstated.

Policy implications

The results reported here suggest that provision of monthly food aid rations to HIV/AIDS-affected households may improve livelihood resilience by allowing recipients to diversify economic activities. The assessment of non-randomized interventions can be strengthened through the use of PSM.

Learning from Haiti: beyond food consumption indicators

Mock, Nancy[136]; Horjus, Peter; Mathieu, Gary[137]; Sylvestre, Nelson[138]; Figley, Charles; Luu, Ky; Strother, Shannon; and Curdumi, Sofia

The 2009 Haiti earthquake was one of the greatest catastrophes of modern times. It resulted in hundreds of thousands of lives lost as well as a major disruption of food systems to Port-au-Prince, the capital city. The humanitarian response to the Haiti catastrophe was swift and vigorous, as was the collection and analysis of various types of information related to food security and vulnerability. Two rounds of Emergency Food Security Assessments were conducted as was a SMART (Standardized Monitoring and Assessment of Relief and Transitions) survey. More than 80 different significant evaluation assessments were conducted between January 2010 and November 2011. Routine monitoring of population displacement and conformity to SPHERE standards was implemented.

During this period of response and early recovery, Tulane University, in collaboration with the State University of Haiti (UEH) and the Center for Food Security and Nutrition (CNSA), undertook an analysis of food security as part of a larger evaluation of the impact of humanitarian assistance on disaster resilience outcomes. The Bill and Melinda Gates Foundation funded the evaluation. The analysis presented here examines the relationships between food security and food security vulnerability/resilience measures. The research identifies relationships between traditional measures of food insecurity and emergent methods of analyzing resilience.

Methods

This study used multiple-method research techniques, combining secondary data analysis, meta-evaluation, a survey of implementing organizations (resource flow study), focus groups, community key informant assessments and a large national probability survey of 3,556 households, implemented by the project research team in collaboration with CNSA. Disaster resilience was captured through analyses of time series and cross-sectional data. Traditional food security summary measures were compared with change scores in assets, livelihoods and other well-being outcomes. Cross-sectional regression analyses also examined the relationship between food consumption security and other measures of food security and disaster resilience. This study is novel in that it includes psychosocial stress/well-being scales and multiple scales reflecting food insecurity/vulnerability.

Results

Psychosocial resilience measures, dietary consumption, and measures of coping and hunger were key predictors of improved welfare outcomes. Dietary consumption alone provided a very incomplete picture of well-being. The traditional data collected to measure food security and vulnerability were extensive and largely inefficient in capturing important variability in food insecurity/vulnerability/resilience, but additional indicators in the dataset provide promising means to assess other aspects of well being, food insecurity, vulnerability, and resilience.

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Policy implications

The research demonstrates the importance of monitoring basic well-being measures in addition to food consumption measures. The research also points to the need to simplify monitoring strategies for food security/vulnerability and resilience, prioritizing those measures that explain significant variation and capture response to intervention efforts.

Conclusion

This research suggests the need to focus assessment efforts on a more parsimonious but complete set of measures that captures the well being of populations affected by disasters.

CONVERTING KNOWLEDGE INTO SOUND POLICY: LESSONS FROM FAR AND WIDE

What counts as high quality research and evidence? Reflections on using systematic reviews to understand the food security impacts of school feeding, social funds and public works Programmes

Rachel Slater[139], Jessica Hagen-Zanker and Richard Mallett

There is growing concern about the use of evidence in the design and implementation of international development and humanitarian policies and programmes. This preoccupation with evidence is strongly linked to the results and Value for Money agendas that have emerged in recent years in major bilateral and multilateral donors. In this context, donors are paying more attention to Systematic Reviews (SRs) and testing their appropriateness in assessing development and humanitarian interventions. This paper looks at three SRs conducted in 2010 and 2011. Each provides important insights into the use of systematic reviews to evaluate the impacts of programmes on food security.

The three reviews demonstrate that SRs can reduce bias and introduce rigour and objectivity into meta-analysis or literature review processes. Using specific search strategies can ensure that a realistic and answerable research question is identified and that there are clear definitions of indicators and measurable outcomes. SRs also ensure that assessing the quality of methods and analysis in the literature is part of the review process. There is also the potential for SRs to provide a baseline for large research projects and to help define research gaps.

However, in practice, there are trade-offs associated with SRs. First, systematic searching based on bibliographic databases often fails to identify grey or unpublished literature so evaluations on school feeding, for example, by organisations such as WFP are only identified by searching institutional sites. But the selective introduction of some institutional sites introduces the sorts of biases that systematic reviews seek to avoid. Second, the selection of only research that is of highest quality (for example, that which uses randomised control trails) means that very few studies make it into a SR. However, meta-analysis becomes constrained when there are few studies, and is further confounded because research is often based on divergent methodologies and types of data. Ultimately if there are few studies, then the contribution of the SR to policy-making and programming is limited.

More fundamental concerns with a SR approach are explored in more detail in the paper and include: i) the limited extent to which researchers from the south have access to the required databases and closed-access journals that are needed to carry out a systematic review; ii) the limited value attached to qualitative research, however robust it might be; iii) the danger of attempting to replicate quantitative methods adopted from the natural sciences to measure impact and causality; that is, methods that try to control for confounding factors and cut out noise and context, which are precisely the things that we want to know about – noise, context and specificity; in relation to food security, we don't just want to know whether something works (or not); we want to know why.

SRs are a relatively new tool within the food security field and need to be adapted so that they generate useful answers to our questions. They should be seen as a means to an end (getting a robust and sensible answer to the question) and not an end in themselves. A sensible SR approach focuses on using broad systematic review principles – that can be adjusted in the course of the process, if that improves quality of the findings – not on a fixed SR methodology. In other words, we should be concerned with the utility of more systematic literature reviews and not the rigid application of a systematic review approach.

The SR approach has important policy implications: If systematic reviews produce a particular view of the literature on food security, one that is based primarily on peer reviewed journal articles and that privileges evidence from certain methods such as randomised control trials (RCTs), and if those systematic reviews influence policy choices, then we may see a contraction in the range of instruments, programmes and innovation within the sector.

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Food insecurity and public agricultural spending in Bolivia: putting your money where your mouth is?

Jose Cuesta[140], Svetlana Edmeades and Lucia Madrigal[141]

This paper explores the reduction of food insecurity in Bolivia, adopting a supply side approach that analyses the effect of agricultural spending on vulnerability. Vulnerability to food insecurity is captured by a municipal level composite – developed locally within the framework of World Food Programme food security analysis (Vulnerability Analysis and Mapping or VAM) – that combines welfare outcomes, weather conditions and agricultural potential for all 327 municipalities in 2003, 2006 and 2007.

Our methodology consists of econometrically predicting the effect that levels and changes in agricultural spending have on the probability of a municipality to remain, move in or move out of high vulnerability to food insecurity. The analysis of the effects of agricultural spending on high and very high vulnerability is conducted at a municipal level. The covariates of interest relate to agricultural spending by municipality, and are decomposed into multiple categorizations of spending: restricted and extended; current and capital; research and development, infrastructure, support, administrative and other. Risk of food insecurity is defined according to a pre-assigned VAM category (dependent on welfare, weather and agricultural potential, as indicated above).

Our results indicate that levels of public agricultural spending are positively associated with high or very high vulnerability. We interpret this to indicate that agricultural spending allocation decisions are driven by high or very high vulnerability levels. In other words, more agricultural spending appears to be allocated where it is more needed. This finding is in line with findings from other studies conducted in other spending sectors in Bolivia (in the context of decentralization). Within our analysis, this finding is confirmed through a number of specifications, including contemporaneous and lagged relationships between spending and vulnerability. We also find evidence of public spending on infrastructure and research and extension services having a significant (but very small) effect on reducing high vulnerability. In other words, agricultural spending arrives where most needed but has little impact on vulnerability to food insecurity. Even though there has been an improvement in the vulnerability status of some municipalities, none has escaped from a highly vulnerable to a moderate/low status. This indicates the importance of the level but also the composition of public spending in reducing vulnerability to food insecurity. Knowing which investments have the largest impact on reducing food insecurity vulnerability is critical from a policy point of view.

Social protection for food security: evidence from Africa

Stephen Devereux[142]

Social protection has emerged as a dominant development policy agenda item since the 2002 International Scientific Symposium. In many countries social protection interventions are explicitly designed to address chronic or acute food insecurity – in Ethiopia, for instance, the "Productive Safety Net Programme" was intended to replace emergency and non-emergency food aid. The food security impacts of social protection are most evident with seasonal safety net interventions that target self-provisioning farmers, such as off-season public works programmes and cash transfer programmes linked to livelihood activities.

This paper will build on a small but growing body of literature that explores the linkages between food security and social protection, including several contributions by this author, notably a global review of public works Programmes for ILO (2005), the outputs from a project commissioned by FAO on "Linking Social Protection and Support to Small Farmer

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Development" (2007/08), and a background paper titled "The role of social protection in enhancing food security in sub-Saharan Africa", commissioned by UNDP for the "Africa Human Development Report" (2011).

This paper will first set out the conceptual linkages between social protection (social assistance, social insurance and livelihood promotion) and food security, and will then review empirical evidence on food security impacts of social protection programmes in Africa. This evidence is drawn from impact evaluations led by the author of the following programmes: South Africa's "Child Support Grant" (2010); Kenya's "Hunger Safety Net Programme" (2009-2011); Rwanda's "Vision 2020 Umurenge Programme" (2009-2011); Lesotho's "Cash and Food Transfer Pilot Project" (2008); Swaziland's "Emergency Drought Response" (2008); Ethiopia's "Productive Safety Net Programme" (2006 & 2008); Malawi's "Dowa Emergency Cash Transfers" (2007); and Malawi's "Food and Cash Transfers" (2006).

The policy-influencing objective of this review is to determine which interventions and policies, and which design choices and implementation modalities, work best in terms of achieving enhanced food security outcomes, since different mechanisms and designs generate very different outcomes. This issue is especially topical given the dominance of cash transfer programmes in the context of recent global food price rises, and growing interest by governments and donor agencies in achieving sustainable "graduation" from social protection programmes.

Translating evidence into effective policy actions: insights from efforts to address obesity

Adrienne Rathert and Diego Rose[143]

Obesity is on the rise throughout the world. Although distinct from under-nutrition or food insecurity, the problem presents similar challenges in translating evidence into effective policy action. This paper reviews three developments in policy-making to address over-nutrition with the goal of providing insights for those working on food insecurity in low-income countries.

Policy-makers need information on the relative effectiveness of proposed actions. Although many types of interventions might improve food security, evaluations vary in quality and the impacts studied are often not comparable. Facing similar issues with the problem of obesity, Australian scientists developed a framework for synthesizing results from many specific interventions with varying impacts. First, strength of evidence for the impact of each type of intervention was ranked into six categories based on established criteria. Then, modeling was used to develop a common long-run outcome, known as disability-adjusted life years. Each intervention was plotted on a graph of likely benefits versus strength of evidence. This allowed policy-makers to choose interventions with strong evidence of high benefits, avoiding those where only weak evidence supported minimal benefits. A food security framework could use productivity gains as the common outcome to be modeled and could rank strength of evidence based on study design and quality.

For some food security interventions, the evidence base may be too weak to employ the above approach. With obesity in the U.S., a similar situation resulted in a focused campaign by a private philanthropic organization - the Robert Wood Johnson Foundation (RWJF) - to provide resources for evidence generation and advocacy. Currently, the RWJF successfully promotes and funds impact evaluations of obesity-related policies and interventions by cultivating partnerships with stakeholders and leveraging resources to expand funding. RWJF-supported evaluations test the effectiveness of policies and inform the wider public, including policy-makers, through tailored communication.

The magnitude of food security problems is often so great that public funds are insufficient to address them. Such a shortfall occurs in the U.S. with the problem of "food deserts". Food

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deserts occur in low-income urban areas where a lack of grocery stores and a plethora of retail outlets selling processed "foods of minimal nutritional value" make high-calorie junk foods cheaper than nutritious foods, leading to over-nutrition. Public-private partnerships have formed in several cities to address this issue. Initiatives have been developed that provide financing for healthy food stores in underserved areas. Funding from public grants has been matched by private lenders, and the low-interest loans are recycled. In these cases, local policy-makers committed public funds because of clear geographic evidence of food deserts, and because of well-organized food policy committees that formed effective alliances between stakeholders.

This paper explores three developments in the obesity policy field that may have application to policy-making on food insecurity. An analytic framework that models a common benefit and considers strength of evidence could allow policy-makers to prioritize food security interventions with the greatest impact. An institution, focused on generating and communicating policy-relevant research, could have an impact on food security actions, as does the RWJF on obesity. Public-private partnerships forged at the local level can address resource constraints. Food insecurity, like obesity, is an extremely complex problem; therefore the recommendations offered from obesity research are not prescriptive. Rather, the lessons learned in developing and translating evidence to improve obesity policy can provide insights for developing strategies for achieving effective policy making on food insecurity.

Linking practice to policy through online consultations

Mauricio Rosales, Renata Mirulla and Max Blanck[144]

Practitioners working in development and agriculture often have unique insight into the socio-economic situation of the countries they work in. In order to take advantage of this and to develop effective and innovative policies to foster food security it is essential that these practitioners be given the option of participating in the policy formulation process. This calls for a functioning system of information and knowledge exchange between those active in the field and in research and those working in governments or international policy making bodies.

With this in mind, the Global Forum on Food Security and Nutrition (FSN Forum, km.fao.org/fsn), an online community for knowledge exchange, has started to strengthen its role as a communication platform between practitioners and policy makers. The FSN Forum aims to become a direct connection tool, allowing its e-community to participate in different steps of the policy formulation process. Our vision is to see practitioners and policy makers as part of the same community of practice, sharing a common interest in discussing problems and developing collective solutions.

E-communities of practice such as the FSN Forum greatly reduce spatial and hierarchical divisions and allow all participants to engage in productive exchange processes with policy makers in a way which is typically out of reach for individual practitioners. In the case of the FSN Forum, a series of discussions have proven the ability of such e-communities to link practitioners and policy makers:

- In March 2011, Jennie Dey de Pryck facilitated a discussion addressing the issue of women's empowerment and gender equality in agriculture. A few months later, the Agriculture Learning & Impacts Network featured one of the examples cited in the FSN Forum discussion in the literature review "P4P & Gender: Lit Review and Fieldwork Report" and the WFP Purchase for Progress Global Gender Strategy included one of the proposed recommendations.
- A series of electronic consultations held by the FSN Forum on behalf of the High Level Panel of Experts of the Committee on World Food Security (CFS) have allowed a broad range of practitioners to take part in the drafting process of studies on land tenure, climate change,

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social protection and price volatility. These studies are designed to brief the CFS and to provide a baseline for policy formulation.

- During consultations on biofuels and bioenergy, the FSN Forum facilitated a channel for interested parties to comment on a set of criteria, indicators, good practices and policy options for sustainable bioenergy production being developed by FAO's Bioenergy and Food Security Criteria and Indicators (BEFSCI).

While the outcomes of policy formulation processes and the extent of influence depend on many factors and are unique to each case, the above examples illustrate the viability of electronic communities and consultations as effective tools which, by focusing on transparency, inclusiveness and equality, allow a wide range of practitioners to participate in policy formulation processes.

ASSESSING FOOD AND NUTRITION SECURITY AT THE HOUSEHOLD LEVEL WITH A FOCUS ON CHILDREN AND THEIR CARETAKERS

In utero exposure to frequent social events and early child stunting

Xi Chen [145]and Xiaobo Zhang[146]

Despite rapid economic growth in the past decades in India and China, calorie consumption per capita has declined and the rate of improvement in nutritional status has been relatively slow. When given more resources, the poor tend to eat less basic staple food and consume greater amounts of tastier, albeit less nutritious, food. Moreover, the poor are more likely to spend their extra income on visible goods and occasions, such as shirts and wedding ceremonies. Why do the poor prefer to consume less food or less nutritious food at the potential high cost of nutritional status?

There are many potential explanations to the puzzle. One is that economic growth is associated with a reduction in physical activity and thus the need for calories. However, this cannot explain why child malnutrition has barely improved in the past decades. In this paper, we offer an alternative explanation: Due to social pressures and concerns for status, the poor are forced to cut basic necessities in order to afford participation in community social events.

In many low income countries, rural people live in closely knit communities. It is a social norm that people are compelled to attend weddings, funerals and other occasions in their communities and present a gift. Studies have provided some insightful observations regarding the social pressure associated with these events. For example, the poor do not want to lose face, even when the social custom is to spend a lot on those occasions. As a result, in order to save money for hosting an event or preparing a gift, the poor have to cut back on basic necessities such as food. Such a reduction in food intake may have a lasting detrimental impact on nutrition and health status.

It is challenging to test this hypothesis using commonly available household surveys; they normally sample only a few households in a community, making it impossible to measure relative concerns. As an alternative we use primary data collected via a household survey administered in 18 natural villages in rural China to test the “squeeze effects” of social spending on child growth. The dataset is unique in several ways. First, all of the households in the natural villages were surveyed during 2004-2009. Therefore, we are able to measure the relative deprivation status for each household over time. Since the villages are in remote and poor mountainous areas, each village forms a good reference group for local social comparison. Second, cross-sectional anthropometric information was collected in 2009 for children immediately after birth through six years, a period during which malnutrition is most easily assessed. Third, we collected detailed information on all ceremonies in the past ten years as well as on each subcategory of food item consumed per household member.

We examine the “squeeze effect” of ceremonies on fetal and early childhood malnutrition using these data. Ceremonies are categorized into good year events (e.g. weddings and house-building) and bad year events (e.g. funerals) in separate estimations to avoid biasing the squeeze effects towards any particular direction and provide us with the lower and upper bound of the effects. Our results show that more frequent ceremonies squeeze food expenditures to facilitate gift spending, and that children born to mothers exposed to frequent ceremonies during their pregnancy are more likely to display higher rates of stunting. Timing of ceremonies matters, as our falsification test with events not experienced in the fetal period does not find significantly detrimental effect. We also find that girls are more resilient than boys to shocks in the fetal period; it is plausible that the lack of ultrasound technology in the region (one of the poorest in China) prevents parents from resource allocation biased towards boys during gestation.

Our findings question conventional anti-poverty programmes aiming at lifting people out of poverty without fully understanding social customs. As experienced by many fast growing economies such as China and India, increased income has not resulted in improved nutrient

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intake for the extremely poor. Our results inform policy makers and future mothers of the unintended long-term consequences of prenatal malnutrition due to costly social events, a risk many may not be aware of. In addition to extreme shocks such as famine and radioactive fallout, mild shocks in the daily lives of the rural poor may also cause damage to fetal health.

Household food insecurity is directly associated with infant growth but mediated by maternal nutrition during pregnancy in rural Bangladesh

Muzi Na, Keith P. West, Jr[147]., Abu Ahmed Shamim[148], Sucheta Mehra[129], Alain Labrique[129], Hasmot Ali[130], Lee Wu[129], Rolf Klemm and Parul Christian[129]

Introduction

Food insecurity is a major concern in South Asia. However, the validity of household food insecurity (HFI) indicators and the causal paths they represent in reflecting poor growth remain largely unknown. Longitudinal population-based cohort studies conducted in regions where food insecurity is common offer opportunities to validate HFI indices against measures of infant growth.

We examined the strength of association between HFI scores, obtained from responses to questions asked to mothers about food concerns in the previous 6 months at 6 months postpartum, and (a) infant size at 6 months of age and (b) the prevalence of maternal malnutrition and pregnancy risk factors in a rural area of northwestern Bangladesh.

Methods

This study is underway in Gaibandha District, covering an area of ~450 sq km and population of ~650,000, in rural northwestern Bangladesh. Women participating in a pregnancy surveillance system were enrolled in the first trimester into a micronutrient supplementation trial and assessed for anthropometry, dietary intake and socioeconomic status. Newborns were assessed for size (weight, length and head and chest circumferences) at birth and at 6 months of age. The HFI instrument, developed and validated by Food and Nutrition Technical Assistance (FANTA) project in Bangladesh, consists of 9 questions related to the frequency of the following behaviors or concerns: Eating square meals, eating wheat (instead of rice), skipping meals, eating less food, having no money to buy food, worrying about food, buying rice, taking out a loan from shops or borrowing money to buy food. To date 11,243 mother-infant pairs have been assessed at 6 months postpartum. A HFI index score was created to summarize intensity of food insecurity and evaluated against infant size at 6 mo. Effects of perceived food insecurity on infant size were conditioned on maternal 1st trimester size measures, infant birth size and socioeconomic status (SES) indicators by linear regression models to reveal likely time-dependent, causal pathways by which food insecurity may influence postnatal infant size.

Results

Food insecurity reported by mothers at 6 months postpartum, summarized by the HFI score, shared a significant, dose-response association with infant size (weight, length, circumferences in arm, head, chest) at 6 months: The more food insecure, the smaller the infant. Yet, the strong cross-sectional associations were largely explained by maternal undernutrition early in pregnancy and during gestation (reflected by infant size at birth). Remaining decrements in infant weight and circumferences in arm, head and chest associated with a decrement in the HFI were explained by recent SES factors, possibly reflecting current dietary or hygienic/infection factors. However, infant stunting was not explained by current SES or diet; rather, chronic maternal food insecurity and poor nutrition, traced back to early gestation and throughout pregnancy, were the major influencing factors between infant size at 6 mo of age and reported food insecurity at 6 mo post partum.

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Conclusions

The severity of household food insecurity, as perceived by postpartum Bangladeshi mothers, was progressively associated with a small infant size at mid-infancy. However, factors explaining this relationship were found to have acted a year or more before assessment, during gestation and even prior to conception, emphasizing the need to identify food insecure households before and during pregnancy to improve diet and avoid mid-infancy growth stunting. In this rural South Asian setting, a 9-question HFI instrument identified chronically food insecure households with infants at risk of being small in size.

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Dietary patterns, energy intakes and micronutrient adequacy among children under 5 and their caretakers in Thaba-Tseka district, Lesotho

Doris Wiesmann[149], Wahito Kabaire[150], Lineo Mathule[151], Palesa Lesoli[152], and Kathryn Ogden[153]

Introduction

High chronic malnutrition among young children, monotonous diets, and high food insecurity among vulnerable sections of the population are well-documented for Lesotho. A better understanding of local diets and their links with malnutrition and health is vital for a comprehensive analysis of food and nutrition security and for implementing well-targeted programmes and interventions.

Purpose of the work

The study's objective was to inform food and nutrition security programming by means of a pilot study in Thaba-Tseka, a district with particularly high chronic malnutrition among children. Food intake among children and their caretakers was assessed to determine the dietary pattern as well as to derive energy, macro- and micronutrient intakes. The study also examined the links between energy, macro- and micronutrient intakes and anthropometric and health indicators. Associations between energy intakes, micronutrient adequacy, anthropometric indicators and the World Food Programme's food consumption score (FCS), a proxy indicator of household food security, were also analysed.

Methods

The survey collected data in Thaba-Tseka district in December 2009 for the following: household characteristics, household food consumption (frequency of consumption of different food groups during the seven days prior to survey administration), maternal and child health and anthropometry, and food intake among children under five and their caretakers (interactive 24-hour recall). After exclusions, 136 caretakers with 42 repeat recalls of food intake, and 133 children with 38 repeat recalls remained in the sample; small samples sizes are common for dietary studies. Usual energy intakes, probability of micronutrient adequacy (for 11 micronutrients: thiamin, riboflavin, niacin, vitamin B6, folate, vitamin B12, vitamin C, vitamin A, calcium, iron, and zinc) and mean probability of micronutrient adequacy (MPA) were estimated from the interactive 24-hour recall data (see full study[154] for selection of micronutrient requirements used and thresholds of energy intakes applied). The FCS was constructed from the household food consumption data.

149 Independent consultant

150 WFP Lesotho at the time of the study (now with UNICEF).

151 National University of Lesotho at the time of the study (now with UNICEF)

152 Food and Nutrition Coordinating Office, Government of Lesotho.

153 WFP

154 Wiesmann, Doris, Wahito Kabaire, Lineo Mathule, and Palesa Lesoli. forthcoming. A study of dietary patterns, energy intakes and micronutrient adequacy among children under 5 and their caretakers in Thaba-Tseka district, Lesotho, to inform food and nutrition security programmeming. Report submitted to the World Food Programmeme, Rome.

Results

Among the caretakers, 40percent of women of reproductive age were overweight, whereas 48percent of the children were stunted. The interactive 24-hour recall data confirmed much greater deficiencies in diet quality - related to a lack of animal source foods - than in diet quantity. Thirty-three percent of caretakers and 25percent of children had borderline or poor energy intakes, yet, 84percent of caretakers and 67percent of children had low micronutrient adequacy (MPA<70percent). The FCS classification indicated that 30percent of households had borderline or poor food consumption, matching the estimated prevalence rates of inadequate energy intakes quite closely. Mean MPA was significantly higher for individuals consuming fortified maize flour than for those consuming unfortified flour from own production (almost half of the caretakers and more than one third of the children), and for children using supplements. Exclusive breastfeeding up to 6 months and the composition of weaning foods were inadequate. Women of reproductive age on tuberculosis (TB) or anti-retroviral treatment (ART) were at risk of nutritional deficiencies: they had significantly lower energy and protein intakes, and underweight prevalence was 35percent compared to 3percent for other women in this age group (controlling for height, age, and lactation status, the odds ratio was 22.7, p-value=0.018). Orphans had a significantly higher risk of being chronically malnourished: prevalence of stunting was 70percent for orphans and 44percent for non-orphans (controlling for age group and sex, the odds ratio was 3.2, p-value=0.045).

Policy implications

This is the first study in Lesotho to comprehensively measure food and nutrient intake, and it has been instrumental in providing evidence to influence programming. Its findings informed the National Nutrition Policy document, submitted to the Government in 2011, as well as plans for national food fortification. For Thaba-Tseka district, the following specific recommendations are proposed: promote livestock and fish production; explore the possibility to fortify unrefined maize meal from own production that is processed in hammer mills; educate caretakers about optimal breastfeeding and complementary feeding practices and increase the use of multiple micronutrient supplements; investigate how existing programmes for ART and TB patients, orphans and vulnerable children could be improved to better prevent shortfalls in nutritional status.

Vietnam's Mekong Delta Region: Malnutrition Amongst Plenty[155]

Le Canh Dung[156], Vo Van Tuan[137], Nguyen Van Sanh[137] and Pham Thi Tam[157]

Introduction

This research was carried out in 2011 as part of collaboration between the World Bank, the Mekong Delta Development Research Institute and Can Tho University of Medicine and Pharmacy. The study aimed to assess the correlation between food production and child malnutrition incidence between 2000 and 2010 in the Vietnamese Mekong Delta, considered to be the most productive agricultural region in Vietnam. The study aimed to explore determinants of child malnutrition in six different agro-ecological zones.

Methods

Research was conducted in six provinces along both sides of the Mekong River, stretching from the severe flooding area characterized by rice production (An Giang and Dong Thap), to the tidal flooding areas characterized by diverse farming practices (Can Tho and Vinh Long), to the coastal areas characterized by shrimp production (Soc Trang and Tra Vinh). Secondary data analysis from the provinces and the National Institute of Nutrition (1999-2009) and interviews of 22 provincial nutritional experts revealed the paradox that producing more food is not always good for rural development in general and for child nutrition in particular.

155 Not presented

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157 Can Tho University of Medicine and Pharmacy, Vietnam

Results

Correlation analysis showed higher child malnutrition rates in the shrimp and rice production systems located in the coastal and severe flooding areas, and lower rates in the diverse production systems located in the tidal flooding areas. Moreover a substantially different child stunting rate between the dominant rice production area (23.8%) and the diverse farming area (18.2%) was found to exist within one province (Vinh Long).

These findings are consistent with the hypothesis that higher malnutrition rates would occur in areas where people concentrated on either commercial monoculture rice or shrimp, consequently neglecting growing vegetables for complementary food in daily diets. Further, findings from the interviews with the provincial nutritional experts indicate that the relative importance attached to various factors affecting child malnutrition is shaped by local production and socio-economic conditions. Poverty was ranked as the primary determinant of malnutrition in monoculture areas of rice and shrimp while lack of knowledge regarding proper care and feeding (e.g. use of poorly informed wet nurses) ranked as the first determinant in areas where diversified farming was the dominant production system.

Policy implications

Policy implications of these findings include the fact that regional child malnutrition prevention strategies need to be considered as part of overall rural development policies. Specific measures should be considered in accordance to local context and differences in income. Balanced diets and healthcare knowledge improvement should be the focus for better-off groups and regions, while poverty reduction should be the first priority for worse-off people in order to reduce food insecurity. In the short term, State financing and knowledgeable support to grass root collaborators should be enhanced since, as revealed by local nutritional experts, these collaborators are very important bridges between nutrition policies and knowledge and malnutrition-vulnerable groups in the underdeveloped and unbalanced food-producing regions.

SAMPLING AND SURVEILLANCE ISSUES IN HUMANITARIAN AND DEVELOPMENT CONTEXTS

Innovating the measurement of humanitarian impact: the case of coverage assessment of community-based management of acute malnutrition (CMAM) Programmes

Ernest Guevarra and Alison Norris[158]

Introduction

Maximum coverage and access is a key principle of community-based management of acute malnutrition (CMAM). However, despite widespread acceptance and implementation of CMAM in the treatment of severe acute malnutrition, assessment of its coverage hasn't been adopted in the same way. This is mainly due to limitations of previously utilised coverage assessment methods (i.e. indirect method, cluster survey method). These challenges prompted Valid International along with other partners to develop and test new and better methods to assess coverage. These methods include Centric Systematic Area Sampling (CSAS), Semi-Quantitative Evaluation of Access and Coverage (SQUEAC), Simplified Lot Quality Assurance Sampling Evaluation of Access and Coverage (SLEAC) and Simple Spatial Survey Methods (S3M). This paper describes the development process of these methods over the past decade.

Methodology

Development of new assessment techniques was approached from a philosophy of using existing, familiar, tested and easy to use survey instruments, keeping methods simple, and ensuring continuous innovation allowing for the evolution of new and better methods that addressed limitations of previous ones. Methods were tested in the field. Whenever possible, a new method was use-tested alongside the older method it was trying to innovate upon (i.e. SQUEAC implemented simultaneously with CSAS in the same area), or a new method was implemented soon after an older method was used in the same area (i.e. SLEAC applied in Lusaka CMAM a few months after CSAS). Testing of additional features of SLEAC for use in large-scale programmes was done through its pilot application in a national coverage survey of Sierra Leone. S3M, the most recent evolution of these methods specifically designed for coverage assessment over wide areas, was pilot-tested in one region of Niger in *add date* and is now being implemented across the country.

Results

Through various field use-tests, CSAS was shown to be robust as compared to indirect and cluster survey approaches to coverage assessment. CSAS was able to estimate and map coverage with precision and provides information about barriers to programme access. However, CSAS was shown to be resource-intensive, limiting its use to end-of-programme evaluation rather than regular monitoring and evaluation. SQUEAC and SLEAC field use-tests provided the same richness of coverage information as CSAS but with less resources. For wide-area and national coverage assessments, SLEAC was demonstrated to be an easily scalable method. Finally, the pilot of S3M indicated a potential projected savings of 47percent as compared to CSAS when used over a wide-area.

Policy implications

Experience over the past decade has shown that using these methods to investigate coverage and factors affecting coverage informs programme reform and improves coverage and effectiveness. Programmes that audit coverage using these methods commonly achieve coverage within Sphere minimum standards (i.e. > 50percent). Moreover the greater accessibility of these new methods allows coverage audits to be done regularly. This in turn increases the potential of more programmes achieving minimum Sphere standards. The current challenge is ensuring that these levels of performance are achieved in national CMAM programmes.

158 Valid International

Conclusion

The development process reported here supports the use of SLEAC and SQUEAC for routine CMAM programme coverage assessments. SLEAC has also proven to be useful for wide-area coverage assessments of regional up to national level programmes. Preliminary testing of S3M indicates its potential as an alternative for assessing coverage at national-scale.

Development of early warning indicators of urban slow-onset crises: Measuring the food security dimension

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Introduction

There is increasing recognition among humanitarian actors that urban populations, particularly slum dwellers, are highly vulnerable to shocks that cause a rise in morbidity and mortality. Despite this recognition, tools for urban humanitarian programming are lacking. One of the key gaps is in early warning indicators of crisis. Most early warning systems are designed for rural settings and cannot be directly translated to the urban setting which lacks a single dominant livelihood system. Identifying appropriate metrics for the complex urban setting is crucial for both guiding response and driving policy to address longer term urban poverty issues.

Purpose of Work

To identify sensitive indicators of humanitarian crisis, in particular food security, appropriate for use in an urban setting.

Methods

Initial indicators were developed using mixed methods. All studies took place in two sites in Nairobi Kenya; Korogocho and Viwandani slums. Korogocho is located next to a city dumpsite and has one of the highest poverty rates in Nairobi. Viwandani is located adjacent to the industrial area and most residents work in factories and surrounding businesses. Samples were drawn from the Nairobi Urban Health and Demographic Surveillance System that follows over 60,000 individuals in these two communities. A qualitative study focusing on community perceptions of crisis and coping strategies collected information from 10 focus groups and 12 key-informants. This was followed by two cross-sectional surveys conducted in April and August, 2011, involving 1045 and 1118 households respectively, as well as price monitoring for basic commodities from slum-level markets. The indicators monitored in the two rounds included food security, physical security, water and sanitation, health (morbidity), employment and income, housing and community cooperation/conflict, and use of negative coping strategies.

Findings

The qualitative study highlighted food security as a major concern of slum households. Availability was good and prices cheaper than other urban areas, but access was still limited by the poor quality and inconsistent nature of livelihoods. Many informants reported surviving on one meal per day. Use of street foods was a common coping mechanism and parents frequently prioritized children's intake over their own. Quantitative data supported this picture of food insecurity. Of the 959 households with complete records in April 2011, 50.2percent (n=952) were classified as severely food insecure (using the Household Food Insecurity and Access Scale definition); 31.3percent in Viwandani and 68percent in Korogocho. Food prices also varied spatially with a standard commodity basket 18 shillings cheaper on average in Viwandani than Korogocho (316.60 KSH vs. 335.10 KSH). Use of negative coping strategies was common with 74.9percent (n=959) of households using at least one strategy in the last month. The August survey showed significant changes in food insecurity levels in both

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study sites, with severe insecurity increasing in Viwandani to 41.7percent and decreasing in Korogocho to 53.7percent, though the overall proportion of severely food insecure households across both sides was constant at 49.4percent. Food prices trends were highly variable in the second round as well with sugar increasing from 60 to 110 KSH (0.71-1.31 USD) per half kilo while cooking fat decreased by 25 KSH (0.30 USD) per half kilo over the same period. In both rounds household food insecurity was strongly correlated with low income of the main breadwinner, morbidity, physical insecurity, likelihood of being involved in a community dispute, consumption of street foods and use of negative coping strategies.

Policy implications

The April survey showing high levels of food insecurity, coupled with rising food prices spurred humanitarian organizations like Concern Worldwide to launch an emergency response in several urban slums of Nairobi to protect household food security and address rising malnutrition, demonstrating the potential of such information to drive response.

Conclusions

Food insecurity is a key defining feature of life for many urban poor, closely linked to negative coping strategies and inconsistent livelihoods. The variation in levels of food insecurity seen across time in the two study sites suggest that local factors can have a strong influence on food insecurity in urban slums, with some slums in a city improving while others worsen. This raises important questions for how disaggregated early warning information must be in an urban area to yield actionable information. Further monitoring of these indicators across time and sites will facilitate better understanding of this question and how macro level shocks translate into household level effects across multiple slums in an urban area.

Mothers' dietary diversity is mirrored in their infants' diets: Important implications of a food security indicator

Melissa C. Daniels [161]and Altrena G. Mukuria

Introduction

What can we learn about food security and dietary patterns within the family by studying maternal dietary diversity? The answer: A lot. In fact, maternal micronutrient deficiency is strongly associated with micronutrient deficiency of infants. Poor intake of nutrients is common among women of reproductive age in resource-poor settings where food insecurity is common. A recent systematic review of women's diets evaluated studies from 21 low-income countries and found inadequate intake of 7 out of 10 micronutrients. Recognizing the importance of nutrient-rich diets, the availability dimension of food security emphasizes quality foods and supports evaluation through the collection of simple validated dietary measures. Maternal and child dietary diversity scores (DDS) were recently mandated as indicators by Feed the Future.

Purpose

The DDS reflect population-level adequacy of nutrients, but their versatility may extend even further. One recent study demonstrated that dietary diversity of an index woman reflects overall household nutrient adequacy. However, mother's diets are also highly vulnerable because of their position within the household hierarchy. Maternal diets are the first to be sacrificed and the last to benefit when food security fluctuates. How does the dietary diversity of mothers and other family members relate to each other? Very few studies have considered this question. This study takes a groundbreaking look at the relationship between the DDS of mothers and infants in developing country settings and provides a benchmark for future work.

161 Both authors carried out this work when associated with the US Agency for International Development – funded Infant & Young Child Nutrition (IYCN) Project. IYCN was implemented by PATH from 2006 to 2012 in collaboration with CARE; The Manoff Group; and University Research Co., LLC.

Methods

Demographic and Health Survey (DHS) data from Cambodia (2005), Haiti (2005/2006) and Ghana (2008) were used in this study. All surveys collected 24-hour food group recalls on women and their last-born children. Our sample included all mothers and their children 6–23 months of age. The dietary diversity of mothers and infants was scored with two indicators that are cross-culturally validated and currently recommended for use by Feed the Future. Statistical comparisons considered the relationship between maternal and child scores, as well as patterns of consumption for individual food groups. Logistic and log-binomial models used maternal DDS to predict whether children achieved minimum diversity requirements. The influence of socioeconomic factors was also evaluated.

Results

There were strong similarities among the specific food groups that mothers and children commonly consumed within each country. The diversity of maternal and child diets (i.e., number of food groups consumed) was also related. Mean (SD) maternal dietary diversity was 3.0(1.3) in Haiti, 4.0(1.4) in Cambodia and 4.0(1.5) in Ghana. In all three countries, children's mean DDS increased consistently with maternal dietary diversity. Breastfed children achieving minimum diversity (4 or more food groups) increased from less than 10% (all countries) with low maternal DDS (≤2) to 50-80% with high maternal DDS scores (≥5). In multivariate models, breastfed children of mothers with high dietary diversity were 4.8-9.4 times more likely to achieve minimum dietary diversity than children of mothers with low dietary diversity. The relationships were robust and minimally influenced by socioeconomic factors.

Conclusions/recommendations

We found a strong link between the diets of mothers and their infants. Because mother's diets reflect those most at risk in a household, mothers' diets are analogous to the environmental biologists' concept of the "indicator species," with potential value for identifying communities with households at risk of food quality insecurity. However, much work is needed to further characterize their relationship to other family dietary patterns and identify key influential household-level actions that should be addressed when programming food security interventions.

Food security and nutrition surveillance in urban areas for improved decision making: A case-study from Ouagadougou and Bobo-Dioulasso, Burkina Faso

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Introduction

Though urbanization has been growing for years in developing countries, food security and nutrition surveillance systems are still focused on rural areas. The 2008 food price crisis and the 2009 world economic recession hit the urban poor hard, highlighting the lack of data for this demographic. Decision makers urgently need information about food security and nutrition in urban areas to respond to shocks ex-post as well to anticipate their consequences ex-ante.

Purpose of the work

To document trends in food security and nutrition indicators in Ouagadougou and Bobo-Dioulasso, the two main cities of Burkina Faso, in the context of high food prices and economic crisis, in order to help in decision making.

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Methods

Since 2009, annual cross sectional surveys have been conducted in Ouagadougou and Bobo-Dioulasso among 3000 randomly selected households living in each city. At each round, a standardized questionnaire gathers information on food insecurity using, among other indicators, the Household Food Insecurity Access Scale, the Individual Dietary Diversity Score (of a household's adult member), household food and total expenditures, and the Coping Strategies Index. Basic demographic and socioeconomic characteristics of households are also collected. In parallel, complementary feeding practices and the nutritional status of children 0-59 months are assessed.

Results

From 2009 to 2010, overall household food security deteriorated in Ouagadougou and remained stable in Bobo-Dioulasso (although the share of household income spent on food increased slightly). In addition, in Ouagadougou changes in indicators varied according to the type of district. For example, the mean of the individual dietary diversity score decreased most in more structured districts (4.7 ± 1.5 food groups in 2009 versus 4.5 ± 1.4 food groups in 2010, $p < 0.0001$) while the risk of household food insecurity increased most in non-structured districts (2010 versus 2009 Odds Ratio = 2.7 [1.9-3.9]). In Ouagadougou the 2010 survey showed also that, regardless of district, all indicators decreased dramatically in households affected by the floods which occurred in September 2009. On the other hand, the mean weight-for-height index among under-five children decreased significantly in Bobo-Dioulasso (-0.34 ± 0.04 z-scores in 2010 versus - 0.16 ± 0.03 z-scores in 2009, $p=0.0003$) while increasing in Ouagadougou, though not significantly. Interestingly, these trends mirrored changes observed in food diversity among children, which decreased in Bobo-Dioulasso but not in Ouagadougou.

Policy implications

The indicators collected in annual surveys in Ouagadougou and Bobo-Dioulasso proved sensitive not only to changes in the economic context, but also to climate events such as flooding. These surveys can constitute a base for setting up a permanent urban food security and nutrition surveillance system, which might be very useful in identifying vulnerable households before, during and after shocks. Such a system could also be used to measure the impact of relevant interventions implemented in urban areas.

The costs and benefits of using agro-ecological zones as a sampling frame for food security and nutrition surveillance in Bangladesh

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Introduction

Most surveillance systems do not rely on traditional sampling frames, instead utilizing sentinel sights or estimates drawn from populations at risk. However in Bangladesh, because the majority of households, women, and particularly young children are at risk of food and nutrition insecurity, a more generalized and representative sampling frame, similar to that used in a sample survey, is appropriate.

Bangladesh's geography is intrinsically linked to livelihoods, which in turn is linked to food security and nutrition. In January 2010, the Food Security and Nutrition Surveillance Project (FSNSP, see note, below) used a sampling frame based on the government's administrative unit of districts. In January 2011, a revised sampling frame based on agro-ecological zones was established. This revision aimed to focus more on areas of the country at particular risk for sudden livelihood shocks, which are therefore relatively more sensitive to changes in food and nutrition insecurity. Additionally, this approach reduced costs and thereby increased the likelihood of sustainability, without compromising the ability to generalize the data obtained.

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Purpose

This paper will detail the process through which the surveillance system's sampling frames were constructed, including comparing the costs and benefits of the two sampling frames.

Methods

FSNSP generates seasonal information on food security of households and the nutritional status of women, adolescents, and young children as well as factors which influence these outcomes. To generate this information cross sectional data are collected three times a year.

The review of sampling frame development will be based on a desk review and evaluation of FSNSP programme documents and informal interviews with project staff. Analysis of the costs and benefits of the two sampling frame systems will be based on budget estimations as well as a comparison of number and quality of estimates of food security and nutrition indicators drawn from each system. By extracting sub-samples from the first round of district-based surveillance that are equivalent to samples from the revised sampling frame (agro-ecological zones), we will be able to compare results and determine the quality of estimates.

Policy implications

The FSNSP surveillance system is designed to inform policy makers about the extent and distribution of food insecurity and malnutrition, thus guiding policy and programme development as well as the targeting of interventions to improve household food security and nutrition in Bangladesh. Understanding differences in seasonal trends across agro-ecological zones is critically important to this goal. Policy makers need reliable and timely information to ensure that scarce government resources are targeted to those areas that are most food and nutrition insecure. Moreover, establishing a sustainable surveillance system provides policy makers with data on which to base critical decisions.

Conclusion

The revised sampling frame of FSNSP attempts to integrate the flexibility and possibility of generalizing the sample survey frame to the targeted nature of a sentinel site and vulnerable groups system.

Note: Helen Keller International and BRAC University James P. Grant School of Public Health have partnered with the Bangladesh Bureau of Statistics to establish a national Food Security and Nutrition Surveillance Programme (FSNSP) in Bangladesh, through funding from the European Commission.