



## Impact of Social and Behavior Change Communication in Nutrition Sensitive Interventions on Selected Indicators of Nutritional Status

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### Abstract

The United Nations Decade of Action on Nutrition has focused on elimination of malnutrition in all its forms. To achieve this goal, countries are focusing on nutrition specific and sensitive programs. This paper reviews studies in three thematic areas - agriculture, social safety net and WASH (Water, Sanitation and Hygiene) - to assess the effects of nutrition sensitive strategies combined with a social and behavioral change communication component on diet and nutritional status.

### Introduction

The United Nations Decade of Action on Nutrition (2016-2025) emphasized both nutrition specific and nutrition sensitive interventions to alleviate malnutrition [1]. While there are a number of nutrition specific approaches that have been proven to be successful and efficacious [2], it is unlikely that agreed upon nutrition related objectives such as in the Sustainable Development Goals [3] and the World Health Assembly targets [4] will be achieved without a dual strategy of implementing nutrition specific and sensitive interventions simultaneously to produce bring a synergetic effect.

Nutrition sensitive approaches are those in which a sector includes a specific focus on nutrition objectives. This could include, but not be limited to, agriculture, social protection, education, and gender and transportation sectors. There are large gaps in our understanding of the diet and nutrition effects of nutrition sensitive strategies. Even less understood are the potential synergistic effects of nutrition sensitive interventions combined with Social and Behavior Change Communication (SBCC).

SBCC is a method of promoting positive change and employs a collection of tools and approaches that are informed by communication, behavior theory and marketing to improve adoption of and sustain changes in behavior. SBCC can serve as a stand-alone intervention but is increasingly used in combination with nutrition sensitive strategies to improve nutritional status. There is currently a paucity of evidence on the impacts of SBCC implemented in combi-

nation with nutrition sensitive interventions.

This review focuses on the agriculture, social protection and WASH (Water, Sanitation and Hygiene) sectors. These sectors are chosen for review, in part, because these thematic areas focus on pregnant women and children to age two - a target of the 1000 days. Global initiatives such as the Scaling Up Nutrition Movement (SUN) have focused specific attention on the 1000 days, including implementing nutrition sensitive interventions [5]. The review is limited to programs which have combined a nutrition sensitive approach with SBCC as an element in the program.

The purpose of this review is to synthesize studies on nutrition sensitive programs in the agriculture, social safety net and WASH sectors which have included an SBCC component and summarize the lessons learned.

### Methodology

A literature search using Ovid/Medline was conducted by Tufts using the key words shown in Table 1 for ag-

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**Table 1:** Selected nutrition sensitive interventions areas by specific practices.

Intervention area	Specific practices
Agriculture	<ul style="list-style-type: none"> <li>■ Agricultural/crop/food production</li> <li>■ Home gardens</li> <li>■ Homestead food production</li> <li>■ Household food availability</li> <li>■ Dietary diversification</li> <li>■ Bio-fortification of staple crops</li> <li>■ Food security</li> <li>■ Increase income</li> <li>■ Access to food in markets</li> <li>■ Food prices</li> </ul>
Education/Schooling	<ul style="list-style-type: none"> <li>■ Girls in school</li> <li>■ Young women empowered</li> <li>■ Gender inequality</li> <li>■ Deworming</li> <li>■ Micronutrient supplementation</li> <li>■ Food fortification</li> <li>■ Early childhood development programs</li> </ul>
Social protection	<ul style="list-style-type: none"> <li>■ Social welfare</li> <li>■ Social safety nets</li> <li>■ Conditional cash transfers</li> <li>■ School feeding programs</li> <li>■ Food transfers</li> <li>■ Child protection</li> <li>■ Poverty reduction</li> <li>■ Investments</li> </ul>
Public health/WASH	<ul style="list-style-type: none"> <li>■ Hand washing</li> <li>■ Soap</li> <li>■ Safe drinking water</li> <li>■ Basic sanitation</li> </ul>

riculture, social safety and WASH. **Table 2** describes the classification of types of SBCC approaches and search terms employed. The literature review includes both published and “gray” literature. The gray literature represented final reports and other documents relevant to the purpose of the review. This review generated thousands of articles both nutrition specific and nutrition sensitive. A total of 5824 papers were retrieved - 5474 from published literature, 350 from the gray literature.

A final list of 884 articles was the basis of the review; this number represents both nutrition specific and nutrition sensitive approaches. This report is limited only to three nutrition sensitive sectors: Agriculture, social safety net and WASH. Of the 884 articles a total number of 794 were excluded. The major reasons for exclusion were (1) Lack of an SBCC component (2) Research design with no control or comparison group (3) Ambiguous description of data collected and/or procedures for data analysis. A final group of 17 studies formed the basis

**Table 2:** Social and behavior change programs approaches and activities.

SBCC methods	Specific activities listed
Advocacy	<ul style="list-style-type: none"> <li>■ Religious leaders</li> <li>■ Decision makers</li> <li>■ Policy makers</li> <li>■ Opinion leaders</li> <li>■ Professional groups</li> <li>■ Religious associations</li> </ul>
Mass communication	<ul style="list-style-type: none"> <li>■ Drama</li> <li>■ Radio/TV spots</li> <li>■ Community radio/video</li> <li>■ Magazine</li> <li>■ Posters</li> <li>■ Brochure</li> <li>■ Reminder stickers</li> <li>■ Mass media</li> <li>■ Social marketing</li> <li>■ Social media</li> <li>■ Strategic communication</li> </ul>
Interpersonal communication	<ul style="list-style-type: none"> <li>■ Individual counseling sessions</li> <li>■ Client provider/physician</li> <li>■ Home visits</li> <li>■ Household outreach</li> <li>■ Peer educators</li> </ul>
Group-based approaches	<ul style="list-style-type: none"> <li>■ Social support</li> <li>■ Social networks</li> <li>■ Social norms</li> <li>■ Normative change</li> <li>■ Community conversation</li> <li>■ Group education</li> <li>■ Caregivers support group</li> </ul>
Community/Social mobilization	<ul style="list-style-type: none"> <li>■ Campaigns</li> <li>■ Special events</li> <li>■ Community engagement</li> <li>■ Community interventions</li> <li>■ Community outreach</li> <li>■ Social mobilization</li> <li>■ Social movements</li> </ul>

of this review in agriculture, social safety net and WASH sectors. This phenomenon of a vast literature resulting in only a very limited number suitable for synthesis is not unusual. In one meta-analysis, for example, 7239 studies were identified with only 23 retained for the actual review [6].

## Results: Agriculture, Social Safety Net and WASH

Some overarching themes will be summarized for agriculture, social safety net and WASH interventions in section IV. Before this, however, the relevant data from each thematic area will be analyzed.

**Table 3:** Key aspects of Agriculture, social safety net and WASH studies with SBCC component.

Study	Study Size	Methods/SBCC Approach Used	Evaluation Methods	Outcome Measured	Results/Findings
<b>Agriculture</b>					
Girard, et al. [10]; Kenya	505 women	Social mobilization: Health clinics were linked with community-based maternal support groups to provide nutrition counseling and vouchers for Orange-fleshed sweet potato (OFSP) vine cuttings	Quasi-experimental allocation by health facility	Nutrition knowledge, diets, and nutritional status of mothers	Pregnant and lactating women (PLW) significantly higher vitamin A intake; IG women greater consumption of vitamin A rich fruit and vegetable; 45% decrease in low retinol-binding protein (RBP)
Bezner Kerr, et al. [7]; Malawi	3,838 children < 3 years	Group based approach: Agricultural interventions involved intercropping legumes and visits from farmer researchers, while nutrition education involved home visits and group meetings	A prospective quasi-experimental study	Weight- and height-for-age Z-scores	Significant increase in wt/ age; positive results most pronounced in villages intensively involved in the intervention
Reinbott, et al. [8]; Cambodia	743 at baseline and 921 at impact	Group based approach: Nutrition education (NE) program	Cluster randomized trial	Child's dietary diversity and height-for-age Z-scores	Intake of all food groups increased in intervention group(IG); comparison group (CG) decreased intake protein, vitamin A and animal source foods (ASF) foods; improved diet diversity in IG but not HAZ
Marquis, et al. [9]; Ghana	179 women (IG) and 142 non-participants	Group based approach: Microcredit loans and weekly sessions of nutrition and entrepreneurship education for women with children 2-5 y of age [intervention group (IG)]	Quasi-experimental trial	Weight-for-age (WAZ), height-for-age (HAZ), and body mass index-for-age (BAZ) z scores	91% of household (HH) were food insecure, with CG HH higher food insecurity (It 0.8); mean ASF score for preschoolers higher in IG vs. CG; modest increase in WAZ in IG; only 60% HH attended all 4 cycles of interventions
Osei, et al. [11]; Nepal	335 children	Group based approach: Enhanced homestead food production program (EHFP), consisting of home gardens, poultry, and nutrition education	Cluster randomized study	Hemoglobin and anthropometry were measured at baseline and post-micronutrient powders (MNP) supplementation	No impact on child growth; combined agri and MNP group marginally significant decrease in anemia among children
<b>Social Safety Net</b>					
Nsabuwera, et al. [17]; Rwanda	600 households enrolled in the FSLP	Advocacy: Health Food Security and Livelihoods Program (FSLP)	A before-and-after intervention	Food Insecurity Access Scale (HFIAS) scores and household Food Consumption Scores (FCS)	HH food access improved most in the poorest HH; HH food consumption increased significantly in larger landholdings HH
Robertson, et al. [14]; Zimbabwe	1,199 for control, 1,525 to the UCT & 1,319 to the CCT group	Group based approach: Unconditional cash transfers (UCTs) and conditional cash transfers (CCTs)	Cluster randomized controlled trial	Vaccination uptake and school attendance	Deletion CCT children had increased % of birth certificates, deletion; UCT and CCT had higher probability of attending school at least 80% of the time compared to control group

Siega-Riz, et al. [15]; Honduras	Intervention, n= 160 and control, n= 140	Group based approach: LNS. All children received food vouchers and nutrition education	Randomized controlled trial	Improving the micronutrient status	B12 and vitamin A deficiency decreased in IG group; folate increased significantly at 6 m and 12 m
Remans, et al. [12]; Sub-Saharan African countries: Ethiopia, Ghana, Kenya, Malawi, Mali, Nigeria, Senegal, Tanzania, & Uganda	N/A	Group based approach: Integrated, multi-sector intervention combines nutrition-specific, health-based approaches with food system- and livelihood-based interventions	A prospective observational trial	Childhood stunting	Household food security and diet diversity improved over a 3-year period; child stunting decreased by 43% from baseline
Lechtig, et al. [13]; Peru	75,000 children and 35,000 mothers	Group based approach: Integrated intervention with education on nutrition and WASH through home visits and daily community meetings	Experimental prospective study with baseline and end line surveys to measure impact evaluation	Weight-and height-for-age & weight for height Z-scores, iron-deficiency anemia and vitamin A status	Stunting, anemia and vitamin A deficiency decreased during the intervention period
Singh, et al. [16]; India	942 mother-child dyads	Social mobilization and interpersonal: Implementing districts of a Cooperative for Assistance and Relief Everywhere (CARE) nutrition and health program	Quasi-experimental design	Breastfeeding and complementary feeding practices	IG involving health care providers of anganwadi workers (AWWs) had increased contacts; socio-demographic factors were the main factors influencing BF
<b>Water, Sanitation and Hygiene (WASH)</b>					
Fenn, et al. [21]; Ethiopia	5,552 in 2014 & 3,758 in 2009	Group based approach: (i) Health; (ii) Nutrition education; (iii) Water, sanitation and hygiene (WASH); or (iv) Integrated comprising all interventions	Cross-sectional surveys were conducted at baseline (2004) and for impact evaluation (2009)	Height (or length) -for-age Z-scores	WASH IG only group to show significant increase in HAZ; IG significant improvement in mother's knowledge of diarrhea and hygiene
Kariuki, et al. [22]; Kenya	Total of 300 mothers	Group based approach: Sanitation and hygiene promotion based on community participatory approaches	Repeated cross-sectional study design	Mothers' and children's health	Significant increases in handwashing, presence of soap and refuse pit ownership with intervention; significant decrease in diarrhea in preschoolers
Bowen, et al. [20]; Pakistan	461 children	Advocacy, Interpersonal & mass communication: Weekly hand washing promotion	Cluster randomized controlled trial	Child growth and development	No difference in growth between IG or CG children; dev. Quotient sign higher in IG children at 5 to 7 y
Dangour, et al. [18]; 10 low- and middle-income countries	N = 4,627 for weight-for-age and height-for-age- z-score, n = 4,622 weight-for-height z-score	Group based approach & mass communication: WASH interventions either singly or in combination	Systematic review	Child anthropometry	No significant effects of WASH interventions on WAZ or WHZ; marginal effect of WASH on HAZ
Arnold, et al. [19]; Guatemala	600 households and 929 children	Group based and interpersonal: A 3-year, combined household water treatment and hand washing campaign	Cohort	Child growth	No difference between IG and CG in handwashing, hygienic conditions, child diarrhea, clinical LRI or growth

Luby, et al. [23]; Bangladesh	5,551 pregnant women	Group based approach: Nutrition and multimedia WASH education provided through home visits	Cluster randomized controlled trial	Length-for-age Z score of children born and caregiver-reported diarrhea among children < 3 years	Treatment children in groups, except water, had significantly lower prevalence of diarrhea. After 1 y of program, children in the nutrition group significantly taller than controls
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## Agriculture

A summary of the studies in the agriculture thematic area is presented in Table 3. The studies vary in country included, sample size, type of SBCC implemented, research design and outcomes included. A major challenge in summarizing the impact of the selected studies is threefold. First, the exact type of agricultural intervention varies; as an example, this includes distribution of orange fleshed sweet potato vine cuttings; intercropping with legumes; technical assistance to farmers; microcredit; homestead production stressing home gardens and poultry.

Secondly, the SBCC approach varies, including type of program used, the specific target audience and length of the intervention. Commonly used SBCC approaches include nutrition counseling at health facilities; home visits, community sessions; and/or group-based approaches. Target groups have typically focused on pregnant women and/or preschool aged children.

Finally, the primary goal of the programs varies. Commonly the combined SBCC-agriculture programs have focused on some measure of diet quality and/or child nutritional status using anthropometry. The results summarized in Table 3 are mixed with regard to effects on diet or measures of nutritional status.

The study by Bezner, et al. [7] reported a significant impact on weight for age and weight for height of the target child. Reinbott et al. [8], however, observed no significant effects on height. Marquis, et al. [9] report a small but non-significant effect on child growth. Worth noting is that the intervention reported by Benzer and colleagues was longer term, including a treatment period of six years for some participants; the authors note that the most significant effects on nutritional status were found in those villages involved in the program for the longest periods. These data give some hints to a possible dose-response effect. What is less clear is the minimum and optimal period of time required to produce the desired effect.

The outcomes were more consistent when a specific nutrient was the target of the intervention. For example, the intervention focused on improved knowledge of Vitamin A reported a significant increase in consumption of OFSP, and an increase in the intake of vitamin A [10]. Similarly, the project combining essential nutrition actions with the distribution of a micronutrient supplement had a slightly more positive effect in decreasing

anemia than that observed in controls [11]. It should be noted, however, that anemia decreased in all groups in the time period studied.

A key priority for this review was to ascertain if there was an incremental benefit from including a SBCC component in an agricultural intervention. The answer to this is inconclusive. Here again, the type of agricultural program varied, methods of SBCC varied and in some cases, included a combination of SBCC approaches and as indicated, the diet and nutrition targets as well as age groups involved varied. This is not to conclude that SBCC is not an important component of agricultural interventions but rather the existing studies were not structured to quantify the incremental or independent impacts of SBCC. Sorely lacking in most studies was any detail on content of the SBCC, or assessment of average length of participation in each component of SBCC.

## Social safety net programs

Table 3 summarizes studies reviewed on social safety net approaches. The work by Remans, et al. [12] thoroughly describes the nature of the intervention. The program operates under the label of “Millennium Villages” and includes a multi sector intervention with the primary goal of reducing child stunting. Intermediate impacts on household food security and diet were also analyzed. The program involved a combination of agriculture, health, education, sanitation and infrastructure development. Data were collected in 9 countries. The SBCC component included a focus on adequate child care, exclusive breast feeding and complementary feeding. Participation in the Millennium Villages project was associated with improved household food security and diet diversity (a measure of diet quality), increased vitamin A consumption and increased rates of exclusive breastfeeding. Before and after measures of preschooler stunting found that there was a 43% reduction compared to baseline measures. The baseline and end line measures were compared to national trends in stunting and found to have decreased more rapidly than overall trends at the country level.

A project similar to that of Remans, et al. was implemented in Peru by Lechtig, et al. [13]. An integrated package including health, hygiene, and preventive nutrition was targeted to pregnant women and children. The education for women stressed five meals a day, including

at least some cheese, meat or eggs. Similar to the design of the Millennium Villages, a baseline and end line assessment of program participants were conducted. The SBCC component included daily home visits, daily community meetings for growth monitoring and early stimulation, hand washing education, water use, fecal disposal and control of domestic animals.

The education program in Peru was associated with better weight gain during pregnancy and increased birth weights. Morbidity and mortality decreased in infants, the quality of complementary feeding improved, overall development improved and was associated with improved growth. There was a significant association between adequate disposal of child's excreta and reduced stunting.

Here again, while the independent effects of SBCC were not directly assessed, it is promising that the behaviors targeted in the program - diet, growth, sanitation practices - improved between baseline and end line measures. There are some words of caution, however, from the authors. There were no data collected to indicate what proportion of children surveyed in 2004 still participated at the time of the final survey. It was also not clear, on average, how long individuals participated in the program and which components reached the target age groups.

A common type of social safety net strategy is the use of either Unconditional Cash Transfers (UCT) or Conditional Cash Transfers (CCT). In one study, Robertson, et al. [14] two treatment groups, UCT and CCT, were compared to control households. Each transfer household received payments every two months; the payments in the CCT group were tied to utilization of health services. All groups, including controls, had parenting skills classes and also received maize seeds and fertilizer. Thus, in essence, there was no true control group. The main results reported indicate that none of the three groups had complete immunization records. The CCT group but not the UCT group had a significant increase in birth certificate registration, possibly due to the conditional transfer link to health services.

A different type of safety net program included the distribution of lipid based nutrient supplements to preschoolers in the treatment group [15]. All children - treatment and controls- received food vouchers and nutrition education. After treatment for six months, levels of serum folate had increased and there was a decreased risk of deficiency of vitamin B12 in the treatment group. Since children in both the treatment and control groups received nutrition education, it is impossible to assess the independent impact of SBCC.

Singh, et al. [16] implemented a community-based

nutrition and health program in India. The nutrition education component focused on breastfeeding and complementary feeding. An enhanced package of services was compared to the standard nutrition and health package. There was little detail on the content and the quality of the nutrition education component. Results indicate that enhanced services were associated with increased breast-feeding rates.

Nsabuwera, et al. [17] used a multi-pronged intervention including agriculture, nutrition knowledge and hygiene sanitation components. A before and after design was used over a 12-month period in 600 households in three districts. At the end of a year, severe food insecurity had decreased, and results were more prominent in the poorest households. No other significant effects were observed.

## WASH

There are direct and indirect mechanisms through which water, sanitation and hygiene initiatives might improve nutritional status. The direct effects of poor quality water, sanitation and hygiene operate through influences on infections, environmental enteropathy, and diarrhea. These factors, in turn, can influence nutritional status, either positively or negatively.

The indirect mechanisms of WASH components on health and nutritional status operate primarily through the household's ability to improve the health, sanitation and hygienic environment; this includes, but is not limited to, facilities for fecal disposal, adequate water, and soap for handwashing - all of which are related to the household's income for purchase of these WASH goods and services. At the community level, investments in access to appropriate quality and quantity of water and investments in the overall sanitary environment are key aspects for ensuring nutritional status.

Dangour, et al. [18] conducted a synthesis of studies to assess the impact of water quality, water supply, sanitation and hand washing on nutritional status of children 18 years of age and younger. The studies represented 10 countries; data on 22,241 children were reviewed studies. The final sample involved 14 studies. Here again, there are a large number of studies identified, yet resulting in a small number of articles that met the inclusive criteria for review. Although the 14 studies ranged in duration from six to 60 months, most were of a short duration. Data on 4627 children reported no effect on weight for age Z score or weight for length Z score; there was a borderline effect on height for age Z score. Adherence to the intervention protocols was available for only two studies and ranged from less than 35% to over 90%. The authors of this review note that none of the studies reviewed were of high quality. It should be noted that the criteria for the

Dangour, et al. [5] review did not include an SBCC component of the specific interventions. Additional studies, summarized below, are limited to those that include a SBCC component as part of a larger program.

Arnold [19] conducted a three-year combined water and hand washing intervention in Guatemala. The SBCC arm of the intervention focused on hand washing behaviors. A total of 90 villages participated. The results indicated that there was no effect on handwashing behavior, or diarrhea. In addition, there were minimal sustained efforts in water treatment or improved hand washing behavior. There were also no significant effects on infant diarrhea or any measures of anthropometry.

In Pakistan, Bowen [20] conducted an intervention on hand washing involving 461 children less than eight years of age. Neighborhoods were randomized into three groups: (a) Handwashing promotion (b) Handwashing promotion plus improved water quality (c) Control. The two intervention groups received free soap as well as a handwashing promotion campaign. Nutritional status as measured by anthropometry of children did not differ among groups.

A more rigorous evaluation of selected interventions was conducted by Fenn, et al. [21] in Ethiopia. Four interventions were tested for effects on stunting in 6 to 60-month-old children; the study was conducted over a five-year period. The four interventions included (a) Health (b) Nutrition education (c) WASH (d) An integrated intervention including all of the above; each of these were compared to a control village.

Each specific intervention included several elements. The health interventions included free essential drugs, micronutrients for pregnant women and children, health education, vaccines, family planning, prenatal and post-natal care, safe obstetrical delivery services, awareness and treatment of common illnesses.

The nutrition intervention group involved nutrition and health education, education on feeding practices with a particular focus on breastfeeding complementary feeding, food diversity, nutrition during pregnancy, and diarrhea prevention.

The WASH group stressed access to protected water, sanitation education, awareness of personal and environmental practices, including uses of soap and handwashing, education on cleanliness in the house, segregation of housing for animals and maintenance of a clean water supply. The WASH group benefitted from an investment in physical infrastructure and capacity development.

The integrated intervention included all of the elements of health, nutrition education, and WASH. All of the treatment groups and the control villages had ac-

cess to the Productive Safety Net Program (PSNP). Thus, both treatment and control group had access to a generalized welfare program.

All intervention groups received education messages door-to-door. Health and integrated groups received the home-based message ten days per month; the nutrition education group received home based messages five days per month at home and an additional five days at a village center.

The primary outcome of interest for this research was preschool aged stunting. The WASH intervention group was the only treatment associated with a significant increase in a height for age Z score; stunting decreased by 12.1% in this group. In addition, the WASH group showed an increase in knowledge in diarrhea causality and hygienic practices, including use of soap.

The Nutrition Education and Integrated groups showed the largest increase in knowledge of breast feeding practices and complementary feeding. The nutrition education treatment individuals showed a slight but non-significant increase in height for age Z score.

Some unexpected findings were highlighted by the authors. There was a significant improvement in access to safe water in the integrated group only; in the WASH group this was non-significant despite an explicit investment in water and sanitation infrastructure and resources.

All intervention groups had improved access to vaccinations and supplements. This study is important since it is one of the few that has a detailed description of the interventions implemented.

Finally, a study by Kariuki, et al. [22] was launched to address the question “Does promotion of sanitation hygiene influence a mother’s and child’s health”. There was a significant improvement in handwashing practices and presence of soap in target households combined with an increase in refuse pit ownership. The prevalence of diarrhea decreased in children under five years of age.

A more recent study by Luby et al addressed many of the flaws in prior research [23]. The study assessed the impact of water, sanitation, hand washing, nutrition, alone or in combination, contrasted with a control group. The nutrition arm included counseling on child nutrition and provision of a lipid-based nutrient supplement (LBNS). The study used a cluster randomized design, in which, clusters were randomly allocated to treatments. The sample included children in utero and up to age three.

Results indicate that compared with the control children, treatment children who were younger than three years at enrollment in any of the treatment groups except

water treatment had significantly decreased prevalence of diarrhea at one and two years of the intervention implementation. After one year of operation, children in the nutrition group were significantly taller than control children but not preschoolers in other intervention groups. The nutrition component provided counseling and LBNS. The nutrition arm of the research corrected one-sixth of the growth deficit detected at baseline. Combining interventions to improve drinking water, sanitation, and hand washing provided no additional benefits for the reduction of diarrhea over a single intervention. Adherence to the interventions was high in all clusters.

## Discussion

The emphasis on nutrition sensitive approaches for improvement in diet and nutritional status has generated a proliferation of studies. Many of these publications lay out a theoretical framework for the proposed mechanisms for nutrition sensitive strategies. The body of literature on the actual implementation of nutrition sensitive approaches and changes in nutrition is more limited. Much of this attention has been focused on the agriculture, social safety net and WASH sectors.

The evidence, to date, indicates that a range of nutrition sensitive agricultural projects have had only a weak, mixed or non-significant impact on nutrition. The evidence on the nutrition effects of social safety net and WASH interventions are equally limited. Where the outcome of interest is child growth and results appear positive, the interventions have tended to involve a social and behavior change communications component as part of a larger strategy. The objective of the present review was to take the available evidence a step further to ascertain the effects of agriculture, safety net and WASH interventions that have included an SBCC component.

Before summarizing the lessons learned from the individual studies, some general overarching themes have emerged from this review. First, there continues to be controversy on the most appropriate indicator(s) of success. While a wide variety of outcomes have been identified, there is an inordinate focus on child stunting as the primary focus for nutrition sensitive interventions. While stunting is acknowledged as an appropriate indicator of overall development, its use as the primary outcome for nutrition sensitive strategies is questioned [24]. Much more attention needs to be directed toward the link between the implemented program and appropriate metrics. A factor that is critical in this determination is the time frame of the intervention. From the evidence reviewed, it is clear that short to medium term indicators may be much more appropriate to evaluate effectiveness of nutrition sensitive program/interventions. For example, improvements in complementary feeding

or increased handwashing are important intermediate outcomes that can affect longer term changes in nutritional status. In general, interventions that were implemented for a longer period are the ones that demonstrate a significant, positive effect on reducing child stunting [2]. Significant reductions in stunting appear to require a multi-dimensional project implemented for a longer period to time.

A second issue across the range of studies reviewed is the attribution of effects. None of the studies included in this review evaluated the specific impact of SBCC on diet and nutrition. This review was limited to approaches in agriculture, social safety nets and WASH in which SBCC was one element. The independent impact of the SBCC component cannot be determined. There are, however, suggestions that SBCC may be an essential element of nutrition sensitive strategies.

In general, the interventions implemented in the three thematic areas - agriculture, social safety net, WASH - have limited details on how the program was implemented and specific details on the content of the program. Nutrition education as presented in the studies did not elucidate the specific content of the SBCC component. SBCC, as presented, was described in broad terms and thus, it is difficult to identify essential program elements. Where there was more detail on the content of the intervention, such as in the study of Fenn, et al. [6], it was possible to disaggregate the results and link to actual program components. At a minimum, descriptions should include content of specific program components, behaviors targeted by elements of the multifaceted intervention, adherence to the program as implemented, fidelity to the intervention and length of participation.

Finally, although there are a wide variety of methods for implementing SBCC (Table 2), most programs rely on household and/or community approaches. There is a tremendous, underutilized potential for a diverse array of methods either alone or in combination to improve nutrition.

## Lessons learned and way forward

Although the studies reviewed in this report provided disappointingly scant data on the synergistic effects between SBCC and nutrition sensitive strategies, the absence of evidence should not be equated with evidence of no impact. The synthesis of SBCC as part of broader, nutrition sensitive interventions in agriculture, social safety nets and WASH provides some insights that can be useful in new and on-going interventions. However, there is a need to assess and evaluate with strong study design the best programmatically feasible SBCC items or components that can gauge whether stand alone or combined forms of any SBCC help to change the behav-

ior of the target group in designing a nutrition sensitive program.

The indicator(s) used for the assessment of effectiveness must be specific to the program that is implemented. This review highlighted the fact that many nutrition sensitive interventions have focused on stunting as the primary outcome. Stunting, however, as the primary or sole indicator may mask some important short and intermediary impacts of programs. Data from this review highlight the fact that interventions implemented over a multi-year period are more likely to demonstrate evidence of a significant effect in decreasing stunting. Improvements in diet quality, nutrient intake, and/or specific behaviors, are often more appropriate metrics for assessing impact; this is particularly relevant to consider for programs that have a limited period of implementation.

The scaling up of potentially successful nutrition interventions is limited by the lack of data on program components and implementation. Broad descriptions of SBCC and other program component preclude an understanding of core elements for the successful improvement of diets and nutrition.

Interventions “as planned” and what are actually implemented can be dramatically different. Methods to measure the fidelity to treatment have to be a key part of program delivery. It is obvious that if the program is not delivered, or only partially delivered, any impacts would not be expected. Detailed methods for understanding what is actually delivered is sorely needed. From this review, an SBCC component of a larger intervention is often seen as an afterthought.

Improving the targeting, timing and duration of exposure, combined, is an important element in program success. In addition, however, it is important to stimulate demand for a particular intervention. Simply having an intervention in place does not guarantee utilization by the target group. This review made clear that a focus on both a description of the intervention that is implemented as well as use of appropriate indicators of impact are critical to modifying existing approaches and scaling up interventions to reach a larger target population.

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