Building Evidence for Sustainability of Food and Nutrition Intervention Programs in Developing Countries

Sunny S. Kim, Beatrice L. Rogers, Jennifer Coates, Daniel O. Gilligan, and Eric Sarriot

Poverty, Health, and Nutrition Division, International Food Policy Research Institute, Washington DC; Friedman School of Nutrition Science and Policy, Tufts University, Boston, MA; and Center for Design and Research in Sustainability, ICF International, Calverton, MD

ABSTRACT

After making large investments to put in place effective health and nutrition interventions, researchers, program implementers, policy makers, and donors all expect lasting effects. However, it is uncertain whether this is the case, and there is less certainty on how to approach the study of program sustainability. This symposium, “Building Evidence for Sustainability of Food and Nutrition Intervention Programs in Developing Countries,” provided not only frameworks for conceptualizing sustainability but concrete evidence about the approaches and methods used as well as lessons on how they do or do not work in particular contexts. We presented the following findings: 1) sustainability of activities and impacts of Title II food aid programs in Bolivia and Kenya, 2) sustainability of impact in terms of adoption and consumption of a biofortified orange sweet potato in Uganda, and 3) lessons from incorporating pro-sustainability investment strategies in child survival programs in Guinea.

Our symposium introduced a new important body of research on program sustainability to provide insights and stimulate innovative thinking in the design and planning of further applied research and future prosustainability intervention programs. Adv. Nutr. 4: 524–526, 2013.

Introduction

A 2012 Lancet editorial highlighted a “strategic shift in global health, away from development and toward sustainability,” with the need to build a “strong case for health as part of sustainable development” (1) (p. 193). As researchers, program implementers, policy makers, and/or donors, we are interested in ensuring that our intervention activities and benefits are not ephemeral. After making large investments to develop and put in place effective health and nutrition interventions, we expect lasting effects. However, as the body of literature on this topic begins to grow, we find numerous challenges presented by the broad range of research perspectives and approaches. This symposium provided not only frameworks for conceptualizing sustainability but concrete evidence about the approaches and methods used as well as lessons on how they do or do not work in particular contexts.

The session was opened by Dr. Sunny Kim with an introduction and overview of concepts and perspectives. Foremost, she posited that not all innovations or interventions should continue for extended periods of time, particularly where a more appropriate or cost-effective strategy becomes available or the nature of the problem to be addressed has changed or no longer exists (2). However, more often, the failure in program sustainability is a serious issue because the initial problem remains or recurs, the program established at great cost has its initial funds withdrawn before activities reach full completion, and community support and trust are diminished by abrupt or inappropriate termination of programs (3). These conditions are common for programs addressing nutritional problems, which are often persistent or chronic, require interventions that involve time-consuming behavior change and adoption of recommended practices, and face limited project funds.

In studying program sustainability, Dr. Kim posed a set of questions: What is it that we expect to be sustained? (defining the type of sustainability and elements to be sustained), How do we know if a program is sustained? (applying the methods...
and measures of sustainability), and How do we make a program sustainable? (identifying the mediating processes and influencing factors). Crosscutting these questions is the consideration that the sustainability process is intertwined with implementation, so its potential may be built while not yet knowing whether the intervention will achieve the intended outcomes. She presented the distinct types of sustainability [continuation of activities (or service delivery), capacity development (e.g., knowledge or skills), and maintenance of impact (3)] each contributing to different outcomes of sustainability and requiring different approaches and methods of study. Theoretical bases from various disciplines and fields lend guidance and insight for each type and process, and an overarching approach is studying sustainability as a complex system.

Dr. Kim described findings from recent review papers, which concluded that challenges persist. For example, little differentiation is found among types of sustainability measures, varied methods do not sufficiently assess sustainability, and a wide range of associated factors do not present clear connections of influence on sustainability (4,5). These challenges draw attention to the need for well-designed studies.

Drs. Beatrice Rogers and Jennifer Coates presented the approach and findings from their study of U.S. Agency for International Development Title II food aid programs in Bolivia and Kenya. The objectives of this study were to determine the extent to which program activities, outcomes, and impacts were sustained; identify program characteristics which concluded that challenges persist. For example, little

In their conceptual framework, a period of sustainability followed the program exit strategies. Sustainability was defined in terms of sustained resources; capacity (both technical and managerial); motivation; and linkages among program entities, which were found to be variably important. These four sustained elements led to sustained service delivery, access, and demand followed by sustained behaviors, service utilization, and maintained impact. In addition to the baseline survey and endline impact evaluation, data involving qualitative and quantitative methods were collected 2–3 times over 3 yr (2008–2011) in the sustainability period.

Distinct program components yielded different results. Dr. Coates presented two main sectors of the Kenya programs, health and microfinance, whereas Dr. Rogers presented findings from the water and sanitation as well as rural income generation components in the Bolivia programs. In the Kenyan health sector, practices that do not require outside resources were more likely to be sustained; people continued to participate or practice recommended behaviors only when incentives were offered; and participation during and after project termination was a major predictor of improved practices. However, the exit strategy did not account for resources, capacity, motivation, or linkages; service delivery by community health workers declined in all project areas; the linkage with the Ministry of Health was not realistic; and there was no substitute for free food, thus its withdrawal acted as a disincentive to participation.

In contrast to the health sector, Dr. Coates explained that the microfinance model was highly successful with sustained service delivery, utilization, and impact. There were sustained capacity, motivation, and resources. The intensive modular training program developed solid technical and managerial capacity, and the savings groups operated independently before exit to maintain services. Although each microfinance group acted independently, with no vertical linkages, horizontal links were maintained among the groups. In addition, the microfinance groups were equipped to “hire” resource personnel when technical assistance was necessary.

In the Bolivian water and sanitation programs, the piped water system and latrines continued to be available and maintained because the infrastructure provided tangible benefits, was sustained by self-financing user fees, and depended on community capacity to operate and administer the system. Water committees maintained independence from linkages. However, sanitation and hand-washing practices as well as water quality testing were not sustained, possibly because of the lack of clear, tangible benefit. Dr. Rogers also discussed the rural income–generation component, which produced mixed results. Fewer farmers continued to participate in producer associations, in part because they could not meet quality standards. However, association members had higher incomes than nonmembers, with more successful farmers able to afford inputs through the profits from marketing. Thus, the commercialization model was successful for those who could take advantage of it. The use of inputs and improved practices declined, and the practices continued by trained farmers were those that returned noticeable benefits at low cost (e.g., organic fertilizer, crop rotation). Sales through an association were more likely to occur when the association continued to receive support from external sources.

Drs. Rogers and Coates also presented a few findings from the livestock and natural resource management components of programs. They concluded that a critical combination of resources, motivation, and technical and managerial capacity is necessary to ensure sustainability. The importance of vertical and horizontal linkages is variable. Programs should be designed with exit in mind, and a consideration that the sustainability process is intertwined with service delivery, utilization, and impact. There were sustained capacity, motivation, and resources. The intensive modular training program developed solid technical and managerial capacity, and the savings groups operated independently before exit to maintain services. Although each microfinance group acted independently, with no vertical linkages, horizontal links were maintained among the groups. In addition, the microfinance groups were equipped to “hire” resource personnel when technical assistance was necessary.

Dr. Daniel Gilligan presented his study, jointly with Drs. Scott McNiven and Christine Hotz, on the sustainability of the impact of a biofortification program that introduced provitamin-A–rich orange-fleshed sweet potatoes (OSP) to farming households in Uganda. A previous impact evaluation of the 2-yr program using baseline and endline data found large impacts on both OSP adoption and vitamin A consumption in beneficiary households (6). The

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sustainability study examined how the profile of OSP adoption, consumption of OSPs, and dietary intakes of vitamin A changed over 4 seasons after the program's end. The study also explored some of the mechanisms behind the pattern of adoption behavior.

The study was conducted through three surveys between 2007 and 2011 in original beneficiary households, nonbeneficiary households in the same communities, and diffusion households in communities surrounding the original program sites. Dr. Gilligan described that, after an adoption rate of >90% after the distribution of free planting material in the first season, a trajectory of declining adoption occurred over time as farmers gained experience with the crop. Mean adoption rates fell to 37% 4 seasons after the project ended. However, substantial differences occurred across districts. In Mukono district, adoption rates remained >50% for both beneficiary and nonbeneficiary households in project communities 4 seasons after the project ended. In Kamuli, the adoption rate was 49% for beneficiaries but fell to 18% for nonbeneficiaries during the sustainability study. In Bukedea, adoption rates for beneficiaries and nonbeneficiaries fell to <10%, which reflects in part the district's dryer climate and lower production of any sweet potato at baseline. In addition, households with low baseline vitamin A intakes were less likely to cultivate OSP at later seasons. Another lesson from the study was that there were returns to social networks, because having more adopters nearby boosted (new) adoption. Adoption and benefits of the original program may stabilize in some communities but not in others, suggesting that complementary programs or support may not be needed everywhere but cannot be eliminated. These lasting effects and impact have implications on the cost-effectiveness of the program.

Based on the experience of modeling the impact of a pro-sustainability investment strategy of a child survival project (7), Dr. Eric Sarriot drew applications for sustainability planning of food and nutrition programs. Two successive child survival projects in Guinea, with documented project evaluation through repeat population surveys from 1998 to 2006, provided 3 benchmarks of results based on a lives saved (LS) analysis: entry project (21 LS of children under age 5 yr/$100,000), expansion project (37 LS/$100,000), and continuation project (100 LS/$100,000). Extrapolating from these projects, Dr. Sarriot presented the model of impact of a "traditional" project investment scenario (staggering project investments from one site to another) against a "prosustainability" scenario (gradual phasing in and out of investments from one site to a neighboring one) to compare the number of deaths averted per dollar over 5 project cycles. The impact per dollar spent on a prosustainability strategy was 3.4 times that of a traditional one over the long run (range from 2.2 to 5.7 times in a sensitivity analysis).

In expanding lessons to food and nutrition programs, one challenge is the proper identification of the level of complexity of the expected change, given the intersection of various sectors (e.g., health, food security, and nutrition) and actors in these programs. Dr. Sarriot presented a broad framework for identifying appropriate measures of sustainable food security and nutrition of vulnerable groups and suggested that the objective was not to measure everything, but to measure enough to indicate possible levels of sustainability. He concluded that time is an essential program element and not interchangeable with money and that project investment strategies, not simply project design and implementation, affect sustainability. Lastly, sustainability results from the behavior of a complex adaptive system. A sufficient understanding of the level of complexity being targeted and the position of a project within the context of the local systems is thus required.

The collection of presentations provided a small glimpse into the wide field of research in program sustainability. Inasmuch as this topic is a major priority for those involved in health and nutrition intervention programs, the approaches and lessons learned from these empirical studies and other experiences provided insights for the design and planning of further applied research and future prosustainability intervention programs.

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Literature Cited