



USAID
FROM THE AMERICAN PEOPLE

SPRING
Strengthening Partnerships, Results,
and Innovations in Nutrition Globally

Evidence of Effective Approaches to Social and Behavior Change Communication for Preventing and Reducing Stunting and Anemia

Findings from a Systematic Literature Review

August 2014



ABOUT SPRING

The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) project is a five-year USAID-funded Cooperative Agreement to strengthen global and country efforts to scale up high impact nutrition practices and policies and improve maternal and child nutrition outcomes. SPRING provides state-of-the-art technical support and focuses on the prevention of stunting and maternal and child anemia in the first 1,000 days. The project is managed by JSI Research & Training Institute, Inc., with partners Helen Keller International, The Manoff Group, Save the Children, and the International Food Policy Research Institute.

RECOMMENDED CITATION

Lamstein, S., T. Stillman, P. Koniz-Booher, A. Aakesson, B. Collaiezzi, T. Williams, K. Beall, and M. Anson. 2014. Evidence of Effective Approaches to Social and Behavior Change Communication for Preventing and Reducing Stunting and Anemia: Report from a Systematic Literature Review. Arlington, VA: USAID/ Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project.

ACKNOWLEDGMENTS

The authors wish to express our profound gratitude to the many individuals who contributed to this review. Anuradha Narayan, Joy Del Rosso and Marcia Griffiths contributed to the development of the protocol, prioritization of practices and categorization of behaviors and approaches. Marcia Griffiths, Michael Manske, and Agnes Guyon provided very thoughtful feedback on earlier drafts of this document. In addition, Vicky Santoso contributed tremendously to the analysis of data extracted; Allison Smith-Estelle expertly edited the entire document cover to cover; Tammy Loverdos provided the beautiful graphic design; and Daniel Cothran shared this on SPRING's website in a user-friendly interactive format. Thank you all so much!

DISCLAIMER

The contents of this report are the responsibility of the authors, and do not necessarily reflect the views of USAID or the U.S. Government.

SPRING

JSI Research & Training Institute, Inc.
1616 Fort Myer Drive
16th Floor
Arlington, VA 22209 USA
Phone: 703-528-7474
Fax: 703-528-7480
Email: info@spring-nutrition.org
Internet: www.spring-nutrition.org

Cover photos: left photo, John Nicholson, SPRING; right photos, Peggy Koniz-Booher, SPRING

TABLE OF CONTENTS

Table of Contents	I
List of Tables	III
Acronyms	IV
Executive Summary	V
1. INTRODUCTION.....	1
A. Background.....	1
B. Objectives.....	1
2. METHODS.....	3
A. Search Procedures.....	3
B. Organization of Findings.....	4
Priority practices	4
Study design	5
SBCC approaches	5
Implementation processes	5
C. Limitations	6
D. Works Cited and Literature Reviewed	7
3. FINDINGS.....	8
3.1 PRACTICES DURING PREGNANCY AND LACTATION.....	8
A. Background.....	8
B. Search Results.....	9
C. Overview of the Evidence, by Practice.....	9
Increased energy and protein intake during pregnancy and lactation	9
Enhanced quality of diet during pregnancy and lactation	10
Micronutrient supplementation or fortification	12
Increased rest and decreased work during pregnancy	12
D. Summary of the Evidence.....	12
SBCC approaches utilized	12
Implementation processes followed	14
E. Conclusions.....	15
F. Works Cited and Literature Reviewed	20

3.2.	EVIDENCE OF EFFECTIVE SBCC APPROACHES TO PROMOTE BREASTFEEDING PRACTICES	22
	A. Background.....	22
	B. Search Results.....	22
	C. Overview of the Evidence, by Practice.....	23
	Early initiation of breastfeeding	23
	Exclusive breastfeeding	26
	Continued breastfeeding	32
	D. Summary of the Evidence.....	34
	SBCC approaches utilized	34
	Implementation processes followed	35
	E. Conclusions.....	36
	F. Works Cited and Literature Reviewed	55
3.3.	EVIDENCE OF EFFECTIVE SBCC APPROACHES TO IMPROVE COMPLEMENTARY FEEDING PRACTICES	61
	A. Background.....	61
	B. Search Results.....	62
	C. Overview of the Evidence, by Practice.....	63
	Timely introduction of appropriate complementary foods.....	63
	Dietary diversity	63
	Micronutrient supplementation or fortification.....	68
	Responsive and active feeding.....	72
	Feeding during and after illness	72
	D. Summary of the Evidence.....	72
	E. Conclusions	77
	F. Works Cited and Literature Reviewed	102
	APPENDIX: SBCC LITERATURE REVIEW SEARCHING SETS	106

LIST OF TABLES

Table 2.1: High impact nutrition practices reviewed, by intervention area.....	3
Table 2.2: Number of studies by intervention area and study design	4
Table 2.3: Categorization of SBCC approaches and activities.....	4
Table 3.1.1: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by recommended practice and study design.....	8
Table 3.1.2: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design.....	11
Table 3.1.3: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach, practice, and study design.....	13
Table 3.1.4: Studies reporting on maternal dietary practices during pregnancy and lactation	16
Table 3.2.1: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by recommended practice and study design.....	23
Table 3.2.2: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design.....	33
Table 3.2.3: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design.....	37
Table 3.2.4: Studies reporting on breastfeeding practices.....	39
Table 3.3.1: WHO Guiding Principles for complementary feeding of the breastfed child.....	61
Table 3.3.2: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by recommended practice and study design.....	62
Table 3.3.3: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design	73
Table 3.3.4: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design.....	75
Table 3.3.5: Studies reporting on complementary feeding practices	79

ACRONYMS

ANC	antenatal care	MICAH	Micronutrient and Health Program
AOR	adjusted odds ratio	MIYCN	maternal, infant, and young child nutrition
BCC	behavior change communication	NCD	noncommunicable disease
BFH	baby-friendly hospital	NE	nutrition education
BFHI	Baby-friendly Hospital Initiative	NEC	nutrition, education, and counseling
BINP	Bangladesh Integrated Nutrition Project	NGO	nongovernmental organization
CFG	complementary feeding group	NLM	National Library of Medicine
CHW	Community Health Worker	NRC	Nutrition Rehabilitation Center
CI	confidence interval	OR	odds ratio
DALY	disability-adjusted life year	p	p-value
DISH	Delivery of Improved Services for Health	PAHO	Pan-American Health Organization
EBF	exclusive breastfeeding	PD	positive deviance
ENA	essential nutrition actions	PROBIT	Promotion of Breastfeeding Intervention Trial
FeSS	iron-fortified soy sauce	RCF&PG	Responsive Complementary Feeding and Play Group
GMP	Growth monitoring and promotion	RCT	randomized controlled trial
HKI	Helen Keller International	RR	relative risk
ICFI	Infant and Child Feeding Index	SBCC	social and behavior change communication
IEC	Information, Education and Communication	SC	Save the Children
IFA	iron-folic acid	SGA	Small for gestational age
IFPRI	International Food Policy Research Institute	SP	Sulfadoxine/Pyrimethamine
IG	Intervention group	SPRING	Strengthening Partnerships, Results, and Innovations in Nutrition Globally
IMCI	Integrated Management of Childhood Illness	SUN	Scaling Up Nutrition
INE	Intensive nutrition education	TIP	trials of improved practices
INE+SF	Intensive nutrition education plus supplementary feeding	UNICEF	United Nations Children's Fund
IPC	Interpersonal communication	USAID	United States Agency for International Development
IYCF	infant and young child feeding	WASH	water, sanitation, and hygiene
IYCN	infant and young child nutrition	WHO	World Health Organization
KAP	Knowledge, Attitudes, and Practices	WRA	women of reproductive age
KCAL	kilocalories	YYB	Ying Yang Bao (a Chinese multiple micronutrient powder)
KJ	kilojoule	ZVITAMBO	Zimbabwe Vitamin A for Mother and Babies Trial
KSPES	Knowledge Sharing Practices with Empowerment Strategies		
LAM	lactational amenorrhea method		
LBW	low birthweight		
LHW	Lay or Lady Health Workers		
MAD	minimum acceptable diet		
MCHIP	Maternal and Child Health Integrated Program		

EXECUTIVE SUMMARY

Evidence suggests that simply increasing knowledge and awareness of good nutrition practices rarely leads to sustained behavior change, nor is sustained change in nutrition behavior likely to be achieved through a single activity. Several specific behaviors or practices impact nutritional status during the critical first 1,000 days (pregnancy to age two), while complex, contextual determinants also influence individual decisions to consider, test, adopt and sustain a given behavior or practice. The field of Social and Behavior Change Communication (SBCC) is a collection of approaches and tools informed by behavioral theories and used to design public health interventions.

This review, part of a broader effort by SPRING to support governments and other stakeholders in their delivery of high impact nutrition practices, provides a summary of peer-reviewed evidence regarding the effectiveness of SBCC approaches to increase the uptake of three key nutrition behaviors: women's dietary practices during pregnancy and lactation, breastfeeding practices, and complementary feeding practices. SBCC interventions have been broadly categorized into three areas: interpersonal communication; use of media; and community/social mobilization. This review also identifies gaps in the evidence and recommendations for further areas of study.

This review includes a total of 91 studies identified using the Ovid MEDLINE database. Recognizing the potential value of a broad array of study designs, results from five study types are included: reviews (including meta-analysis), randomized controlled trials, longitudinal studies, repeated cross-sectional studies, and cross-sectional studies. Excluded studies include those with data from high income countries, those published prior to 2000, those written in a language other than English, and those that focused exclusively on refinement of a research methodology. Other exclusions are noted in the text.

Findings related to women's dietary practices during pregnancy and lactation

Undernutrition during pregnancy and lactation is a critical determinant of maternal, neonatal, and child health outcomes. Improving dietary adequacy during pregnancy and

lactation is important to help women accommodate their nutritional requirements as well as their children's requirements during intrauterine development and while breastfeeding (Haileslassie, et al., 2013).

The body of literature on the effectiveness of SBCC to improve women's dietary practices during pregnancy and lactation is still small (only 15 peer-reviewed studies met the inclusion criteria), but indicates that SBCC approaches can and do succeed in improving uptake of the behaviors promoted. The greatest gap in the literature was in evidence of effectiveness of SBCC in improving rest and workload during pregnancy. Given the importance of women's dietary practices during pregnancy and lactation, the dearth of evidence is notable.

Findings related to breastfeeding practices

Breastfeeding is widely recognized as one of the most cost-effective investments to improve child survival (UNICEF, 2013), as well as cognitive and motor development and academic performance (Horta et al, 2013). Breastfeeding also imparts critical benefits to the woman, including natural postnatal infertility. Despite the promise of optimal breastfeeding practices, rates for WHO recommended breastfeeding practices remain low (UNICEF, 2013).

The body of literature on the effectiveness of SBCC approaches in improving breastfeeding practices is strong and broad (62 peer-reviewed studies met the inclusion criteria) and supports the claim that SBCC approaches can and do succeed in improving uptake of the behaviors promoted.

Evidence from several studies strongly suggests that increasing the number of contacts increases the positive effect of SBCC on breastfeeding practices. Greater consistency in how breastfeeding practices are measured – the definitions of indicators and the methods of data collection – exists for breastfeeding practices when compared to women's dietary practices and complementary feeding practices, but even with globally-recognized indicators and measurement guidance, considerable variation remains.

Findings related to complementary feeding practices

Timely appropriate complementary feeding are critical to a child's growth and development and could avert millions of

disability-adjusted life years, but global coverage of optimal complementary feeding practices remains low.

The evidence of the effect of SBCC on complementary feeding practices is quite broad (30 studies met the inclusion criteria) and clearly indicates that SBCC interventions can improve a wide range of complementary feeding practices. However, measures of optimal complementary feeding are so varied that it is particularly challenging to draw conclusions regarding the effectiveness of particular SBCC approaches.

Common findings

The SBCC approach most used, and the only one used without other communication interventions, was interpersonal communication. While media and community/social mobilization were used, they were always used with at least one other communication approach.

Studies included in this review employed a wide range of implementation strategies with variations in the interactions or combinations with other interventions, target groups, content, messages, scale and coverage, length and intensity, as well as context. Very little has been done to compare the effect of differences in the delivery science, particularly when implemented at scale.

The majority of the studies were implemented on a small scale, typically with fewer than 500 people per group.

Additionally, there was considerable variation in how women's dietary practices and complementary feeding practices were defined and measured.

Conclusions

Evidence suggests that using multiple SBCC approaches and channels to change behaviors is more effective than using one, that targeting multiple contacts has a greater effect than targeting only the woman herself, and that more visits or contacts results in greater change. However, such comparisons are not well-tested in the literature. Very few

comparisons have been made between the effect of timing of communications and what little has been done presents contradictory evidence. Unfortunately, it can be challenging to conduct such studies that compare differences in delivery and/or disaggregate single approaches within a multi-approach intervention. SBCC practitioners and researchers must assess whether that line of research is useful.

Differences in local context (including social norms, culture, and environmental factors) as well as differences in the implementation and scale of implementation also affect the success of interventions. This underscores the importance of proper context assessments, formative research and/or ethnographic study prior to SBCC implementation.

Finally, if practices and indicators are not standardized, a project may improve behaviors but it will be difficult to attribute changes in outcomes. This underscores the importance of developing practices and indicators that are globally recognized, accepted, and used by the research and program communities. At the same time, many nutrition interventions are suited to iterative programming for incremental change toward the optimal, evidence-based behaviors. This means that more easily achieved indicators (components of standardized indicators or shorter time periods) may also be needed to measure progress toward the ultimate goal of changes in the standardized indicators of behaviors.

Other areas particularly important for future evaluations and operations research include:

- the effect of targeting multiple audiences or influencers of the behaviors being promoted, rather than focusing on one target population;
- the effect of the same SBCC intervention implemented in different contexts (social and environmental);
- the effectiveness of different approaches (including intensity and targeting) for different behaviors;
- the cost and cost effectiveness of various SBCC approaches (particularly as it relates to scalability); and
- the effectiveness and sustainability of these approaches when implemented at scale.

I. INTRODUCTION

A. Background

Evidence suggests that simply increasing knowledge and awareness of good nutrition practices rarely leads to sustained behavior change, nor is sustained change in nutrition behavior likely to be achieved through a single activity targeting a single subset of the population. Several specific behaviors or practices greatly impact nutritional status during the critical first 1,000 days (pregnancy to age two), and many complex, contextual determinants also influence individual decisions to actually consider, test, adopt and sustain a given behavior or practice.

Realizing this, public health practitioners for decades have applied theories from social psychology and marketing about behavior change to improve the potential of interventions to change key practices. These theories address how and why people practice certain behaviors, why they make and sustain changes in their behaviors (or don't), and the way that social and environmental structures affect both their current practices and the likelihood they will change practices and sustain those changes. The field of Social and Behavior Change Communication (SBCC) is a collection of approaches and tools informed by behavioral theories and used to design public health and nutrition interventions.

SBCC theories, approaches, and tools have been widely accepted and integrated into public health, water, sanitation, and hygiene (WASH), disaster prevention and response, as well as maternal, infant, and young child nutrition (MIYCN). Sectors such as agriculture and education have also increased the impact of their interventions by utilizing SBCC, while the private sector, where much of SBCC theory and practice originated, continues to use SBCC to sell existing products and services and develop new ones, and remains a key player in the evolution of the field.

SBCC is at an interesting crossroads. Technology is rapidly increasing access to information, even among remote populations, and the types of, and channels for, communication are ever expanding. New technologies have the potential to democratize SBCC, giving those most affected by health and nutrition problems a greater voice in address-

ing them, and creating a platform for mutual accountability among social actors. While many programs and projects have impacted health and nutrition outcomes using SBCC, including campaigns to reduce tobacco use or increase use of seatbelts or re-usable shopping bags, there is a sense that SBCC may not be fulfilling its full potential to bring about social and individual changes for improved health and nutrition outcomes.

Under and over-nutrition, cancer and other NCDs, preventable childhood diseases, and maternal and infant/young child mortality remain key global health issues. Some of these issues, like chronic malnutrition (stunting) among children, have been surprisingly resistant to improvement, highlighting the need for more evidence about the potential of SBCC. Specific areas of focus include how single or combined SBCC interventions change certain types of behaviors among certain groups in specific contexts, how they can be designed and implemented to ensure cost-effectiveness, scalability and sustainability, and how investments in SBCC can be targeted to take proven interventions to scale and to foster continual innovation.

SPRING seeks to strengthen the SBCC evidence base for stunting and anemia globally. SPRING conducted a systematic literature review to assess the state of SBCC evidence related to three key areas of nutrition behavior: maternal diet during pregnancy and lactation; breastfeeding; and complementary feeding. The review focused on communication interventions, categorized into three broad areas: interpersonal communication (IPC); use of media; and community/social mobilization. This report summarizes the evidence for the different SBCC approaches related to these three key behavioral or intervention areas, and findings are presented first by intervention area, then by SBCC approach, then by type of evidence.

We hope that SBCC practitioners and researchers will find this report a valuable reference tool, and a place from which to start when looking for current evidence regarding specific SBCC approaches and/or key intervention areas within MIYCN.

B. Objectives

To be effective, SBCC approaches should be grounded in behavioral and social science theories, a deep understand-

ing of the local context, as well as evidence. This literature review is part of a broader effort by SPRING to document and disseminate evidence related to effective SBCC approaches, and to develop program guidance to support governments and other stakeholders in the delivery of high impact nutrition practices at the facility, community, and household levels.

This review provides a comprehensive summary of peer-reviewed evidence regarding the effectiveness of SBCC

approaches in increasing the uptake of high impact MIYCN practices, seeking to answer the following questions:

1. What is the state of peer-reviewed evidence regarding the application of SBCC approaches to increase the uptake of high impact nutrition practices?
2. Where are the gaps in the evidence? What SBCC approaches or activities lack evidence of effectiveness in improving nutrition-related practices?

2. METHODS

A. Search Procedures

The authors searched the United States National Library of Medicine biomedical database (NLM[®]) Ovid MEDLINE between May-December 2012. The Ovid MEDLINE database contains bibliographic citations and author abstracts from more than 4,600 biomedical journals published in the United States and 70 other countries. The database contains over 13 million citations dating back to 1950, including more than 130,000 population-related journal citations (unique to the former POPLINE[®] database) that were added to MEDLINE in 2002.

The following primary search parameters were used: the practices or behaviors promoted, the SBCC approach utilized, and the study design. A complete list of search terms is included as Appendix A.

Excluded from this review are studies with data from high income countries,¹ those published prior to 2000, and those

1 The authors used the World Bank's categorization and list of high income countries. See: http://data.worldbank.org/about/country-classifications/country-and-lending-groups#High_income.

written in a language other than English. Furthermore, articles focused exclusively on the refinement of a research methodology, those without a clear description of the practices promoted or the SBCC approach utilized, and those that did not specifically quantify or disaggregate the effect of SBCC on behavioral outcomes, were also excluded. Out of 15,847 hits, 91 studies were extracted for detailed review.

Using a standardized procedure, researchers conducted an in-depth review of each of the selected studies and extracted the following information:

- location
- objective
- practice(s) promoted
- SBCC approach(es) utilized
- intervention design process (e.g. formative research)
- scale of implementation
- duration of the intervention (where available)
- frequency of contact or of potential exposure (where available)
- population targeted
- study design
- study results and p-values

Table 2.1: High impact nutrition practices reviewed, by intervention area

Intervention area	Specific practices
Women's dietary practices during pregnancy and lactation	<ul style="list-style-type: none"> ■ Increased energy and protein intake during pregnancy and lactation ■ Enhanced quality of diet during pregnancy and lactation ■ Micronutrient supplementation or fortification ■ Increased rest and decreased work during pregnancy
Breastfeeding practices	<ul style="list-style-type: none"> ■ Early initiation of breastfeeding ■ Exclusive breastfeeding ■ Continued breastfeeding
Complementary feeding practices	<ul style="list-style-type: none"> ■ Timely introduction of complementary foods ■ Dietary diversity <ul style="list-style-type: none"> - Feeding children animal source foods - Feeding children fruits and vegetables - Feeding children a minimum number of food groups (dietary diversity) ■ Micronutrient supplementation or fortification ■ Increased meal frequency and/or density <ul style="list-style-type: none"> - Increasing frequency of feeding children - Adding fats or oils to children's foods - Enhancing the consistency of children's foods - Increasing the quantity fed to children at each meal ■ Responsive/active feeding ■ Feeding during and after illness

B. Organization of Findings

The literature review focuses on evidence of effectiveness around three primary intervention areas: women’s dietary practices during pregnancy and lactation, breastfeeding practices, and complementary feeding practices. These intervention areas focus on actions by mothers or other caretakers during the “first 1000 days” – the period between conception and a child’s second birthday. The vast majority of stunting occurs during this period, and there is generally little potential for recovery thereafter.

This review is divided into three chapters corresponding to each of these three intervention areas. The chapters can be read together as one document, or read separately as independent documents. With each of these chapters, the findings are organized by priority practices, SBCC approach(es) utilized, and study design. This organization enables the reader to derive an independent judgment re-

garding findings from different study designs. In addition, implementation processes followed are also discussed.

Priority practices

Within each chapter, we identify high impact nutrition practices with proven efficacy with respect to child nutrition outcomes. This list of practices is consistent with those prioritized in The Lancet’s Maternal and Child Nutrition Series (Bhutta et al., 2008a; Bhutta et al., 2013), the World Health Organization’s “Essential Nutrition Actions: Improving Maternal, Newborn, Infant and Young Child Health and Nutrition” (WHO, 2013), the WHO e-Library of Evidence for Nutrition Actions, and the United Nations Children’s Fund’s (UNICEF) “Improving Child Nutrition: The Achievable Imperative for Global Progress” (UNICEF, 2013). Where normative recommendations exist, the chapter is organized accordingly. Where such recommendations

Table 2.2: Number of studies by intervention area and study design

Intervention area	Reviews with meta-analysis	RCT	Longitudinal studies	Repeated cross-sectional studies	Cross-sectional studies	Total
Women’s dietary practices during pregnancy and lactation	1	4	2	8	0	15
Breastfeeding practices	6	27	14	13	2	62
Complementary feeding practices	0	11	9	10	0	30

Table 2.3: Categorization of SBCC approaches and activities

SBCC approaches	Specific activities*
Interpersonal Communication	The following activities can be conducted in facilities, communities, or homes and by health care providers, lay health workers, or peers: <ul style="list-style-type: none"> ■ One-on-one counseling ■ Group education ■ Support groups
Media	<ul style="list-style-type: none"> ■ Mass media ■ Mid-sized media (community radio / video, local billboards) ■ Small media (posters, flyers, calendars, reminder stickers) ■ Traditional media (songs, drama) ■ Social media (Twitter, Facebook, etc.)
Community/Social Mobilization	<ul style="list-style-type: none"> ■ Campaigns, events, special “days”, rallies ■ Issue groups

do not exist, we review practices with widely acknowledged potential for impact. See Table 1.1.

There was considerable variation in indicators used to measure these practices. This is partly due to the wide range of practices included within each intervention area, but is also because not all studies reviewed used standardized or recommended indicators to measure behavioral outcomes. Any difference in indicators is clearly indicated in the summaries associated with each practice.

Finally, because the review is organized around the effectiveness of SBCC activities on specific practices, studies looking at the effectiveness of SBCC on more than one of the prioritized practice are cited and discussed multiple times. Where this occurs, we have provided a detailed description of the study in the first reference, and only discuss results in subsequent references.

Study design

Study design influences the validity and comparability of outcomes. The Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) Working Group² focuses on four key elements to assess the validity of study findings: study design, study quality, consistency, and directness (GRADE Working Group, 2004). Habicht et al. (1999) also provide guidance on evaluation design for public health program performance based on “type of inference to be made, whether this is a statement of adequacy, plausibility, or probability” regarding attribution of change to an intervention.

Recognizing the value of a broad array of study designs, results from five primary study designs are included: reviews (including meta-analysis), randomized controlled trials (RCT), longitudinal studies, repeated cross-sectional studies, and cross-sectional studies. Additional aspects of study design are noted within each chapter. Table 1.2 summarizes the number of studies reviewed, by intervention area and study design.

We included detailed information and analysis of all studies reporting statistically significant findings related to priority practices. All studies are included in the summary tables at the back of each chapter. Seventy-four of the studies (including the seven literature reviews with meta-analyses)

2 See: <http://www.gradeworkinggroup.org/intro.htm>.

reviewed reported statistically significant results relevant to this literature review. Readers may wish to use caution in interpreting statistically significant findings as the quality and design of studies differ considerably.

SBCC approaches

While the importance of structural, environmental, and systems-related interventions in achieving sustainable social and behavior change (SBC) should not be underestimated, this review was confined to the effectiveness of communication-related interventions in affecting behavior change. We focused on evidence around three broad SBCC approaches: interpersonal communication, the use of media, and community/social mobilization. Within each approach, further identified sub-approaches or activities were identified. See Table 1.3.

The SBCC approaches and activities outlined are consistent with those referenced in the C-Change/FHI360 Learning Package for Social and Behavior Change Communication (2010), the Bill and Melinda Gates Foundation “Social & Behavior Change Interventions Landscaping Study: A Global Review” (Storey et al., 2011), the USAID Infant and Young Child Nutrition (IYCN) Project “IYCN Social and Behavior Change Communication Approach” (2011), the USAID “Community Interventions to Promote Optimal Breastfeeding: Evidence on Early Initiation, Any Breastfeeding, Exclusive Breastfeeding, and Continued Breastfeeding” (2012), the USAID “Behavior Change Interventions and Child Nutritional Status: Evidence from the Promotion of Improved Complementary Feeding Practices” (2011) and the USAID Maternal and Child Health Integrated Program (MCHIP) publication “Technical Reference Materials: Behavior Change Interventions” (2010).

Most studies used more than one SBCC activity and many used more than one approach.

Implementation processes

There is consensus that delivery systems for nutrition interventions are currently suboptimal (Black et al., 2008; Chopra et al., 2012; Leroy and Menon, 2008; Menon et al., 2014). The World Bank’s report on how to improve health service delivery in developing countries reviewed the evidence and concluded that “the evidence base is weak for claiming suc-

cess of any particular health services strengthening strategy across LMICs³,” noting that “how a strategy is implemented is as important as the type of strategy implemented” (Ovretveit et al., 2009). Implementation processes include, but are not limited to, the overall program design, intensity and timing of contacts; type and training of person(s) communicating messages, supervision of field workers, and audience(s) targeted. Acknowledging the importance of *how* services are delivered, information on targeted audiences, the scale, as well as the timing and intensity of interventions is provided whenever possible in the chapters that follow.

A particularly important aspect of the delivery of SBCC interventions is the target audience. Many people can influence whether an individual adopts or fails to adopt a promoted behavior. Successful SBCC strategies target various audiences and often more than one audience or sphere of influence, including:⁴

- self/caregivers, such as pregnant and lactating women, as well as other immediate caregivers of children under two;
- direct influencers, including partners/fathers, mothers-in-law, siblings, other family members, and peers;
- actors within the local community, including community members, leaders, social groups, and providers; and
- actors within the enabling environment, including the government (national, sub-regional, district and/or municipal), business, faith and movement leaders.

3 LMIC stands for Low and Middle Income Countries

4 See the C-Change Social Ecological Model for Change.

C. Limitations

The authors limited this literature review to peer-reviewed studies and those identified in the Ovid MEDLINE[®] database. While use of a second peer-reviewed journal database, Web of Science[®], was considered, the high degree of overlap between the two databases made this unnecessary. Since not all projects, programs and national strategies publish in peer-reviewed journals, some relevant SBCC information, experiences, and evidence may have been omitted.

We limited the review to studies published on or after January 1, 2000. Studies published prior to 2000 may also include valuable findings that are not captured in this review.

The review excluded research conducted in high income countries. We acknowledge that experience from other country contexts, including the United States, may be valuable to assess the relative success of different SBCC approaches.

Despite comprehensive search terms that included the full range of activities included in the term SBCC, review findings are limited to communication-based approaches. This is consistent with the types of SBCC delivery strategies and interventions currently being utilized by the SBCC community.

Differences in local context (including social norms, culture, and environmental factors) as well as differences in the implementation and scale of implementation can impact the success of interventions and may affect generalizability of findings included in this review.

D. Works Cited and Literature Reviewed

- ACC/SCN. 2001. What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions, Allen LH and Gillespie SR. ACC/SCN: Geneva in collaboration with the Asian Development Bank, Manila.
- Bhutta, Zulfiqar A, Jai K Das, Arjumand Rizvi, Michelle F Gaffey, Neff Walker, Susan Horton, Patrick Webb, Anna Lartey, and Robert E Black. 2013. "Evidence-based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?" *The Lancet* 382 (9890) (August): 452–477.
- Bhutta, Zulfiqar A, Tahmeed Ahmed, Robert E Black, Simon Cousens, Kathryn Dewey, Elsa Giugliani, Batool A Haider, Betty Kirkwood, Saul S Morris, H P S Sachdev, Meera Shekar, for the Maternal and Child Undernutrition Study Group. 2008a. "What Works? Interventions for Maternal and Child Undernutrition and Survival." *The Lancet* 371 (9610) (February): 417–440.
- Black, Robert E, Lindsay H Allen, Zulfiqar A Bhutta, Laura E Caulfield, Mercedes de Onis, Majid Ezzati, Colin Mathers, and Juan Rivera. 2008. "Maternal and Child Undernutrition: Global and Regional Exposures and Health Consequences." *The Lancet* 371 (9608) (January): 243–260.
- C-Change. C Modules: A Learning Package for Social and Behavior Change Communication (SBCC). Washington, DC: C-Change/FHI 360.
- GRADE Working Group. "Grading Quality of Evidence and Strength of Recommendations." 2004. *BMJ* 328 (7454): 1490–0.
- Habicht, J P, C G Victora, and J P Vaughan. 1999. "Evaluation Designs for Adequacy, Plausibility and Probability of Public Health Programme Performance and Impact." *International Journal of Epidemiology* 28 (1): 10–18.
- Leroy J. and Purnima Menon. 2008. "From Efficacy to Public Health Impact: A Call for Research on Program Delivery and Utilization in Nutrition." *The Journal of Nutrition*. 138 (3): 628-629.
- Maternal and Child Health Integrated Program (MCHIP). 2010. Technical Reference Materials: Behavior Change Interventions. Washington, DC: USAID.
- Menon, Purnima, NM Covic, PB Harrigan, SE Horton, NM Kazi, S Lamstein, L Neufeld, E Oakley, and D Pelletier. 2014. "Strengthening Implementation and Utilization of Nutrition Interventions through Research: A Framework and Research Agenda: Nutrition Implementation Framework and Research Agenda." *Annals of the New York Academy of Sciences* doi:10.1111/nyas.12447.
- Chopra M, A Sharkey, N Dalmiya , D Anthony , N Binkin, on behalf of the UNICEF Equity in Child Survival, Health and Nutrition Analysis Team. 2012. "Strategies to improve health coverage and narrow the equity gap in child survival, health, and nutrition." *The Lancet* 380 (9850): 1331 – 1340.
- Ota, Erika, R Tobe-Gai, R Mori, and D Farrar. Antenatal Dietary Advice and Supplementation to Increase Energy and Protein Intake. In *Cochrane Database of Systematic Reviews 2012*, edited by The Cochrane Collaboration and Erika Ota. Chichester, United Kingdom: John Wiley & Sons, Ltd.
- Ovretveit J, B Siadat, DH Peters, A Thota, and S El-Saharty. 2009. "Chapter 1: Review of Strategies to Strengthen Health Services." In *Improving Health Service Delivery in Developing Countries: From Evidence to Action*, edited by D.H. Peters, Sameh El-Saharty, Bafsheh Siadat, Katja Janovsky and Marko Vujicic, Washington DC: World Bank, 2009.
- Storey D, K Lee, C Blake, P Lee, YL Lee, and N Depasquale. "Social & Behavior Change Interventions Landscaping Study: A Global Review" Seattle: The Bill and Melinda Gates Foundation, 2011.
- UNICEF. *Improving Child Nutrition: The achievable imperative for global progress*. New York: UNICEF, 2013.
- USAID Infant and Young Child Nutrition (IYCN) Project. *Behavior Change Interventions and Child Nutritional Status: Evidence from the Promotion of Improved Complementary Feeding Practices*. Washington, DC: UNICEF, 2011a.
- USAID Infant and Young Child Nutrition (IYCN) Project. *IYCN Social and Behavior Change Communication Approach*. Washington, DC: USAID, 2011.
- USAID Infant and Young Child Nutrition (IYCN) Project. *Community Interventions to Promote Optimal Breastfeeding: Evidence on Early Initiation, Any Breastfeeding, Exclusive Breastfeeding, and Continued Breastfeeding*. Washington, DC: USAID, 2012.
- World Health Organization. *Essential Nutrition Actions: Improving maternal, newborn, infant, and young child health and nutrition*. Geneva: World Health Organization, 2013.
- WHO. *E-Library of Evidence for Nutrition Actions*. Geneva: World Health Organization.

3. FINDINGS

3.1. Evidence of Effective SBCC Approaches to Improve Women's Dietary Practices during Pregnancy and Lactation

D. Background

Undernutrition during pregnancy and lactation is a critical determinant of maternal, neonatal, and child health outcomes. Maternal undernutrition is associated with an increased risk of maternal mortality (Christian et al., 2008), and both maternal stunting and wasting are associated with term and preterm births of children small for gestational age (SGA) (Black et al., 2013) and low birth weight (ACC/SCN, 2001, among others). Children born SGA are more likely to become stunted children and adults, which, for women, can place them at increased risk for delivery complications, morbidity, and mortality over time (Bhutta, 2013; Mason et al., 2012). Low birth weight has been shown to cost society in increased infant mortality (Katz et al 2013), lost wages and productivity in adulthood, increased stunting and related illness, and increased rates of noncommunicable disease (NCDs) in adulthood (Alderman and Behrman, 2006).

Maternal anemia is associated with an increased risk of maternal death, and there is a strong causal link between iron deficiency anemia and both low birthweight (LBW) and perinatal mortality (Rasmussen and Stolfus, 2003). Maternal vitamin A deficiency is associated with visual

impairment among women (Black et al., 2013) as well as increased risk of infants being LBW (Tielsh et al., 2008) and infant mortality (Christian et al., 2001). Deficiencies of zinc, iodine, folate, and calcium are also implicated in adverse maternal and child health outcomes.

Improving dietary adequacy during pregnancy and lactation is critical to helping women accommodate their nutritional requirements as well as their children's requirements during intrauterine development and while breastfeeding (Hailelassie, et al., 2013).

There is limited evidence regarding the effectiveness of protein and energy-related interventions to address maternal wasting and SGA. The strongest evidence comes from a Cochrane Review which concluded that balanced energy protein supplementation reduced the incidence of SGA by 32%. A subsequent meta-analysis found that balanced energy protein supplementation increased birth weight by 73g and reduced the risk of SGA by 34% (Bhutta et al., 2013).

Evidence supporting the benefits of maternal micronutrient supplementation and fortification is more robust. Iron folic acid supplementation during pregnancy is associated with improved mean birth weight and a 79% reduction in megaloblastic anemia (Lassi et al., 2013). Multiple micronutrient supplementation in pregnant women is associated with a 10% reduction in SGA and 11% reduction in LBW babies (Haider and Bhutta, 2012). The consumption of micronutrient and iron-rich foods can also contribute to improved maternal nutritional status. Increasing the con-

Table 3.1.1: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by recommended practice and study design

	Reviews with meta-analysis	RCT	Longitudinal studies	Repeated cross-sectional studies	Cross-sectional studies	Total
Increased energy and protein intake during pregnancy and lactation	1 (1)	0	1 (0)	3 (2)	0	5 (3)
Enhanced quality of diet during pregnancy and lactation	1 (0)	1 (1)	0	4 (3)	0	6 (4)
Micronutrient supplementation or fortification	0	3 (2)	0	3 (1)	0	6 (3)
Increased rest and decreased work during pregnancy	0	0	0	1 (0)	1 (1)	2 (1)

* Note that columns do not sum to the "total" since some articles reported on multiple practices.

sumption of certain plant-based foods (such as green leafy vegetables) or meat and fish can have a considerable impact on an individual's iron status (Allen et al., 2001).

This chapter focuses on the effectiveness of Social and Behavior Change Communication (SBCC) approaches to increase the quantity and quality of women's dietary intake during pregnancy and lactation.

E. Search Results

Fifteen peer-reviewed studies on women's dietary practices met the review's inclusion criteria.⁵ A complete list of the studies reviewed, including a summary of the SBCC approach(es) utilized, the study design, practices measured, and levels of significance is presented in Table 3.1.4 at the end of this chapter.

Ten studies reported a statistically significant change in at least one of the priority practices. Each of those articles is described in greater detail below. Studies reporting a statistically significant change in more than one of the prioritized practices and/or utilizing more than one SBCC approach are cited and discussed multiple times. Where this occurs, we have provided a detailed description of the study in the first reference, and only discuss results in subsequent references.

The findings are organized by practices targeted, SBCC approach(es) utilized, and study design. This organization enables the reader to derive an independent judgment regarding findings from each study. In addition, implementation processes followed are also discussed.

Of the 15 studies reviewed for this chapter, one was a literature review including a meta-analysis, four were randomized controlled trials (RCT), one was a longitudinal study (including a control group), eight were repeated cross-sectional studies (five of which included control groups and three that did not) and was a cross-sectional study implemented only at one point in time. See Table 3.1.1.

F. Overview of the Evidence, by Practice

The evidence focuses on four key maternal nutrition practices: increased energy and protein intake during pregnancy, enhanced quality of diet during pregnancy and lactation,

⁵ See the introductory chapter of this literature review for a full description of search procedures and inclusion/ exclusion criteria.

consumption of micronutrient supplements, and reduced work during pregnancy and lactation. While health status is also an important determinant of women's nutritional status, practices associated with improved health status were not explored in this review.

Of the studies reviewed, five explored energy and protein intake among pregnant and lactating women, six assessed enhanced quality of diet among pregnant and lactating women, six reported on the intake of micronutrient supplements, and two looked at increased rest and reduced work during pregnancy. See Table 3.1.1.

Increased energy and protein intake during pregnancy and lactation

Of the five studies that discussed increased energy and protein intake, two measured the proportion of women consuming more food during pregnancy, one measured the proportion of women consuming more food during lactation, two measured caloric intake and two measured protein intake. Three of the five studies reported statistically significant results.

Literature Reviews with meta-analysis

Ota et al. (2012) conducted a meta-analysis of four RCTs looking at energy and protein intake among pregnant women. The authors included three studies in each of the analyses comparing intake among women who received nutritional advice during pregnancy and those who did not. Following a pooled analysis, the authors concluded that "advice to increase protein intake seems to be successful in achieving its goal [mean difference of +6.99 g/day], but there was no significant increase in energy intake."

Cross-sectional studies

Garg and Kashyap (2006) conducted a repeated cross-sectional study looking at mean daily energy and protein intake among pregnant women in one village in India. The nutrition education intervention included facility-based counseling, weekly home visits to pregnant women, and six group meetings for pregnant women over a period of two to four months. Following baseline data collection, the intervention was delivered to 50 pregnant women having completed 5-7 months of gestation. Another 50 women in month 8-9 of pregnancy were considered to be the control

group. By the time women in the intervention group had reached 8-9 months of gestation they consumed 686 kcal more per day than those in the control group.

Guyon et al. (2009) looked at dietary intake during lactation in two highland provinces in Madagascar. The intervention included training of health workers, interpersonal communication including small and large group activities, one-to-one counseling in homes and at local health facilities, community/social mobilization events such as festivals celebrating breastfeeding and child health days, and the use of mass media to air breastfeeding promotion songs. The authors found that women in intervention communities were 12% more likely to report increased food intake during lactation than women in control communities.

Enhanced quality of diet during pregnancy and lactation

Of the six studies explored the effectiveness of SBCC interventions on the consumption of specific nutrient-rich foods, including fortified foods, during pregnancy, four reported statistically significant results.

Randomized controlled trials

Sun et al. (2007) conducted an RCT exploring the “effectiveness of social marketing (SM) on the improvement of women’s knowledge, attitudes, and behaviors” regarding consumption of iron fortified soy sauce (FeSS) in Guidzhou Province, China. The intervention included the use of mass media and “social marketing strategies using an integrated 6 Ps approach (product, price, place, promotion, policy, and partnership).” The SM strategy included physician-led counseling of patients on the benefits of consuming FeSS, as well as the distribution of FeSS samples and calendars with FeSS information at the community level. *The authors reported an increase in eating and purchasing behaviors in rural and urban intervention site as well as in control sites. In rural sites there was a net increase in FeSS purchase in intervention sites of 35 percentage points compared with rural control sites. Likewise, the net increase in was 29.5 percentage points in urban intervention sites compared with urban control sites. With regard to the consumption of FeSS, the authors reported a net increase of 21.1 percentage points in rural intervention sites compared with rural control sites and a net increase of 25.6 percentage points in the proportion of urban women consuming FeSS.*

Repeated cross-sectional studies

Garg and Kashyap (2006) conducted a repeated cross-sectional study looking at mean daily intake of green leafy vegetables. By the time women in the intervention group had reached 8-9 months of gestation they consumed 49.3g of green leafy vegetables daily compared with only 12.9g among women in the control group.

Ndiaye et al. (2009) looked at the intake of animal products among pregnant women in rural Senegal. The study compared two intervention packages within the Micronutrient and Health Program (MICAH). Control communities received the standard MICAH intervention package which included basic nutrition education and a supply of iron supplements and other products through health centers. Intervention communities received the standard MICAH package along with a positive deviance (PD)/Hearth⁶ intervention, exposure to mid-sized media (such as community radio/video, local billboards), home counseling by peers, and group education. After eight months, the percent of pregnant women consuming meat or fish increased from 49.4% to 70.7% in PD/Hearth intervention communities while it had declined from 41.5% to 32.0% in control communities.

Finally, Wang et al. (2009) conducted a study to look at “the effectiveness of social mobilization and social marketing in improving knowledge, attitudes and practices (KAP) and Fe status in an Fe-deficient population.” The intervention included a kick-off meeting with key stakeholders as well as the training of community health workers, community heads and store owners/market managers. In addition, “schoolchildren were mobilized to distribute information, education and communication (IEC) materials to the whole family after they learned the relevant knowledge through specially designed classes” and “trained volunteers were recruited to disseminate IEC materials in public areas like hospitals, culture and sports centres.” After one year, the percentage of women in the intervention area who had ever purchased FeSS increased from 8.9% to 36.6%.

6 According to the CORE Group’s Resource Guide for Sustainably Rehabilitating Malnourished Children, “a Positive Deviance/Hearth Nutrition Program is a home- and neighborhood-based nutrition program for children who are at risk for protein-energy malnutrition in developing countries. The program uses the “positive deviance” approach to identify those behaviors practiced by the mothers or caretakers of well-nourished children from poor families and to transfer such positive practices to others in the community with malnourished children. The “Hearth” or home is the location for the nutrition education and rehabilitation sessions.” (McNulty, 2005).

Table 3.1.2: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design

SBCC approach	Reviews with meta-analysis	RCTs	Longitudinal studies	Repeated cross-sectional studies	Cross-sectional studies	TOTAL
Interpersonal Communication	1 (1)	4 (3)	1 (0)	8 (5)	1 (1)	15 (10)
One-on-One Counseling	1 (1)	3 (2)	1 (0)	6 (4)	1 (1)	12 (8)
Counseling in facilities	0	1 (1)	1 (0)	1 (1)	0	3 (2)
Counseling in communities	0	1 (1)	0	0	0	1 (1)
Counseling in homes (home visits)	0	2 (1)	0	5 (3)	1 (1)	8 (5)
Counseling in other settings	1 (1)	0	0	1 (1)	0	2 (2)
Group Education	1 (1)	1 (1)	1 (0)	6 (2)	0	9 (4)
Education in facilities	0	0	1 (0)	2 (1)	0	3 (1)
Education in communities	0	1 (1)	0	3 (0)	0	4 (1)
Education in other settings	1 (1)	0	0	1 (0)	0	2 (1)
Support Group	0	0	0	2 (1)	0	2 (1)
Support group in facilities	0	0	0	1 (0)	0	1
Support group in communities	0	0	0	0	0	0
Support group in other settings	0	0	0	1 (0)	0	1
Media	0	3 (3)	0	3 (3)	1 (1)	7 (7)
Mass media	0	1 (1)	0	1 (1)	0	2 (2)
Mid-sized media (community radio / video, local billboards)	0	1 (1)	0	1 (0)	0	2 (1)
Small media (posters, flyers, calendars, reminder stickers)	0	3 (3)	0	1 (0)	0	4 (3)
Traditional media (songs, drama)	0	0	0	0	1 (1)	1 (1)
Social media (Twitter, Facebook, etc.)	0	0	0	1 (0)	0	1
Community/Social Mobilization	0	0	0	3 (2)	0	3 (2)
Campaign, event, special “days”	0	0	0	1 (1)	0	1 (1)
Issue groups	0	0	0	2 (1)	0	1 (1)
Other	0	0	0	1 (1)	0	1 (1)

Micronutrient supplementation or fortification

Although many studies reported on micronutrient supplementation or fortification among pregnant and lactating women, just six presented results in a way that allowed for examination of the distinct effect of SBCC approaches on uptake, and all of these were associated with iron supplementation. Three of these reported statistically significant results.

Randomized controlled trials

Adhikari et al. (2009) assessed the effect of an “education program and/or pill count on the change in hemoglobin levels and the prevalence of anemia in pregnant women” among 320 pregnant women receiving prenatal care at the Tribhuvan University Teaching Hospital in Nepal. Women were randomly assigned to one of four groups (education, pill count, education with pill count, and control). By the end of the intervention, women in the education with pill count group were significantly more likely to comply with iron supplementation recommendations than women in the pill count alone group (88% and 73%, respectively).

Risonar et al. (2008) assessed a “redesigned Fe supplementation delivery system” on the island of Negros in the Southern Philippines. The project included providing iron tablets to all pregnant women in two provinces (one intervention and one control). In the intervention group, village health workers and traditional birth attendants also identified and registered pregnant women for antenatal care, and used IEC materials such as posters and flyers to promote iron supplementation. After six months, the percentage of women in the intervention group taking iron tablets had increased from 57.4% to 79.2%, an increase nearly four times greater than in the control group (OR=3.79).

Repeated cross-sectional studies

Baqui et al. (2008b) conducted a repeated cross-sectional study focused on iron folic acid (IFA) supplementation for pregnant women in two districts in India. Both intervention and control groups received counseling on preventive care, nutrition, preparedness for child birth, and health-care utilization for complications during home visits by health care providers. In intervention communities, community health workers recruited additional community volunteers (“change agents”) to further the reach of the program through additional counseling. *The authors report a net increase*

of 14.7 percentage points in the number of women consuming ≥ 100 IFA tablets during pregnancy in intervention sites compared with control sites.

Increased rest and decreased work during pregnancy

Two studies reported on rest and work during pregnancy. One of those two reported statistically significant results. Omer et al. (2008) conducted a cross-sectional study focused on reducing heavy workload during pregnancy (such as lifting), attending prenatal check-ups, and feeding colostrum to newborns in the Sindh province of Pakistan. The intervention trained lady health workers (LHW) to present and discuss an embroidered cloth panel portraying key messages during routine home visits with pregnant women. Following the intervention, the authors found no difference in overall workload practices between the intervention and control groups, but did find that women in the intervention group were 50% more likely to reduce routine heavy work compared with those in the control group (OR=1.48). No baseline data were collected.

G. Summary of the Evidence

SBCC approaches utilized

SBCC approaches are organized SBCC activities into three primary categories or approaches: interpersonal communication, media, and community/social mobilization. These approaches and the specific activities associated with each are described in further detail in the introductory chapter.

The studies reviewed in this chapter included a broad range of approaches to promote optimal dietary intake among pregnant and lactating women. Most included more than one specific SBCC activity and many utilized more than one approach.

The review conducted by Ota et al. (2012) included several studies involving interpersonal communication (IPC) approaches – specifically individual counseling and group education for the promotion of women’s energy and protein intake.

Among the nine other studies reporting statistically significant results, all included IPC approaches, seven included some form of media, and two included community/social mobilization. One-on-one counseling (in the home) was the

most commonly used IPC approach, and small media (such as posters, flyers, stickers) was the most commonly used media approach. See Table 3.1.2.

The breadth of evidence regarding the effectiveness of SBCC in changing dietary practices during pregnancy and lactation varies greatly by type approach. Table 3.1.3 provides a summary of these findings.

Interpersonal communication

There is some evidence of the effectiveness of IPC approaches in increasing protein/energy intake, enhancing the quality of diet, and increasing intake of micronutrient supplements.

The meta-analysis conducted by Ota et al. (2012) found a statistically significant increase in women's protein intake

as a result of individual counseling and group education (pooled mean difference of 6.99g per day), but no increase in energy intake.

In addition to the meta-analysis, two other studies reported significant outcomes related to the effect of IPC approaches on protein/energy consumption, four reported significant outcomes related to enhanced quality of diet, three report significant outcomes with respect to iron intake, and one reported a significant effect on workload during pregnancy.

Among these studies, two reported on the effectiveness of IPC, even after controlling for other SBCC approaches. In a repeated cross-sectional study, Baqui et al. (2008b) documented an increase from 5% to 21.3% in the percentage of women consuming <100 IFA tablets as a result of an IPC

Table 3.1.3: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach, practice, and study design

SBCC approach	Increased energy and protein intake during pregnancy and lactation	Enhanced quality of diet during pregnancy and lactation	Micronutrient supplementation or fortification	Increased rest and decreased work during pregnancy
Interpersonal Communication	5, 3 reporting statistical significance: 1 Review with meta-analysis (intake of protein) 2 Repeated cross-sectional (1 intake of protein & energy; 1 food intake)	6, 4 reporting statistical significance: 1 RCT (intake of iron-fortified soy sauce) 3 Repeated cross-sectional (1 intake of green leafy vegetables; 1 intake of animal products; 1 purchase of iron-fortified soy sauce)	6, 3 reporting statistical significance: 2 RCTs (2 iron supplementation - 1 compliance, 1 likelihood of consumption) 1 Repeated cross-sectional (intake of ≥100 IFA tablets)	2, 1 reporting statistical significance: 1 Cross-sectional (workload)
Media	1, 1 reporting statistical significance: 1 Repeated cross-sectional (food intake)	3, 3 reporting statistical significance: 1 RCT (intake of iron-fortified soy sauce) 2 Repeated cross-sectional (1 intake of animal products ; 1 purchase of iron-fortified soy sauce)	2, 2 reporting statistical significance: 2 RCTs (iron supplementation compliance; likelihood of taking iron tablets)	1, 1 reporting statistical significance: 1 Cross-sectional (workload)
Community/Social Mobilization	1, 1 reporting statistical significance: 1 Repeated cross-sectional (food intake)	1, 1 reporting statistical significance: 1 Repeated cross-sectional (purchase of iron-fortified soy sauce)	1, none reporting statistical significance	No studies

intervention, while Garg and Kashyap (2006) reported an increase from 13.9g to 49.3g in the daily intake of green leafy vegetables as a result of an IPC intervention.

We found no evidence to support the effectiveness of IPC approaches on the intake of other micronutrients during pregnancy and lactation, or related to decreasing work load or increasing rest during pregnancy.

Media

We identified six primary research studies that reported positive outcomes associated with interventions that included media-based SBCC approaches. One study reported positive outcomes related to protein/energy consumption, three reported positive outcomes related to enhanced quality of diet, two reported positive outcomes related to iron intake, and one reported a positive effect on workload during pregnancy.

None of these media-based interventions was delivered in isolation. All included some form of IPC, one included both IPC and community/social mobilization approaches, and the independent effect of media-based approaches was not assessed. It is therefore difficult to derive conclusions regarding the independent, net effective of these media-based approaches. We identified no evidence related to intake of micronutrients other than iron.

Community/social mobilization

We identified two primary research studies looking at the effect of community/social mobilization approaches on the uptake of optimal dietary practices during pregnancy and lactation. Both studies, however, included IPC and media approaches in addition to community/social mobilization, and the independent effect of community/social mobilization approaches on maternal dietary practices was not assessed.

Multiple SBCC approaches

We identified nine primary research studies that assessed the effectiveness of multiple SBCC approaches to improve maternal dietary practices, and seven of the nine reported statistically significant results. Guyon et al. (2009) reported a difference of 12 percentage points between intervention and control communities, while Ndiaye et al. (2009) reported a difference of 21 percentage points in the intake of animal products. Sun et al. (2007) reported a difference of

21-26 percentage points in intake of iron fortified soy sauce between intervention and control communities in rural and urban areas, and Adhikari et al. (2009) and Risonar et al. (2008), both RCTs, reported differences in micronutrient intake of 15 and 22 percentage points respectively. Finally, Omer et al. (2008) reported a positive, statistically significant effect with respect to reduction in workload during pregnancy (OR=1.48); however, no baseline data were collected, making attribution to the intervention difficult.

Just one study, Adhikari et al. (2009), compared the effect of more than one SBCC approach to a single SBCC approach. The authors found higher compliance rates with iron supplementation recommendations in an intervention that combined education with pill counting (88% compliance) compared with an intervention that included pill counting alone (73% compliance). Iron supplementation compliance was not reported for the control group.

Implementation processes followed

None of the studies reviewed in this chapter specifically assessed the effect of implementation processes (e.g. intensity and timing of communications; type and training of person communicating messages, or target audience) on the effectiveness of the SBCC approach on women's dietary practices during pregnancy or lactation, nor did they consistently report all aspects of the implementation processes.

The intensity of communications ranged between one and four visits/sessions or weekly to monthly visits/sessions for various lengths of time. None of the studies compared the effect of timing or frequency.

In terms of target audiences, the studies reviewed primarily targeted the potential or actual breastfeeding woman. The literature review by Ota et al. (2012) conducted a meta-analysis of studies of interventions targeting the woman alone, and among nine primary research studies reporting at least one statistically significant difference, eight targeted the woman herself, three targeted direct influencers, four targeted local community actors, and two targeted actors of the enabling environment. Six targeted more than one target audience or behavioral influencer, but none compared the effect of targeting one vs. multiple audiences or of targeting different audiences.

H. Conclusions

The body of literature on the effectiveness of SBCC to improve women's dietary practices during pregnancy and lactation is small, but indicates that **SBCC approaches can and do succeed in improving uptake of those practices**. While the literature may reflect a bias to publish positive results, it also underscores the important role of SBCC approaches to improve nutrition practices – practices which have been shown to have an impact on nutritional status of women, infants, and children.

What stands out from this review is the lack of evidence (or attention) that has been given to improving women's dietary practices during pregnancy and lactation. The greatest gap was in evidence of effectiveness of SBCC approaches in improving rest and workload during pregnancy.

In addition, there is considerable variation in the description of SBCC interventions, interactions or combinations with other interventions, target groups, content, messages, scale and coverage, length and intensity, as well as context.

There is also variation in how nutrition practices are defined and measured. Of the five studies that discussed energy and protein intake during pregnancy and lactation, four different indicators were measured and no one indicator was measured more than twice. Of the six studies that looked at the quality of diet during pregnancy and lactation, four reported statistically significant results related to distinct indicators. Each of the three studies reporting on micronutrient supplementation or fortification measured a slightly different indicator. **This underscores the importance of developing indicators related to women's dietary practices during pregnancy and lactation that are globally recognized, accepted, and used by the research and program communities alike.**

The SBCC approach most used, and the only one used without other communication interventions, was IPC. While media and community/social mobilization were used, they were always used with at least one other communication approach. **Evidence suggests that using multiple SBCC approaches and channels to change behaviors is more effective than using one, but this is not tested in the literature. It is difficult and expensive to disaggregate the contribution of single channels within a multi-channel intervention, and an important question**

for SBCC practitioners and researchers is whether that line of research is useful.

All but one of the studies reviewed targeted the pregnant or lactating woman herself. More than half targeted other audiences or influencers as well.

The majority of the studies were implemented on a relatively small scale (e.g., in one hospital or community) and typically with between 50 and 350 people per group. **The small scale of research on this topic constrains the generalizability of findings and raises important questions about the scalability and sustainability of approaches used.**

Differences in local context (including social norms, culture, and environmental factors) as well as differences in the implementation and scale of implementation affect the success of interventions. This underscores the importance of proper context assessments, formative research and/or ethnographic study prior to SBCC implementation.

Because of the relatively limited body of evidence on this topic and due to the lack of standardization in the way research related to SBCC is designed and described, it is challenging to make conclusions beyond the fact that projects with SBCC result in uptake of promoted practices. While there is much to be learned from this body of literature to aid us in developing future programs, there are also many questions generated from reviewing this literature that can and hopefully will guide future evaluations and operations research. These include questions related to:

- globally recognized indicators related to women's dietary practices during pregnancy and lactation;
- the generalizability of research in this area;
- the positive (or negative) effect of using multiple SBCC approaches compared with focusing on only one;
- the positive (or negative) effect of targeting multiple audiences or influencers of the behaviors being promoted, rather than focusing on just one target population;
- the role of context, in other words, the effect of the same SBCC intervention implemented in different contexts;
- the effectiveness of different approaches (including intensity and targeting) for different behaviors;
- the cost and cost effectiveness of various SBCC approaches (particularly as it relates to scalability); and
- the effectiveness and sustainability of these approaches when implemented at scale.

Table 3.1.4: Studies reporting on maternal dietary practices during pregnancy and lactation

Color coding key

- Increased energy and protein intake during pregnancy and lactation
- Enhanced quality of diet during pregnancy and lactation
- Intake of micronutrient and iron supplements
- Rest and work during pregnancy

STUDY	APPROACHES USED	SCALE / SCOPE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ⁷	P-VALUES / CIs ⁸
Adhikari et al (2009); Nepal	Counseling in facilities by providers; Small media	1 hospital	RCT – pregnant women receiving prenatal care: 71 in education group, 70 in pill count group, 73 education + pill count group, 70 in control group	Iron supplementation compliance	Education + Pill count vs. Pill count alone: 88% vs. 73%	p < 0.001
Ahrari et al. (2006); Egypt	Group education in facilities by providers; Support group in facilities by providers and/or lay volunteers; Counseling in homes by lay volunteers	2 large communities	Repeated cross-sectional – 519 women (344 intervention, 175 control)	% of women who reported consumption of more food during pregnancy % of women who reported consumption of more meat during pregnancy % of women who reported consumption of more vegetables during pregnancy	54.9% vs. 10.6% 57.1% vs. 4.2% 66.9% vs. 5.3%	Not clear in article Not clear in article
Akter et al. (2012); Bangladesh	Counseling in facilities by providers; Group education in facilities by providers	1 hospital	Longitudinal – 115 women (57 intervention, 58 control)	% of pregnant women who reported taking IFA % of pregnant women who reported taking 7 or more IFA tablets per week % of women who reported an increase in daytime rest during pregnancy % of pregnant women who increased frequency of meals from three to five times a day	97.5% vs. 80.6% 86.2% vs. 0.0% 64.1% vs. 11.7% 34% more	NS ⁹ NS Not clear in article Not reported

⁷ Comparison is intervention vs. control group, unless indicated otherwise.

⁸ Differences reported as not significantly different at the 0.05 level are indicated by “NS”. Differences for which statistical significance was not reported are indicated by “–”.

⁹ NS = not significant either according to what is reported in the original article or p<0.05.

STUDY	APPROACHES USED	SCALE / SCOPE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ⁷	P-VALUES / CIs ⁸
Baqui et al. (2008b); India	Counseling in homes by lay volunteers; Counseling in homes by providers	2 districts	Repeated cross-sectional – baseline: 14,952 recently delivered women (8,756 intervention, 6,196 control); endline: 13,826 recently delivered women (7,812 intervention, 6,014 control)	% of women who consumed equal to or more than 100 IFA tablets during pregnancy	endline vs. baseline Intervention group: 21.3% vs. 5% Control group: 8.3% vs. 6.7%	p<0.001 ¹⁰
Bortolini and Vitolo (2012); Brazil	Counseling in homes by providers	1 hospital	RCT – 397 (163 intervention, 234 control)	% of women who use fortified flour % of women who consume dietary iron that is highly bioavailable % of women with daily iron intake ≥ 3 mg/day Based on a 24 hour dietary recall among children 12-16 months old, mean intake of... - meat (g) - iron (mg) - heme iron (mg)	45.2% vs. 44.2% 18.1% vs. 9.8% 83.2% vs. 82.8%	NS NS NS
Casey et al. (2010); Vietnam	Mobilization of issue groups; Counseling in homes by peers	2 districts	Repeated cross-sectional – baseline (Nov 2005): 389 women of reproductive age (WRA); 1 st follow-up (July 2006): 253 WRA; 2 nd follow-up (Sept 2007): 276 WRA; 3 rd follow-up (Apr 2009): 322 WRA	% of women who took at least 75% of tablets received during pregnancy	3 rd follow-up vs. 2 nd follow-up vs. 1 st follow-up 87% vs. 90% vs. 51%	p=0.024 NS p=0.003
Garg and Kashyap (2006); India	Counseling in facilities by providers; Group education in communities by providers; Counseling in homes by providers	1 village	Repeated cross-sectional – 100 women (50 intervention, 50 control)	Energy (kcal) intake during pregnancy Protein (g) intake during pregnancy Mean daily intake of green leafy vegetables (g) during pregnancy	1521.23 vs. 835.14 48.05 vs. 25.00 49.3 vs. 13.9	95% CIs: (80% - 93%) vs. (84% - 95%) vs. (37% vs. 65%) p<0.001 p<0.001 p<0.001

10 P-value for difference-in-difference test adjusted for age, education, parity, religion and standard-of-living score.

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING	BREASTFEEDING								
STUDY	APPROACHES USED	SCALE / SCOPE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ⁷	P-VALUES / CIs ⁸			
Guyon et al. (2009); Madagascar	Mobilization of issue groups; Mobilization of campaigns, events, or special days; Mass media	2 highland provinces; targeted population varied throughout project from 1.4 million in 6 districts to 6 million in 23 districts	Repeated cross-sectional – baseline (2000): 1,200 children under two years old; endline (2005): 1,760 children under two years old	% of mothers of infants < 6 months who reported increased food intake during pregnancy % of mothers of infants < 6 months who reported increased food intake during lactation	endline vs. baseline 55% vs. 51% 74% vs. 62%	NS p<0.001			
Ndiaye et al. (2009); Senegal	Mid-sized media; Counseling in homes by peers; Group education in communities by lay volunteers	2 communities	Repeated cross-sectional – baseline: 171 pregnant women (89 intervention, 82 control); endline: 200 (100 intervention, 100 control)	% of pregnant women who reported eating meat or fish at least once a week	endline vs. baseline Intervention: 70.7% vs. 49.4% Control: 32.0% vs. 41.5%	p ≤ 0.003 p ≤ 0.019 (difference-in-differences: p=0.0001)			
Omer et al. (2008); Pakistan	Traditional media; Counseling in homes by peers	10 communities from three districts (5 intervention and 5 control)	Cross-sectional study – 1,070 women were pregnant or had delivered during the preceding three years (529 intervention, 541 control); 310 women advised by an LHW, 799 women advised by others or no-one ¹¹	% of women who reported a reduction in routine heavy work during pregnancy	Women in intervention group advised by LHW vs. women advised by others or no one ¹¹ 77.1% vs. 58.9% OR= 1.48	(95% CI: 1.01–2.16)			
Ota et al. (2012); various	Individual counseling; Group education	Varied	Literature review – 15 RCTs reviewed, four related to dietary advice to increase energy and protein intake	Protein intake (g/day) during pregnancy Energy intake during pregnancy	Pooled mean differences: 6.99g/day 105.61 kcal/day	p = 0.00057 NS			
Risonar et al. (2008); Philippines	Counseling in communities by lay volunteers; Small media; Counseling in homes by lay volunteers	6 municipalities / villages from two provinces	RCT – 1,180 pregnant women (596 intervention, 584 control)	Likelihood of taking Fe tablets in the intervention areas - baseline - endline	OR=3.79 8.5% vs. 74.3% 79.2% vs. 57.4%	p=0.001 (95% CI: 2.22-6.49) NS p<0.001			

11 Note that there were no significant socio-demographic differences between intervention and control communities.

STUDY	APPROACHES USED	SCALE / SCOPE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ⁷	P-VALUES / CIs ⁸
Senanayake et al. (2010); Sri Lanka	Group education in facilities by providers	1 hospital	Repeated cross-sectional – 218 women between 16-20 weeks of gestation (107 intervention, 111 control)	% of pregnant women who took iron tablets correctly at 34 weeks gestation	86.9% vs. 32.4%	Not reported
Sun et al. (2007); China	Mass media; Mid-sized media; Small media; Group education in communities	2 urban districts and 2 rural villages	RCT – 373 women 19 to 70 years old (113 rural intervention, 80 rural control, 97 urban intervention, 83 urban control)	% of women who reported buying FeSS - Rural areas - Urban areas	53.6% vs. 19% 43.3% vs. 11%	p<0.001 p<0.001
Wang et al. (2009); China	Community/social mobilization; Small media; Group education in communities; Social media marketing; Meetings targeting policy makers and regulators	3 counties (one urban and two rural)	Repeated cross-sectional – baseline: 801 adult non-pregnant women older than 20 years of age; endline: 716; survey 3:787	% of women who bought FeSS who reported eating FeSS - Rural areas - Urban areas	85.7% vs. 65% 49.5% vs. 11.0%	p<0.001 p<0.001
				% of women who have ever purchased (FeSS)	endline vs. baseline 36.6% vs. 8.9%	p<0.001

F. Works Cited and Literature Reviewed

- ACC/SCN. 2001. *What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions*, Allen LH and Gillespie SR. ACC/SCN: Geneva in collaboration with the Asian Development Bank, Manila.
- Adhikari, Kamala, Tippawan Liabsuetrakul, and Neelam Pradhan. 2009. "Effect of Education and Pill Count on Hemoglobin Status During Prenatal Care in Nepalese Women: a Randomized Controlled Trial." *The Journal of Obstetrics and Gynaecology Research* 35 (3) (June): 459–466.
- Ahrari, Mahshid, Robert F Houser, Siham Yassin, Mona Mogheez, Y Hussaini, Patrick Crump, Gary L Darmstadt, David Marsh, and F James Levinson. 2006. "A Positive Deviance-based Antenatal Nutrition Project Improves Birth-weight in Upper Egypt." *Journal of Health, Population, and Nutrition* 24 (4) (December): 498–507.
- Akter, S.M., S.K. Roy, S.K. Thakur, M. Sultana, W. Khatun, R. Rahman, S.S. Saliheen, and N. Alam. 2012. "Effects of Third Trimester Counselling on Pregnancy Weight Gain, Birthweight, and Breastfeeding Among Urban Poor Women in Bangladesh." *Food & Nutrition Bulletin* 33 (3) (September): 194–201.
- Alderman, H, and JR Behrman. 2006. "Reducing the Incidence of Low Birth Weight in Low-Income Countries Has Substantial Economic Benefits." *The World Bank Research Observer* 21 (1): 25–48.
- Allen, Lindsay H. 2005. "Multiple Micronutrients in Pregnancy and Lactation: An Overview." *The American Journal of Clinical Nutrition* 81 (5) (May): 1206S–1212S.
- Baqui, Abdullahh, Emma K Williams, Amanda M Rosecrans, Praween K Agrawal, Saifuddin Ahmed, Gary L Darmstadt, Vishwajeet Kumar, Usha Kiran, Dharmendra Panwar, Ramesh C Ahuja, Vinod K Srivastava, Robert E Black, and Manthuram Santoshama. 2008. "Impact of an Integrated Nutrition and Health Programme on Neonatal Mortality in Rural Northern India." *Bulletin of the World Health Organization* 86 (10) (October): 796–804.
- Bhutta, Zulfiqar A, Jai K Das, Arjumand Rizvi, Michelle F Gaffey, Neff Walker, Susan Horton, Patrick Webb, Anna Lartey, and Robert E Black. 2013. "Evidence-based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?" *The Lancet* 382 (9890) (August): 452–477.
- Black, Robert E, Cesar G Victora, Susan P Walker, Zulfiqar A Bhutta, Parul Christian, Mercedes de Onis, Majid Ezzati, Sally Grantham-McGregor, Joanne Katz, Reynaldo Martorell, Ricardo Uauy, and the Maternal and Child Nutrition Study Group. 2013. "Maternal and Child Undernutrition and Overweight in Low-income and Middle-income Countries." *The Lancet* 382 (9890) (August): 427–451.
- Bortolini, Gisele Ane, and Márcia Regina Vitolo. 2012. "The Impact of Systematic Dietary Counselling During the First Year of Life on Prevalence Rates of Anemia and Iron Deficiency at 12-16 Months." *Jornal de Pediatria* 88 (1) (February): 33–39.
- Casey, Gerard J, Damien Jolley, Tran Q Phuc, Ta T Tinh, Dang H Tho, Antonio Montresor, and Beverley-Ann Biggs. 2010. "Long-term Weekly Iron-folic Acid and De-worming Is Associated with Stabilised Haemoglobin and Increasing Iron Stores in Non-pregnant Women in Vietnam." *PloS One* 5 (12): e15691.
- Cochrane Database of Systematic Reviews.
- De-Regil, Luz Maria, Parminder S Suchdev, Gunn E Vist, Silke Walleser, and Juan Pablo Peña-Rosas. 2011. "Home Fortification of Foods with Multiple Micronutrient Powders for Health and Nutrition in Children Under Two Years of Age." *Cochrane Database of Systematic Reviews 2011*, edited by The Cochrane Collaboration and Luz Maria De-Regil. Chichester, United Kingdom: John Wiley & Sons, Ltd.

- Dewey, K G, R J Cohen, K H Brown, and L L Rivera. 2001. "Effects of Exclusive Breastfeeding for Four Versus Six Months on Maternal Nutritional Status and Infant Motor Development: Results of Two Randomized Trials in Honduras." *The Journal of Nutrition* 131 (2) (February): 262–267.
- Garg, Aashima, and Sushma Kashyap. 2006. "Effect of Counselling on Nutritional Status During Pregnancy." *Indian Journal of Pediatrics* 73 (8) (August): 687–692.
- Guyon, Agnès B, Victoria J Quinn, Michael Hainsworth, Priscilla Ravonimanantsoa, Voahirana Ravelojoana, Zo Rambeloson, and Luann Martin. 2009. "Implementing an Integrated Nutrition Package at Large Scale in Madagascar: The Essential Nutrition Actions Framework." *Food and Nutrition Bulletin* 30 (3) (September): 233–244.
- Haider, BA, and ZA Bhutta. 2012. "Multiple-Micronutrient Supplementation for Women During Pregnancy."
- Hailelassie, Kiday, Afework Mulugeta, and Meron Girma. 2013. "Feeding Practices, Nutritional Status and Associated Factors of Lactating Women in Samre Woreda, South Eastern Zone of Tigray, Ethiopia." *Nutrition Journal* 12 (1): 28
- Katz, Joanne, Anne CC Lee, Naoko Kozuki, Joy E Lawn, Simon Cousens, Hannah Blencowe, Majid Ezzati, et al. 2013. "Mortality Risk in Preterm and Small-for-Gestational-Age Infants in Low-Income and Middle-Income Countries: A Pooled Country Analysis." *The Lancet* 382 (9890): 417–25.
- Mason, John B, Lisa S Saldanha, and Reynaldo Martorell. 2012. "The Importance of Maternal Undernutrition for Maternal, Neonatal, and Child Health Outcomes: An Editorial." *Food and Nutrition Bulletin* 33 (2 Suppl) (June): S3–5.
- McNulty J. and CORE Group. *Positive Deviance / Hearth Essential Elements: A Resource Guide for Sustainably Rehabilitating Malnourished Children (Addendum)*, Washington, D.C.: CORE Group, 2005.
- Ndiaye, Mamadou, Kendra Siekmans, Slim Haddad, and Olivier Receveur. 2009. "Impact of a Positive Deviance Approach to Improve the Effectiveness of an Iron-supplementation Program to Control Nutritional Anemia among Rural Senegalese Pregnant Women." *Food and Nutrition Bulletin* 30 (2) (June): 128–136.
- Omer, Khalid, Sharmila Mhatre, Noor Ansari, Jorge Laucirica, and Neil Andersson. 2008. "Evidence-based Training of Front-line Health Workers for Door-to-door Health Promotion: a Pilot Randomized Controlled Cluster Trial with Lady Health Workers in Sindh Province, Pakistan." *Patient Education and Counselling* 72 (2) (August): 178–185.
- Ota, Erika, Ruoyan Tobe-Gai, Rintaro Mori, and Diane Farrar. Antenatal Dietary Advice and Supplementation to Increase Energy and Protein Intake. In *Cochrane Database of Systematic Reviews 2012*, edited by The Cochrane Collaboration and Erika Ota. Chichester, United Kingdom: John Wiley & Sons, Ltd.
- Risonar, Maria Grace D, Pura Rayco-Solon, Lorena W Tengco, Jesus N Sarol, Lourdes S Paulino, and Florentino S Solon. 2008. "Effectiveness of a Redesigned Iron Supplementation Delivery System for Pregnant Women in Negros Occidental, Philippines." *Public Health Nutrition* 12 (07) (August 27)
- Senanayake, Hemantha M, Samantha P Premaratne, Thilina Palihawadana, and Sumeda Wijeratne. 2010. "Simple Educational Intervention Will Improve the Efficacy of Routine Antenatal Iron Supplementation." *The Journal of Obstetrics and Gynaecology Research* 36 (3) (June): 646–650.
- Sun, Xinying, Yan Guo, Sisun Wang, and Jing Sun. 2007. "Social Marketing Improved the Consumption of Iron-fortified Soy Sauce Among Women in China." *Journal of Nutrition Education and Behavior* 39 (6) (December): 302–310.
- Wang, Bo, Siyan Zhan, Jing Sun, and Liming Lee. 2009. "Social Mobilization and Social Marketing to Promote NaFeEDTA-fortified Soya Sauce in an Iron-deficient Population through a Public-private Partnership." *Public Health Nutrition* 12 (10) (October): 1751–1759.

3.2. Evidence of Effective SBCC Approaches to Promote Breastfeeding Practices

A. Background

Breastfeeding is widely recognized as one of the most cost-effective investments to improve child survival (UNICEF, 2013). According to The Lancet Series on Maternal and Child Under Nutrition, the adoption of exclusive breastfeeding through six months of age and continued breastfeeding through age two in 36 high burden countries could avert 11.6% of all deaths in children under the age of one, and nearly 10% of all deaths in children under the age of two (Bhutta et al., 2008a). The benefits of breastfeeding stretch beyond a child's survival. Breastfed children do better on cognitive and motor development tests, and generally achieve better academic outcomes than non-breastfed children (Horta et al., 2013).

Additionally, breastfeeding imparts critical benefits to the woman. When practiced exclusively, breastfeeding is associated with lactational amenorrhea, the natural postnatal infertility that occurs when a woman is amenorrheic (not menstruating). The lactational amenorrhea method (LAM) is considered a modern method of contraception that prevents a second pregnancy within six months of giving birth, and helps to conserve maternal iron stores (Dewey et al., 2001). Increased birth spacing improves both the health of the woman and her infant's chances of survival, while suboptimal pregnancy intervals are associated with an increased risk of adverse perinatal and infant/child outcomes including preterm birth, low birth weight, small for gestational age (SGA), stunting, and underweight infants/children (Bhutta et al., 2013; Conde-Agudelo, 2006; Conde-Agudelo et al., 2012; Rutstein, 2008).

The World Health Organization (WHO) recommends three primary breastfeeding practices: initiation of breastfeeding within one hour after birth (also referred to as immediate breastfeeding), exclusive breastfeeding (EBF) through six months of age, and continued breastfeeding until 24 months of age (Dyson et al., 2005; WHO, 2008). Evidence associated with the recommendation for immediate breastfeeding is limited and likely operates through the effect of exclusive breastfeeding (Bhutta et al., 2013). The Lancet, therefore, includes only EBF and continued

breastfeeding in the modeling of optimal breastfeeding practices cited above.

Despite the promise of optimal breastfeeding practices, rates for the three WHO recommended breastfeeding practices remain low, and negligible progress has been made to increase these rates over the past two decades (UNICEF, 2013). According to an analysis of data from 78 low and middle income countries, rates of immediate breastfeeding range from a mean of 36% in Eastern Europe to a mean of 58% in Latin America, and the rate of exclusive breastfeeding in children one to five months of age is just 30% (Black et al., 2013). According to the UNICEF global database of national surveys from 2007-2011, the current rate of breastfeeding at one year is 76%, while the rate of breastfeeding at age two years is 58%.¹²

This chapter reviews the effectiveness of social and behavior change communication (SBCC) approaches on improving breastfeeding practices.

B. Search Results

Sixty-two peer-reviewed studies met the literature review's inclusion criteria.² A complete list of the studies reviewed, including a summary of the SBCC approach(es) utilized, the study design, practices measured, and levels of significance is presented in Table 3.2.4 at the end of this chapter.

Forty-eight reported a statistically significant change in at least one of the priority breastfeeding practices. Each of those articles is described in greater detail below. Studies reporting a statistically significant change in more than one of the prioritized practices and/or utilizing more than one SBCC approach are cited and discussed multiple times. Where this occurs, we have provided a detailed description of the study in the first reference, and only discuss results in subsequent references.

The findings are organized by practices targeted, SBCC approach(es) utilized, and study design. This organization enables the reader to derive an independent judgment regarding findings from each study. In addition, implementation processes followed are also discussed.

¹² See: http://www.childinfo.org/breastfeeding_status.html.

¹³ See the introductory chapter of this literature review for a full description of search procedures and inclusion/exclusion criteria.

Of the 62 studies reviewed for this chapter, six were literature reviews that included meta-analysis, 27 were randomized controlled trials (RCT), 14 were longitudinal studies, 13 were repeated cross-sectional studies, and two were cross-sectional studies. See Table 3.2.1.

The literature reviews were published between 2010 and 2012. Twenty-one of the 56 studies included in the previously published reviews met the inclusion criteria for the present review, and these studies are included in the summaries below.

C. Overview of the Evidence, by Practice

This chapter is organized around the three WHO recommended breastfeeding practices: early initiation of breastfeeding, EBF through six months of age, and continued breastfeeding until 24 months of age. The feeding of colostrum is included in the early initiation section. Specific indicators used to measure these practices varied considerably among studies.

Of the studies reviewed, 22 reported findings related to early initiation of breastfeeding (including six which reported on feeding colostrum), 41 reported on findings related to EBF, and 16 reported on findings related to continued breastfeeding. See Table 3.2.1.

Early initiation of breastfeeding

Of the 22 studies that measured breastfeeding initiation, 17 reported statistically significant results. Fifteen of those looked at early initiation of breastfeeding (defined as initiating breastfeeding within one hour of birth) and three

reported statistically significant results related to the feeding of colostrum to infants.

Literature reviews with meta-analysis

Gogia and Sachdev (2010) conducted a literature review and meta-analysis to “determine whether home visits for neonatal care by community health workers (CHW) can reduce infant and neonatal deaths and stillbirths.” The review included four studies that assessed breastfeeding counseling provided during home visits.¹⁴ All of these studies have been included and are described in the present review. The authors found that women in the intervention group were more than three times more likely to initiate breastfeeding compared with women in control groups (pooled RR 3.35).

Lassi et al. (2010) conducted a review of 18 cluster-RCTs/quasi-RCTs of community-based interventions that involved training outreach workers in maternal care during pregnancy, delivery and in the postpartum period as well as newborn care. Six of the 18 studies assessed the impact of these interventions on initiation of breastfeeding within one hour after birth. The meta-analysis from these studies revealed that following community-based interventions, the practice nearly doubled (Relative Risk (RR) = 1.94). All but one of the six studies included in the meta-analysis matched the inclusion criteria for the present review. These studies are included in the summaries that follow.¹⁵

¹⁴ These include: Baqui et al. (2008a); Baqui et al. (2008b); Bhutta et al. (2008b); and Kumar et al. (2008).

¹⁵ These include the two arms of Baqui et al. (2008a); Kumar et al. (2008); Manandhar et al. (2004); Syed et al. (2006).

Table 3.2.1: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by recommended practice and study design

Practice	Literature reviews with meta-analysis	RCT	Longitudinal studies	Repeated cross-sectional studies	Cross-sectional studies	Total
Early initiation of breastfeeding	2 (2)	8 (6)	2 (1)	10 (8)	0	22 (17)
Exclusive breastfeeding	4 (4)	20 (14)	12 (8)	7 (5)	2 (2)	41 (32)
Continued breastfeeding	2 (1)	7 (6)	3 (1)	4 (1)	0	16 (9)

* Note that columns do not sum to the “total” since some articles reported on multiple practices.

Randomized controlled trials

Six studies reporting statistically significant changes in early initiation of breastfeeding were RCTs. Two of these were included in the meta-analyses described above.¹⁶ Bang et al. (2005) looked at early initiation of breastfeeding as an outcome associated with delivery of a home-based neonatal care package in Gadchiroli District of India. The intervention included the training of female village health workers (VHWs) and traditional birth attendants (TBAs) to provide health education to mothers and grandmothers about care of pregnant women and of neonates through advice, demonstration, and assistance. Messaging addressed traditional beliefs and practices as well as barriers to care identified during the first two years of the program, and was delivered during group meetings conducted once every four months, during home visits in the eighth and ninth months of pregnancy, and on the first day after delivery. By the end of the intervention period, the percentage of women initiating breastfeeding within six hours of birth had increased from 47.5% to 89.7%. The authors did not report on the standard indicator of initiation of breastfeeding within one hour of birth.

Baqui et al. (2008a) conducted a large-scale RCT in Sylhet District, Bangladesh. Twenty-four clusters, each with a population of approximately 20,000 people, were randomly assigned to one of three study groups – a community-care (CC) group, a home-care (HC) group, or a control group. In both intervention groups (CC and HC), “male and female community mobilisers were recruited to hold group meetings for the dissemination of birth and newborn-care preparedness messages...” Each female community mobilizer held community meetings once every four months, while each male community mobilizer did so every 10 months. In the CC arm, female volunteers identified pregnant women and encouraged them to attend community meetings organized by the community mobilizers, receive routine antenatal care, and seek care for signs of serious illness in mothers or newborns. In the HC arm, CHWs “promoted birth and newborn care preparedness through two scheduled antenatal and three early postnatal home visits.” Furthermore, female community mobilizers conducted group meetings with women in the HC group once every eight months. After nearly three years, breastfeeding initiation within one hour of birth was dramatically higher in both interven-

tion arms compared with the control group. While a total of 71% of women in the CC group and 81% in the HC group reported initiating breastfeeding within one hour of birth, only 57% in the control group reported the same. Differences between both intervention groups and the control group were statistically significant.

Guldan et al. (2000) looked at Infant and Young Child Feeding (IYCF) practices in rural Sichuan, China. The study included two intervention and two control groups. The intervention included counseling by CHWs during monthly growth monitoring and promotion sessions, and visits to the homes of pregnant women and women with children under the age of one. At the conclusion of the one year intervention, the percentage of women reporting feeding newborns colostrum was higher in the intervention group than in the control group (91% vs. 80%). However, the authors explained that complete randomization in group selection was not possible as the “[intervention] and control group townships could not be contiguous and needed to be roughly equal geographically and socioeconomically” and there were important differences between the women in the intervention and control groups in terms of mean years of education and main income source, making it difficult to draw conclusions about the effect of the intervention or the generalizability of the findings.

Haider et al (2000) looked at early initiation and EBF in Dhaka, Bangladesh. The intervention included home-based peer counseling over a period of five months. Trained counselors conducted a total of 15 home visits in the five month study period: two in the last trimester of pregnancy, four in the first month postpartum, and every fortnight afterward until the completion of five months. At the conclusion of the study period, the percentage of women initiating breastfeeding within the first hour after birth was 64% in the intervention group, compared with 15% in the control group.

Kumar et al. (2008) conducted a cluster-RCT looking at early initiation of breastfeeding in the context of a neonatal mortality intervention in Uttar Pradesh, India. The intervention included training CHWs to hold community meetings with folk songs and conduct home visits targeting community leaders, priests, teachers, birth attendants, unqualified medical care providers, healthcare workers, fathers-in-law, husbands, mothers-in-law, pregnant women or mothers, neighbors, and relatives. After 16 months of implementation, the rate of

16 These include: Baqui et al. (2008a) and Kumar et al. (2008).

breastfeeding within one hour of birth was 70.6% among women in intervention areas compared with 15.5% among women in non-intervention areas.

Finally, Omer et al. (2008) conducted an RCT focused on reducing heavy workload (such as lifting) during pregnancy, attending prenatal check-ups, and feeding colostrum to newborns in Sindh Province of Pakistan. The intervention trained lady health workers (LHW) to present and discuss an embroidered cloth panel portraying key messages during routine home visits with pregnant women. Following the interventions, the authors found that women advised by a LHW were more likely to feed their newborn colostrum than those who were not advised by a LHW to do so (79.2% vs. 65.3%).

Longitudinal studies

Akter et al. (2012) looked at breastfeeding initiation in a longitudinal study conducted in one hospital in Bangladesh. The intervention involved four group counseling sessions during the last trimester of pregnancy. Following the intervention, 75.4% of women in the intervention group reported initiating breastfeeding within one hour of birth, compared with 34.4% of women in the control group.

Repeated cross-sectional studies

Eight of the 15 studies reporting statistically significant results were repeated cross-sectional studies. Baqui et al. (2008b) looked at the impact of an intervention that included counseling during home visits on preventive care practices for mothers, newborn care practices, and the use of health care services in India. In intervention areas, CHWs recruited additional community volunteers (“change agents”) to expand the reach of the program. Following intervention, the number of women initiating breastfeeding within one hour of birth increased by 31.2%.

Crookston et al. (2007) looked at breastfeeding behaviors in rural Cambodia. The intervention “assess[ed] the impact of Buddhist nuns and wat (pagoda) grannies on optimal breastfeeding behaviours.” Young nuns were trained to promote breastfeeding in their villages using leaflets, visual aids and home visits. In addition, the nuns mobilized community groups, provided one-on-one counseling, and conducted educational sessions with groups of 6-10 women. After one year, women in the intervention group were 62% more

likely to initiate breastfeeding within one hour after birth than those in the control group.

Quinn et al. (2005) conducted a repeated cross-sectional study looking at timely initiation and EBF in three countries: Madagascar, Bolivia, and Ghana. The interventions varied slightly by country, but all were implemented at scale as part of the USAID-funded Linkages project. In all three countries, “women were reached through small- and large-group activities, one-on-one counseling in homes and at local health posts, breastfeeding promotion songs performed by women’s groups and musical troupes, and community mobilization events such as local theater, health fairs, and festivals celebrating breastfeeding and child health days.” Mass media was used to complement this community-based work. After four years of implementation, rates of early initiation of breastfeeding increased from 34% to 78% in Madagascar, from 56% to 74% in Bolivia, and from 32% to 50% in Ghana. All changes were statistically significant.

Guyon et al. (2009) reported on the same intervention in Madagascar after five years of implementation, finding an increase from 33% to 68% in rates of early initiation of breastfeeding. Neither Quinn et al. (2005) nor Guyon et al. (2009) included a control group.

Saowakontha et al. (2000) looked at the feeding of colostrum to newborns in three districts in northeastern Thailand. The intervention included training health officials, health care workers, and villagers, and disseminating messaging through broadcasting systems, events and exhibitions, and bulletin boards. By the end of the study period, the percentage of women reporting feeding colostrum to their newborns increased from 63.5% to 97.2%. There was no control group in this study.

Sun et al. (2011) looked at infant and young child feeding practices as part of an intervention to promote consumption of Ying Yang Bao (YYB), a multiple micronutrient powder, in Shan’xi Province, China. The intervention included formative research and message testing as well as behavior change communication (BCC) targeting health workers and family members. BCC materials included handbooks about IYCF for parents, booklets about YYB for health workers, and television spots for the public. After 20 months of project implementation, the percentage of women reporting

early initiation of breastfeeding had increased from 8.6% to 16.8%.¹⁷ There was no control group in this study.

Syed et al (2006) looked at the provision of newborn care in 10 upazilas (sub-districts) in Bangladesh. The intervention involved “increasing the coverage of health workers and community-based caregivers trained and competent in providing essential newborn care and promoting positive maternal and newborn-care practices.” Activities targeted pregnant mothers as well as family decision-makers, such as husbands, mothers-in-law, and village leaders. After less than two years of the intervention, the percentage of women initiating breastfeeding within one hour of birth had increased from 38.6% to 76.2%. Though this difference was statistically significant, the lack of a control group makes it difficult to conclusively attribute the change to the intervention.

Finally, Thompson and Harutyunyan (2009) looked at EBF through six months of age in Martuni region in northeastern Armenia. The intervention was delivered through a community-based Integrated Management of Childhood Illness (IMCI) platform, and included home visits for pregnant and lactating women, group education classes for new parents, and a local mass media campaign. By the end of the study period, the number of women initiating breastfeeding within one hour of birth was 16.2% greater among women exposed to the IMCI campaign compared with those who were not exposed (72.5% and 56.3%, respectively).

Exclusive breastfeeding

Of the 45 studies reporting on EBF practices, 33 reported statistically significant results. Five of these studies reported on duration of EBF, 14 reported on EBF for six months, five reported on EBF among those under six months of age, 19 reported on EBF at other ages, and two reported on EBF at unspecified ages.

Literature reviews with meta-analysis

Hall (2011) conducted a meta-analysis of four RCTs to “assess the effectiveness of community-based interventions to improve the rates of exclusive breastfeeding at four to six months in infants in low- and low-to-middle income coun-

17 Note that the study authors did not define early initiation; however, given that the authors used many globally recognized indicators, it is assumed that this was defined to be within one hour of birth.

tries.” Community-based interventions were defined as interventions accessible locally to the woman (whether in her own home or a local building such as a clinic or school); delivered by a health professional or trained lay person; and provided either individually or in a group. Interventions could be provided antenatally, postnatally or both, and participants were limited to women who were pregnant or currently breastfeeding an infant less than six months of age. The meta-analysis found a significant effect of community-based interventions on rates of EBF (pooled OR=5.9). Three of the four studies reviewed by Hall met the inclusion criteria of the present review and these studies are summarized below.¹⁸

Imdad et al. (2011) conducted a meta-analysis of a total of 53 RCTs and quasi-RCTs looking at the impact of education and support strategies on breastfeeding outcomes. Fourteen of those studies were conducted in developing countries. The interventions were defined as “breastfeeding education and/or additional support given to mothers through counselors (be they doctors, nurses, midwives, lactation consultants or peer counselors) in individual or group sessions.” The authors found a six-fold increase in rates of EBF at six months of age and an 89% increase in rates of EBF at 4-6 weeks of age following interventions in developing countries. In sub-group analyses, the authors found that changes in prenatal counseling, postnatal counseling and a combination of both were statistically significant, with “the highest impact being that of prenatal counselling.” Furthermore, “group counselling had a greater impact (67% increase in EBF rate at 4-6 weeks), compared with individual counselling (38% increase). The results were statistically significant at all levels of care (community, facility and both combined).” Five of the fourteen studies included in the Imdad et al. (2011) review met the inclusion criteria of the present review and these studies are included in the summaries below.¹⁹

Jolly et al. (2012) conducted a systematic literature review and meta-regression analysis of RCTs conducted in high-, middle- and low-income countries “to examine the effect of setting, intensity, and timing of peer support on breastfeeding practices.” The review included 17 RCTs; however, only six were conducted in low income countries. In a

18 These include Bashour et al. (2008); Bhandari et al. (2003); and Haider et al. (2000).

19 These include Aidam et al. (2005); Aksu et al. (2011); Bhandari et al. (2003); Haider et al. (2000); and Kramer et al. (2001).

sub-analysis of low income countries, those who received peer support were significantly less likely to have stopped EBF at the last study follow up (RR=0.63). Four of the six low-income country studies included in this meta-analysis met the inclusion criteria for the present review and are included in the summaries below.²⁰

Finally, Renfrew et al. (2012) conducted a Cochrane Review looking at the effect of extra support for women on EBF at six months of age. Extra support was defined as reassurance, praise, information, and the opportunity to discuss questions with professionals, trained lay people or both during home visits or facility-based counseling sessions. This meta-analysis used data from 52 RCTs or quasi-RCTs, 16 of which were conducted in middle- to low-income countries. Extra support led to a lower risk of having stopped EBF at 4-6 weeks (average RR=0.74) as well as a lower risk of having stopped EBF at six months (average RR=0.86). In a sub-group analysis, the authors found a greater treatment effect on EBF cessation at six months “in settings where there were high background rates of breastfeeding initiation (average RR=0.83) compared with areas where there was intermediate (average RR=0.89) or low background initiation rates (average RR = 1.00), [...] Results were even more pronounced for cessation of exclusive breastfeeding at up to four to six weeks with interventions seeming to be most effective for women living in areas with high background initiation rates (average RR=0.61) compared with areas with intermediate (average RR=0.81) or low rates (average RR=0.97)” (Renfrew et al., 2012). Fourteen of the 16 middle- to low-income studies included in Renfrew et al. (2012) met the inclusion criteria for the present review and these studies are included in the summaries below.²¹

Randomized controlled trials

Fifteen of the 33 studies reporting statistically significant results were RCTs. Thirteen of these were included in the meta-analyses described previously.²² Agrasada et

20 These include Agrasada et al. (2005); Coutinho et al. (2005); Leite et al. (2005); and Tylleskär et al. (2011).

21 These include Aidam et al. (2005); Aksu et al. (2011); Albernaz et al. (2003); Bashour et al. (2008); Bhandari et al. (2003); Bhandari et al. (2005); Coutinho et al. (2005); de Oliveira et al. (2006); Haider et al. (2000); Khresheh et al. (2011); Kramer et al. (2001); Leite et al. (2005); Santiago et al. (2003); and Tylleskär et al. (2011).

22 These include Agrasada et al. (2005); Aidam et al. (2005); Aksu et al. (2011); Bashour et al. (2008); Bhandari et al. (2003); Bhandari et al. (2005); Coutinho et al. (2005); Haider et al. (2000); Kramer et al. (2001); Kupratkul et al. (2010); Leite et al. (2005); Santiago et al. (2003); and Tripathy et al. (2010).

al. (2005) looked at the efficacy of postnatal peer counseling conducted in a hospital in Manila, Philippines. The study included two intervention groups – one in which peer counselors were trained to provide breastfeeding counseling and the other in which peer counselors were trained to provide general childcare counseling. Women in the control group did not receive any counseling. Both intervention groups included eight counseling sessions conducted at home at the following child ages: 3-5 days, 7-10 days, 21 days, and 1.5 months. Women then received counseling monthly until their children reached the age of 5.5 months. Data on breastfeeding practices were collected during well-child hospital visits at child age two and four weeks and monthly until the child was six months old. The authors found that women in the breastfeeding counseling intervention group were more likely to report EBF in the previous seven days at six months of age (44%) than those in the childcare counseling group (7%) or the control group (0%). Statistical modeling revealed that women in the breastfeeding counseling group were 6.3 times more likely to EBF in the previous seven days at six months than those in the other groups.

Aidam et al. (2005) conducted an RCT looking at EBF at six months of age in Thema Township, Ghana. The intervention involved provider counseling and home visits, and included two intervention groups: the first intervention group (IG1) included two prenatal counseling sessions, one counseling session 48 hours postpartum, and six postpartum home visits. The second group (IG2) excluded the prenatal counseling, but included the rest. Following the intervention, the rate of EBF at 6 months of age was 90% in IG1, 79.5% in IG2, and 54.5% in the control group.²³ The differences were statistically significant for both intervention groups.

Aksu et al. (2011) looked at breastfeeding practices among women who gave birth in a hospital following a Baby-friendly Hospital Initiative (BFHI) intervention in Aydın, Turkey. In addition to education in the first few hours after delivery, which was provided to all women in the hospital, women in the intervention group received breastfeeding education at home three days after delivery and were then monitored for six months. At each time point, women in the intervention group were more likely to exclusively breastfeed than women

23 Aidam et al. measured EBF at 6 months through both monthly recall and 24 hour recall. We site figures from the 24 hour recall.

in the control group – 67% vs. 40% at two weeks, 60% vs. 33% at six weeks, and 43% vs. 23% at six months. At six months postpartum, women in the intervention group exclusively breastfed an average of 0.8 months longer more than women in the control group (4.7 vs. 3.9 months).

Bashour et al. (2008) explored the impact of home visits on EBF in Damascus, Syria. Women who had recently given birth at the Maternity Teaching Hospital in Damascus, Syria were randomly assigned to one of two intervention groups – women in IG1 received four home visits (on days 1, 3, 7, and 30 following delivery), while women in IG2 received one home visit on the third day after delivery. Registered midwives were trained to provide information, education, and support to women during the home visits. Following the intervention, EBF at four months was significantly higher among women in both intervention groups – 28.5% among women in IG1 and 30.1% among those in IG2 compared with those who received no home visits (20.2%). Following a sub-analysis of findings, the authors found that “the effect was major among the groups of women who had normal vaginal delivery but not the women who had a c-section or were primigravidae,” and suggested that other factors such as hospital policy regarding the practice of rooming-in (the practice of mothers and babies staying together after birth) may play a role and that such sub-groups may “require a special package of intervention.”

Bhandari et al. (2003) looked at median duration of EBF, and EBF at three, four, five, and six months of age in Haryana, India. The intervention included counseling by traditional birth attendants at birth, monthly home visits by community-based health workers during the child’s first year of life, and counseling during weighing sessions every three months. By the end of the study period, median duration of EBF was significantly higher in the intervention group compared with the control group (122 days vs. 41 days), the proportion of women reporting EBF at four months was 69% in the intervention group compared with 12% in the control group, and EBF at six months was 42% in the intervention group compared with 4% in the control group. In a follow-up article, Bhandari et al. (2005) reported that women exposed to three or more communication channels were more likely to be practicing EBF at three months than those exposed to just one or two communication channels or none at all (≥ 3 channels: 93.6%, 1-2 channels: 81.3%, no channels: 70.8%).

Bortolini and Vitolo (2012) looked at EBF practices among infants born in one hospital in Brazil. The intervention group received home visits during the children’s first year of life on a monthly basis up to 6 months, and at 8, 10 and 12 months. Results showed that children in the intervention group were more likely to be EBF for four or more months than those in the control group (45.1% vs. 28.6%) and at six months (19.1% vs. 8.2%).

Coutinho et al. (2005) looked at EBF at six months of age in Pernambuco, Brazil. Following the training for health care providers on the BFHI,²⁴ the proportion of infants exclusively breastfed during the hospital stay increased significantly, but EBF was not sustained beyond the hospital stay. In an effort to increase the length of EBF, researchers randomly assigned women who gave birth in two BFHI hospitals to the intervention group, which received ten postnatal home visits by trained community health agents, or to the control group, which did not receive home visits but still received the breastfeeding support provided during the hospital stay. At six months post-partum, rates of EBF among women in the intervention group was 45% compared with 13% among women in the control group.

Haider et al (2000) looked at breastfeeding practices in Dhaka, Bangladesh. Following a five month peer counseling intervention, the proportion of children exclusively breastfed at five months of age was 70% in the intervention group compared with 6% in the control group.

Kramer et al. (2001) looked at breastfeeding practices in 31 hospitals in Belarus. The objective of the Promotion of Breastfeeding Intervention Trial (PROBIT) was to “assess the effects of breastfeeding promotion on breastfeeding duration and exclusivity and gastrointestinal and respiratory infection and atopic eczema among infants.” The intervention was “modeled on the Baby-Friendly Hospital Initiative

24 According to the WHO website: “The Baby-friendly Hospital Initiative (BFHI) was launched by WHO and UNICEF in 1991, following the Innocenti Declaration of 1990. The initiative is a global effort to implement practices that protect, promote and support breastfeeding. To help in the implementation of the initiative, different tools and materials were developed, field-tested and provided, including a course for maternity staff, a self-appraisal tool and an external assessment tool.” The revised BFHI package includes background and implementation; material for training/raising the awareness of policy and decision-makers in relation of BFHI and IYCF in general; materials for a 20-hour course for training facility staff (clinical and non-clinical); self-appraisal and monitoring tools; and assessment and re-assessment tools. See: <http://www.who.int/nutrition/topics/bfhi/en/>

of the World Health Organization and United Nations Children's Fund, which emphasizes health care worker assistance with initiating and maintaining breastfeeding and lactation and postnatal breastfeeding support, or a control intervention of continuing usual infant feeding practices and policies." At the end of the study period, rates of EBF at three months were 43.3% in the intervention group and 6.4% in the control group. Rates of EBF at six months were 7.9% in the intervention group and 0.6% in the control group.

Kupratakul et al. (2010) looked at EBF in the context of an intervention aimed at improving antenatal and postnatal support in Bangkok, Thailand. The intervention included Knowledge Sharing Practices with Empowerment Strategies (KSPES) during antenatal education (storytelling, demonstration, and practice) as well as postnatal support. At the end of the six month intervention period, 20% of the women in the intervention group reported EBF through six months, while none in the control group reported EBF through six months.

Leite et al. (2005) assessed "the effectiveness of home-based peer counselling on breastfeeding rates for unfavourably low birthweight babies" in Brazil. Women and their newborn babies identified in the maternity services that met the inclusion criteria were randomly assigned to the intervention or control group. The intervention group received six home visits from trained lay counselors at 5, 15, 30, 60, 90 and 120 days following birth. In addition to counseling, home visits included "interviews with the mother; observation of the home environment; observation of all aspects involved with the breastfeeding, including technical ones, as well as the mother-child relationship; and identification of the difficulties faced by the mother during breastfeeding." Following the intervention, rates of EBF at four months were significantly higher among the intervention group than the control group (24.7% vs. 19.4%).

Morrow and Guerrero (2001) conducted an RCT to determine the effectiveness of three vs. six home visits by peer counselors on EBF rates among women in a peri-urban area of Mexico. The intervention was informed by an ethnographic study identifying maternal beliefs, practices, and needs. Lay counselors were recruited from each intervention community and trained by La Leche League. Women were enrolled during pregnancy and randomly assigned to one of two intervention groups –women in IG1 received six home visits and women in IG2 received three home

visits. In IG1, "mothers were visited by [peer counselors] twice during pregnancy (mid and late pregnancy), immediately postpartum, and at weeks 2, 4, and 6 postpartum." In IG2, women were visited once late in pregnancy, once immediately postpartum, and once two weeks after delivery. The authors found that women in IG1 who received six home visits had higher rates of EBF than women in IG2 who received three visits (67% vs. 52%) or no visits (12%).

Santiago et al. (2003) explored the role of pediatricians in improving EBF rates at four months in Brazil. Healthy, full term infants born at the pediatrics outpatient clinic in the *Triângulo Mineiro* teaching hospital in Minas Gerais were randomly divided into three groups. Women in IG1 received advice from a multidisciplinary breastfeeding support team (including a pediatrician trained in breastfeeding, a social worker, a psychologist, a dentist and a nurse) during which time breastfeeding difficulties were discussed and potential solutions were offered as a group. Women in IG2 received advice from the same trained pediatrician, but in individual consultations, while those in the control group received advice from a pediatrician with no breastfeeding training. Following the intervention, 82.9% of women in IG1, 66.7% of women in IG2, and 30.3% of women in the control group reported EBF at four months. The difference between IG1 and IG2 was not statistically significant; however, the difference between IG1 and the control was statistically significant.

Finally, Tripathy et al. (2010) conducted an RCT looking at EBF in Orissa and Jharkhand, India. In intervention areas, female facilitators conducted monthly meetings with new mothers for a period of 20 months. The meetings revolved around participatory learning and action, and led to the development and implementation of strategies to address maternal and newborn health problems. Following adjusted analysis of surveillance data from years one and three, the authors reported that the proportion of infants exclusively breastfed at six weeks was higher in intervention areas than in control areas (OR=1.82).²⁵

Longitudinal studies

Eight of the 33 studies reporting statistically significant results were longitudinal studies. Akter et al. (2012) studied an intervention which involved four group counseling ses-

²⁵ These include: Baqui et al. (2008a); Baqui et al. (2008b); Bhutta et al. (2008b); and Kumar et al. (2008).

sions during the last trimester of pregnancy. Following the intervention, 64.9% of women in the intervention group reported EBF at one month after birth, compared with 37.9% of women in the control group.

Balaluka et al. (2012) conducted a longitudinal study looking at median duration of EBF, and EBF at four, five, and six months in two health districts in the Democratic Republic of Congo. The intervention involved a combination of home visits, community based counseling, and community mobilization, including monthly community “weighing sessions.” After approximately three years of implementation, the authors compared EBF practices in the intervention health district with another health district that resembled the intervention district. They found that median duration of EBF was two months longer in the intervention district than in the control district (six vs. four months). Likewise, the prevalence of EBF was higher in the intervention district compared with the control district at all of the following points in time: at four months (91.8% vs. 50.7%), at five months (81.3% vs. 9.6%), and at six months (57.7% vs. 2.7%). All differences were statistically significant; however, the lack of baseline values makes it difficult to attribute these differences to the intervention.

Braun et al. (2003) looked at the effect of the BFHI on EBF by following two cohorts of babies born at a hospital in Porto Alegre, Brazil – one cohort of babies born before the BFHI initiative had been introduced and the other born after the BFHI initiative had been introduced. Mothers were interviewed at the end of the first, second, fourth, and sixth months after birth. The authors found that the median duration of EBF increased from one month to two months after BFHI had been introduced.

Alam et al. (2002) conducted a longitudinal study comparing EBF rates in two hospitals in Dhaka, Bangladesh. The intervention hospital was certified “baby-friendly,” while the control hospital was not. The authors assessed EBF practices at 30, 60, 90, 120, and 150 days postpartum. At each time point, EBF rates were higher among women who delivered in the baby-friendly hospital compared with those who delivered in the control hospital, but the statistical significance of these differences was not reported. The likelihood of EBF for more than five months was statistically greater in the intervention hospital compared with the control hospital (8.1% vs. 6.5%) as was the median duration of EBF (69.74 days vs. 48.4 days).

Piwoz et al. (2005) conducted a longitudinal study within the Zimbabwe Vitamin A for Mother and Babies Trail (ZVITAMBO), in which 14,110 mother-baby pairs were enrolled within 96 hours of delivery. “Formative research was undertaken to guide the design of the program that included group education, individual counselling, videos, and brochures. Exclusive breast-feeding was recommended for mothers of unknown or negative HIV status, and for HIV+ mothers who chose to breast-feed.” Comparisons were made between women who were enrolled in the trial before, during, and after the education and counseling program was implemented. The authors found that women who enrolled in ZVITAMBO while the counseling and education program was being fully implemented were 8.4 times more likely to EBF at three months compared with those who enrolled in ZVITAMBO before the program began and, therefore, only partially participated in the program.

In a follow-up article, Piwoz et al. (2007) assessed the association between exposure to the counseling and education program described directly above and postnatal HIV transmission among a subset of 437 HIV+ women, 365 of whom did not know their HIV status. They found that EBF was higher in the intervention group at six weeks and three months, but no such effect was found at six months.

Salud et al. (2009) evaluated a peer counseling intervention aimed at increasing EBF rates in the Philippines. The intervention targeted 312 “mothers with infants less than 2 months of age who were not exclusively breastfeeding or had difficulty breastfeeding.” Each woman then received three peer counseling visits: one at baseline, another after one week, and the third after two weeks. Following intervention, EBF had increased from 1% to 53.5%.

Finally, Sule et al. (2009) evaluated the impact of nutritional education on IYCF knowledge, attitude and practices (KAP) of women in southwest Nigeria. The intervention included group-based nutrition education and demonstrations of complementary food once every two weeks for a period of six months. Participating women were also visited in their homes monthly for six months to monitor their EBF practices. After six months, women with children six months or older in the intervention community were significantly more likely to report EBF for six months than women in the control community (66.7% and 52.0%, respectively).

Repeated cross-sectional studies

Crookston et al. (2007) looked at breastfeeding behaviors in a repeated cross-sectional study conducted in rural Cambodia. At baseline, women in program communities were 54% more likely than women in control communities to have breastfed exclusively in the previous 24 hours. At follow-up, they were 81% more likely to do so. After one year, the RR associated with EBF through six months of age had increased from 1.54 to 1.81.

Harkins et al. (2008) evaluated the effectiveness of IMCI interventions on EBF for six months in San Luis, Honduras. The authors described the community IMCI approach as using the “social-actor methodology” to create and promote “linkages between partners that create synergies in local and regional social mobilizations.” Teachers and Red Cross volunteers trained in community IMCI conducted home visits to promote prenatal care, exclusive breastfeeding, vaccinations, and the healthy growth and development of infants and children.” After one year, the percentage of women reporting EBF for six months increased from 11% to 19%.

Thompson and Harutyunyan (2009) looked at EBF through six months of age in Martuni region in northeastern Armenia. The intervention was delivered through a community-based IMCI platform, and included home visits for pregnant and lactating women, group education classes for new parents, and a local mass media campaign. By the end of the study period, rates of EBF through six months increased from 16.7% to 48.1%. The finding was statistically significant; however, the lack of data from a control group limits claims of attribution.

Quinn et al. (2005) looked at EBF in three countries: Madagascar, Bolivia, and Ghana. Following a four year multi-channel behavior change program, rates of exclusive breastfeeding among children under six months of age increased from 46% to 68% in Madagascar, from 54% to 65% in Bolivia, and from 68% to 79% in Ghana.

In a follow-up analysis to the Quinn et al. (2005) article, Guyon et al. (2009) reported an increase in EBF from 42% to 70% after five years of implementation in Madagascar. Neither Quinn et al. (2005) or Guyon et al. (2009) included control communities.

Cross-sectional studies

Gupta et al. (2004) “evaluated the extent to which exposure to BCC messages in the media determined improvements in exclusive breastfeeding knowledge and practices in areas targeted by the Delivery of Improved Services for Health (DISH) Project of Uganda.” The DISH Project developed and disseminated materials that targeted both men and women of reproductive age and promoted EBF for the first six months and appropriate complementary feeding practices. The intervention used radio, television, video, posters, and print materials (newspapers, magazines, or leaflets). Multiple logistic regression analysis showed that women exposed to multiple BCC messages were more likely to exclusively breastfeed their infant for six months than women exposed to just one message. However, women with no exposure were more likely to EBF than those with exposure to any one message. The authors cautioned that “even the positive effects of self-reported BCC exposure on the outcomes of interest do not necessarily imply a direct causation, since precise information on the timing of changes in knowledge and practices of individuals with respect to exposure to the mass media was lacking.” They also discussed confounding factors which may be related both to exposure and to EBF practices, including age of respondent, marital status, parity and other socio-demographic factors, and suggested that the effects of media on breastfeeding practices “were less conclusive possibly because of the short interval between the launch of the BCC campaign and survey implementation.”

Matovu et al. (2008) conducted a retrospective study comparing adherence to EBF recommendations among HIV+ Ugandan women attending individual client-provider counseling at a health facility and receiving education with those who only received group counseling or education. At enrollment all women opted to EBF. At the conclusion of the study period, women who had received individual counseling were more likely to EBF at six months than those who had received only group counseling or education (OR=3.43). Furthermore, those who had attended at least four antenatal care (ANC) visits were even more likely to EBF at 6 months (OR=5.95, Adjusted Odds Ratio (AOR)=3.86), while those who attended at least six postnatal counseling sessions were more likely to EBF at six months than those who received less (OR=3.34,

AOR=12.52). Finally, those who consulted a health worker regarding breastfeeding problems were also more likely to EBF at six months (OR=4.97, AOR=13.11). However, the retrospective nature and the lack of randomization make it impossible to attribute these differences to the intervention.

Continued breastfeeding

Of the 16 studies reporting on continued breastfeeding practices, nine reported statistically significant results. Continued breastfeeding was measured at six months (two studies), at 12 months (four studies), and at 24 months (one study). Statistically significant results with regard to the duration of any breastfeeding were reported in two studies.

Literature reviews with meta-analysis

Imdad et al. (2011) conducted a meta-analysis of 53 RCTs and quasi-RCTs looking at the impact of education and support strategies on breastfeeding outcomes. The authors reviewed twenty studies which reported on breastfeeding at six months, two of which were from developing countries. They found a 12% increase in any breastfeeding at six months (RR =1.12).

Randomized controlled trials

Six of the nine studies reporting statistically significant results were RCTs. Aksu et al. (2011) looked at the impact of both facility and home-based counseling on continued breastfeeding rates in Turkey. Following the intervention, women in the intervention group breastfed for an average of three months longer than those in the control group (15.1 vs. 12.1 months).

Bhandari et al. (2001) conducted an RCT in which women were randomized to one of four groups: the first received a micronutrient-fortified food supplement along with monthly nutrition counseling, the second received monthly nutrition counseling alone, the third received a twice-weekly home visit, and the fourth received no intervention. Following intervention, breastfeeding at 12 months was actually lower among those who received the supplement and counseling compared with those who received no intervention (83.9% vs. 96.7%). The authors reported no other statistically significant findings.

Bortolini and Vitolo (2012) conducted a study of infants born in Rio Grande do Sul, Brazil. Newborns and their

mothers were randomly assigned to the intervention or control group. Women in the intervention group received home visits during the children's first year of life once a month through the age of six months, and then every other month until the child reached 12 months. Following the intervention, the proportion of children breastfed at both six and 12 months was higher in the intervention group than the control group (66.3% vs. 55.6% at 6 months and 52.8% vs. 41.9% at 12 months).

Guldan et al. (2000) looked at the impact of home-based peer counseling on continued breastfeeding practices. Following a year-long intervention, the percentage of women reporting breastfeeding infants between the ages of 4-12 months was higher in the intervention group than in the control group (83% and 75%, respectively). The findings were statistically significant; however, as noted before, the lack of baseline and/or randomization of the intervention and control groups makes attribution of change to the intervention challenging.

Kramer et al. (2001) looked at the impact of facility and lay counseling and small media on continued breastfeeding practices in Belarus. Following the intervention, breastfeeding rates at 12 months were 19.7% in the intervention group compared with 11.4% in the control group (adjusted OR=0.47).

Kupratakul et al. (2010) found that the proportion of women practicing "predominant" breastfeeding at 6 months, defined as "infants ... fed with the mothers' breast milk and water, sweetened water and juices without formula" was significantly higher among women in the intervention group compared with those in control group (40.0% vs. 5.3%).

Longitudinal studies

Duyan Camurdan et al. (2007) conducted a longitudinal study looking at the impact of the BFHI initiative on breastfeeding practices in Gazi University Hospital in Turkey. All women delivering in the hospital were invited to participate in periodic well-child visits. During each visit, providers reinforced the benefits of breastfeeding and provided counseling. The average duration of breastfeeding was 21.17 months among women giving birth after the introduction of BFHI, compared with 17.83 months among those giving birth prior to the introduction of BFHI. Following regression analysis

Table 3.2.2: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design

SBCC approaches and activities	Reviews with meta-analysis	RCTs	Longitudinal studies	Repeated cross-sectional studies	Cross-sectional studies	TOTAL
Interpersonal Communication	6 (6)	27 (21)	14 (9)	11 (9)	1 (1)	59 (46)
One-on-One Counseling	6 (5)	25 (20)	12 (9)	10 (9)	1 (1)	48 (44)
Counseling in facilities	0	8 (5)	9 (6)	2 (2)	1 (1)	20 (14)
Counseling in communities	2 (2)	0	2 (2)	2 (2)	0	6 (6)
Counseling in homes (home visits)	4 (4)	23 (18)	4 (3)	5 (3)	0	32 (28)
Counseling in other settings	2 (2)	0	0	2 (2)	0	4 (4)
Group Education	3 (3)	6 (5)	6 (3)	4 (4)	1 (1)	17 (16)
Education in facilities	0	1 (1)	3 (3)	0	1 (1)	5 (4)
Education in communities	1 (1)	5 (4)	4 (2)	3 (3)	0	12 (10)
Education in other settings	2 (0)	0	0	1 (0)	0	3 (0)
Support Group	1 (1)	4 (3)	5 (3)	5 (3)	0	14 (10)
Support group in facilities	0	2 (2)	4 (3)	1 (1)	0	7 (6)
Support group in communities	1 (1)	2 (1)	1 (0)	2 (0)	0	5 (2)
Support group in other settings	0	0	0	2 (0)	0	2 (0)
Media	0	5 (5)	8 (6)	9 (6)	2 (2)	24 (19)
Mass media	0	0	0	4 (3)	1 (1)	5 (4)
Mid-sized media (community radio / video, local billboards)	0	0	2 (2)	5 (3)	1 (1)	8 (6)
Small media (posters, flyers, calendars, reminder stickers)	0	4 (4)	7 (5)	7 (5)	1 (1)	19 (15)
Traditional media (songs, drama)	0	3 (3)	0	0	0	3 (3)
Social media (Twitter, Facebook, etc.)	0	0	0	0	0	0
Community/Social Mobilization	1 (1)	4 (3)	2 (1)	9 (6)	0	16 (11)
Campaign, event, special "days"	0	0	0	2 (2)	0	2 (2)
Issue groups	1 (1)	3 (2)	2 (1)	5 (2)	0	11 (7)
Other	0	1 (1)	0	3 (3)	0	4 (4)

that controlled for variables that might affect breastfeeding practices (mother's occupation, educational status, age, way of birth, parity, duration of pregnancy, birth weight) the breastfeeding rate was 1.5 times higher among women giving birth after the introduction of BFHI, compared with those giving birth prior to the introduction of BFHI.

Repeated cross-sectional studies

Guyon et al. (2009) conducted a repeated cross-sectional study looking at breastfeeding practices in Madagascar. Following an intervention that included community mobilization, campaign events, and mass media, rates of breastfeeding among children 12-15 months of age increased from 89% to 94%, and among children 20-23 months of age the rate increased from 43% to 73%.

D. Summary of the Evidence

SBCC approaches utilized

For the purposes of analysis, we organized SBCC activities into three primary categories or approaches: interpersonal communication, media, and community/social mobilization. These approaches and the specific activities associated with each are described in further detail in the introductory chapter.

The studies reviewed included a broad range of approaches to promote optimal breastfeeding practices. Most included more than one specific SBCC activity and many utilized more than one approach.

All six literature reviews focused on interpersonal communication (IPC) approaches. One review included findings related to community/social mobilization.

Among the 42 other studies reporting statistically significant results, 40 included interpersonal communication (IPC) approaches, 19 included some form of media, and 10 included community/social mobilization. One-on-one counseling in the home was the most commonly used IPC approach, small media was the most commonly used media approach and the gathering of issues groups was the most commonly used community/social mobilization approach (see Table 3.2.2).

Nine of the reviewed studies explored the impact of the BFHI on breastfeeding practices. In some cases an SBCC

intervention was added to the standard BFHI package, while in other cases, facilities implementing BFHI were compared with those who were not doing so.

There is a wide breadth of evidence regarding the effectiveness of various SBCC approaches in changing breastfeeding practices. Table 3.2.3 provides a summary of these findings.

Interpersonal communication

Six reviews with meta-analysis establish the effectiveness of IPC approaches with respect to uptake of optimal breastfeeding practices. All but one looked solely at IPC interventions. Gogia and Sachdev (2010) reported a positive effect of IPC with respect to early initiation of breastfeeding (RR=3.35), while Imdad et al. (2011) reported a six-fold increase in EBF rates at six months following breastfeeding promotion in developing countries (RR=1.37 overall). Renfrew et al. (2012) found that extra support led to a lower risk of having stopped EBF at six months (RR=0.86), Hall (2011) and Jolly et al. (2012) reported similar effect related to EBF at other times, and Imdad et al. (2011) reported a positive effect of IPC on continued breastfeeding at six months (RR=1.12). Lassi et al. (2010) reported an RR of 1.94 with respect to early initiation of breastfeeding, but the intervention package included both IPC and community/social mobilization, making attribution to IPC difficult. None of the reviews reported findings associated with breastfeeding at two years of age, the universally recommended practice.

In addition to the reviews, 41 primary research studies reported statistically significant outcomes related to the effect of IPC interventions on breastfeeding initiation, 14 reported significant outcomes with respect to breastfeeding initiation, 27 reported on EBF, and nine reported significant outcomes with respect to continued breastfeeding rates.

Eighteen studies measured the effectiveness of IPC independent of other SBCC approaches, including six which were not included in the previously described reviews: three RCTs, two longitudinal studies, and one repeated cross-sectional study. Among the RCTs, Bortolini and Vitollo (2012) reported the most compelling findings, a difference between intervention and control communities of 10.7 percentage points with respect to breastfeeding at six months and 10.9 percentage points with respect to breastfeeding at 12 months.

In the only study looking at continued breastfeeding at two

years of age, Guyon et al. (2009) reported an increase of 30 percentage points in their repeated cross-sectional study.

Indicators and study design varied considerably among studies, making consolidation of findings from studies not included in previous literature reviews difficult.

Media

We did not identify any reviews documenting the effectiveness of media-related interventions on breastfeeding outcomes, but did identify 19 primary research studies reporting significant outcomes associated with interventions that included media-based SBCC approaches. Nine reported a significant effect with respect to breastfeeding initiation, 13 reported a significant effect with respect to uptake of EBF, and three reported a significant effect with respect to continued breastfeeding practices.

Only one of these studies, Gupta et al. (2004), presented findings regarding the effect of media-based approaches independent of other SBCC approaches. Researchers measured the impact of exposure to messaging through four different media channels: radio, television, posters, and print materials. They reported a greater likelihood of EBF for six months among those exposed to messages through these forms of media two or more times.

Community/Social mobilization

Lassi et al., (2010) included findings related to community/social mobilization. The review, however, looked at both community/social mobilization and IPC, and did not disaggregate results between the two approaches. It is therefore not possible to assess the effect of IPC independent of other SBCC approaches.

Eight primary research studies reported a significant effect of interventions including community/social mobilization with respect to breastfeeding initiation, six reported a significant effect with respect to EBF, and one reported a significant effect with respect to continued breastfeeding.

None of these studies reported on the effect of community/social mobilization in isolation from other SBCC approaches, so it is difficult to derive conclusions regarding the singular effectiveness of community/social mobilization in changing breastfeeding practices.

Multiple SBCC approaches

One review documented the effect of multiple SBCC approaches on the uptake of breastfeeding practices. Lassi et al. (2010) reported an RR of 1.94 among studies employing IPC and/or community/social mobilization to improve uptake of early initiation of breastfeeding. They did not, however, distinguish among studies employing IPC, community/social mobilization, or both.

In addition to the review by Lassi et al. (2010), we identified twenty-three primary research studies reporting positive outcomes associated with interventions that included more than one SBCC approach. Eleven reported a positive effect with respect to early initiation of breastfeeding, 15 report a positive effect with respect to EBF, and three reported a positive effect with respect to continued breastfeeding at six months or older. Among the most notable are three RCTs not included in the Lassi et al. (2010) review: Bang et al. (2005); Morrow and Guerrero (2001); and Omer et al. (2008).

None of these studies measured the effect of the utilization of more than one SBCC approach compared with the utilization of just one approach. One must use caution, therefore, in drawing conclusions about the effectiveness of interventions employing multiple approaches versus those employing just one approach.

Implementation processes followed

Few of the studies reviewed in this chapter assessed the effect of implementation processes (e.g. intensity and timing of communications; type and training of person communicating messages, or target audience) on the effectiveness of the SBCC approach on breastfeeding practices, nor did they consistently report all aspects of the implementation processes.

Little work has been done to compare the effect of timing or frequency of interventions. Imdad et al. (2011) conducted a sub-analysis which showed that “prenatal counseling had greater impacts on breastfeeding rates at 4-6 weeks, while combined prenatal and postnatal promotion were important for breastfeeding rates at 6 months.” Renfrew et al. (2012) found no effect of the timing of the support (during the antenatal or postnatal visit), while Jolly et al. (2012) found that “combined antenatal and postnatal peer support

was not associated with a significant improvement in not breast feeding at last study follow-up, whereas postnatal only interventions did significantly reduce not breast feeding.” Likewise, Aidam et al. (2005) found that women who received two prenatal counselling sessions, one counseling session 48 hours postpartum, and six postpartum home visits were just as likely to EBF at six months as those who received only postpartum counselling.

The intensity of communications ranged between one and twenty visits or sessions, and several meta-analyses and studies did make comparisons between the effectiveness of interventions with varied intensities. Jolly et al. (2012) found that women in the more intensive interventions (≥ 5 contacts planned) were more likely to report breastfeeding at last follow-up compared with usual care. Similarly, Renfrew et al. (2012) found that “studies with four to eight visits seemed to be associated with a more pronounced treatment effect.” However, the authors warned that “care is needed in the interpretation of this finding as there is inconsistent reporting due to variations in the timing of outcome assessments, and the settings of studies and the population groups included in studies with more face-to-face visits also varied. It is likely that support will be most effective when it reflects the local needs of the population.” Renfrew et al. also found a greater treatment effect on EBF at six months when the “intervention was delivered by non-professionals (average RR=0.74) compared with professionals (average RR=0.93) or both (average RR=0.76).” Likewise, women who received face-to-face support were 19% less likely to have given up EBF at six months compared with those who did not (average RR=0.81).

Piwoz et al. (2007) conducted an RCT comparing those who received no visits, one visit, two visits or three visits when counselling on HIV and infant feeding was provided. They found that EBF at six weeks and three months was incrementally higher with each additional visit. Statistical significance of the differences between the groups were not reported, but the authors did conclude that “frequency of intervention contact was associated with safer breastfeeding knowledge and exclusive breastfeeding practices.”

Finally, Morrow and Guerrero (2001) conducted an RCT in which they compared EBF at three months between those who received six home visits and those who received three home visits. While those receiving six home visits appeared to be more likely to EBF at three months than their counter-

parts who received only three home visits (a 15% difference), the statistical significance of the difference was not reported. Both were effective when compared with a control group.

In terms of target audiences, the majority of the studies reviewed focused attention on the mother or caregiver. Among the 48 studies (literature reviews and primary research) reporting statistically significant results, all targeted the mother of the child herself. Twenty-six targeted only the mother of the child herself. Fourteen also targeted direct influencers, 18 targeted local community actors, and three targeted actors of the enabling environment in addition to pregnant or lactating women.

Only Lassi et al. (2010) compared the effect of targeting one vs. multiple audiences or of targeting different audiences. The authors found that “the most successful packages were those that emphasized involving family members through community support and advocacy groups and community/social mobilization and education strategies, provision of care through trained CHWs via home visitation, and strengthened proper referrals for sick mothers and newborns.”

E. Conclusions

The body of literature focusing on SBCC approaches being used to improve breastfeeding practices is strong and broad, supporting the claim that SBCC approaches can and do succeed in improving uptake of the behaviors promoted. While the literature may reflect a bias to publish positive results, it also underscores the important role of SBCC approaches in improving nutrition practices – practices which have been shown to have an impact on the nutritional status of women, infants, and children.

There is more consistency in how breastfeeding practices are defined and measured than in the other chapters of this review. This is particularly so in the case of early initiation of breastfeeding. However, even with globally-recognized indicators and measurement guidance from the WHO, considerable variation remains. For example, while fourteen studies reported statistically significant findings related to EBF children six months old, 19 reported on EBF at a range of other ages.

There is considerable variation in the SBCC interventions designed to improve breastfeeding practices – in the interactions or combinations with other interventions, target groups, content, messages, scale and

Table 3.2.3: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design

SBCC approach	Initiating breastfeeding early	Exclusive breastfeeding	Continued breastfeeding
Interpersonal Communication	<p>20, 16 reporting statistical significance:</p> <p>2 Review with meta-analysis (within one hour)</p> <p>6 RCTs (3 within one hour; 1 within 6 hours; 2 colostrum, 2 included in previous meta-analysis)</p> <p>1 Longitudinal (within one hour)</p> <p>7 Repeated cross-sectional (6 within one hour; 1 “early initiation”; 1 colostrum, 1 included in previous meta-analysis)</p>	<p>40, 31 reporting statistical significance:</p> <p>4 Review with meta-analysis (2 any EBF; 2 at 4-6 weeks; 2 at 6 months)</p> <p>14 RCTs (8 at 6 months; 1 at 5 months; 8 at 4 months; 5 at 3 months; 1 at 2 months; 1 at 6 weeks; 2 at 30 days; 1 at 15 days; 1 at 7 days; 13 included in previous meta-analysis)</p> <p>8 Longitudinal (1 at 1 month, 1 at 6 weeks, 3 at 3 months, 1 at 4 months, 1 at 5 months, 3 at 6 months, 2 duration)</p> <p>5 Repeated cross-sectional (1 at 6 months; 4 among children < 6 months)</p> <p>1 Cross-sectional (at 6 months among HIV+ women)</p>	<p>16, 10 reporting statistical significance:</p> <p>1 Review with meta-analysis (at 6 months)</p> <p>7 RCTs (3 at 6 months; 2 at 12 months; 1 among those 4-12 months; 1 duration; 4 included in previous meta-analysis)</p> <p>1 Longitudinal (duration)</p> <p>1 Repeated cross-sectional (at 24 months)</p>
Media	<p>10, 9 reporting statistical significance:</p> <p>3 RCTs (1 within 1 hour; 1 within 6 hours; colostrum; 1 included in previous meta-analysis)</p> <p>7 Repeated cross-sectional (4 within one hour; 1 within 30 minutes, 1 “early initiation”; 1 colostrum)</p>	<p>17, 13 reporting statistical significance:</p> <p>2 RCTs (2 at 3 months; 1 at 6 months)</p> <p>5 Longitudinal (2 at 3 months; 1 at 5 months; 1 at 6 months; among children < 6 months; duration)</p> <p>4 Repeated cross-sectional (among children < 6 months)</p> <p>2 Cross-sectional (2 at 6 months, 1 among HIV+ women)</p>	<p>6, 3 reporting statistical significance:</p> <p>1 RCTs (1 at 12 months)</p> <p>1 Longitudinal (duration)</p> <p>1 Repeated cross-sectional (at 24 months)</p>
Community/social mobilization	<p>11, 8 reporting statistical significance:</p> <p>1 Review with meta-analysis (within one hour)</p> <p>1 RCT (initiation within one hour; 1 within 6 hours, included in previous meta-analysis)</p> <p>7 Repeated cross-sectional (5 within one hour; 1 within 30 minutes, 2 colostrum, 1 included in previous meta-analysis)</p>	<p>8, 6 reporting statistical significance:</p> <p>1 RCT (at 4 months; at 6 months, included in previous meta-analysis)</p> <p>1 Longitudinal (at 3 months; at 4 months)</p> <p>4 Repeated cross-sectional (1 at 6 months; 3 among children < 6 months)</p>	<p>2, 1 reporting statistical significance:</p> <p>1 Repeated cross-sectional (at 24 months)</p>

coverage, length and intensity, as well as context.

Interpersonal communication was the most prevalent SBCC approach found to be effective at improving breastfeeding practices in both implementation and research. While media and community/social mobilization were used, they were almost always used with at least one other communication approach. The evidence included in the review also reaffirms the importance of peer support for improving breastfeeding practices, whether one-on-one or in groups. The question remains as to whether many projects use IPC because it is more effective than other approaches at improving breastfeeding practices, or whether it has become the default approach. Given the complex and personal nature of the suite of behaviors making up optimal breastfeeding, it is likely the former. **Unfortunately it is both difficult and expensive to disaggregate the contribution of single channels or specific activities within a multi-channel intervention, and an important question for SBCC practitioners and researchers is whether that line of research is useful.**

SBCC interventions to promote breastfeeding practices are suited to iterative programming, because even if standards for behaviors aren't met, there can be significant movement toward the standard. In a hypothetical example, the target number of women exclusively breastfeeding at six months might not be met, but many women may have continued EBF for a month or two more than they would have had the intervention not happened. In this example, the intervention may not have succeeded in achieving the standardized indicator, but moved the EBF duration in the right direction. **Iterative interventions can learn what supported that move in the right direction, and build on them.**

All of the studies reporting statistically significant results targeted the woman herself. Nearly half targeted other audiences or influencers as well. Little has been done to compare the effect of targeting one vs. multiple audiences or of targeting different audiences, but what was done suggested that **targeting multiple contacts has a greater effect than targeting only the woman herself, given the important role of husbands, mothers-in-law, and community leaders.** With regard to timing, few comparisons were made between the effect of different timings and

what little was done presents contradictory evidence.

There is some evidence that intensity (number of contacts) influences the effectiveness of SBCC interventions in promoting adoption of optimal breastfeeding practices. The intensity of communications ranged between one and twenty visits or sessions. While some studies reported statistically significant improvements in breastfeeding practices after only one or a few contacts, evidence from several meta-analyses and primary research studies strongly suggests that increasing the number of contacts increases the positive effect of SBCC interventions on breastfeeding practices.

The majority of studies were implemented on a relatively small scale, within a few health facilities or communities and typically with fewer than 500 study participants per group. Because of these limitation and due to the lack of standardization in the way research related to SBCC is designed and described, it is challenging to make conclusions beyond the fact that projects with SBCC will result in uptake of promoted practices.

The evidence for SBCC and breastfeeding suggests the effect of context (including social norms, culture, and environmental factors) as well as existing national breastfeeding rates. This underscores the importance of proper context assessments, formative research and/or ethnographic study prior to SBCC implementation.

While there is much to be learned from this large body of literature to aid us in developing future programs, a number of questions remain. These include questions related to:

- the positive (or negative) effect of using multiple SBCC approaches compared with focusing on only one;
- the positive (or negative) effect of targeting multiple audiences or influencers of the behaviors being promoted, rather than focusing on just one target population;
- the role of context, in other words, the effect of the same SBCC intervention implemented in different contexts;
- the effectiveness of different approaches (including intensity and targeting) for different behaviors;
- the cost and cost effectiveness of various SBCC approaches (particularly as it relates to scalability); and
- the effectiveness and sustainability of these approaches when implemented at scale.

Table 3.2.4: Studies reporting on breastfeeding practices

Color coding key
 Breastfeeding initiation
 Exclusive breastfeeding
 Continued breastfeeding

STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷
Abolyan (2006); Russia	Counseling in facilities by providers; Support group in facilities by providers and/or lay volunteers; Small media	8 maternity hospitals	Longitudinal – 741 healthy postpartum women (383 intervention, 358 control)	Median time until initiation of breastfeeding % EBF from birth until discharge from hospital	2 hrs. vs. 12 hrs. 88.9% vs. 32.6%	NS ²⁸ NS
Agrasada et al. (2005); Philippines	Counseling in homes by lay volunteers	1 hospital	RCT – 179 postpartum women (60 IG1, 60 IG2, 59 control)	% EBF during previous 7 days at 6 months Likelihood of EBF	counseling group vs. “other groups” ²⁹ 44% vs. 0% OR=6.3 (based on generalized estimating equation models)	-- p<0.001 (95% CI: 3.53-11.3)
Aidam et al. (2005); Ghana	Counseling in facilities by providers; Counseling in homes by providers	2 hospitals	RCT – 123 pregnant women attending prenatal clinics: 40 IG1, 39 IG2, 44 control ³⁰	% EBF during previous month at 6 months % EBF during previous 24 hours at 6 months % EBF “since birth” at 6 months	IG1 vs. IG2 vs. control 90.0% vs. 74.4% vs. 47.7% 90.0% vs. 79.5% vs. 54.5% Pooled intervention vs. control 39.5% vs. 19.6%	p=0.008 p=0.001 p=0.02

²⁶ Comparison is intervention vs. control group, unless indicated otherwise.

²⁷ Differences reported as not significantly different are indicated by “NS”. Differences for which statistical significance was not reported are indicated by “--”.

²⁸ NS = not significant either according to what is reported in the original article or p<0.05.

²⁹ The authors compared EBF rates among the breastfeeding counseling group with rates found among those in the group where peer counselors were trained to provide general childcare counseling, and the control arm who did not receive any counseling.

³⁰ Intervention group 1 (IG1) included two prenatal counseling sessions, one counseling session 48 hours postpartum, and six postpartum home visits. IG2 excluded the prenatal counseling, and the control interventions.

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY							
COMPLEMENTARY FEEDING		BREASTFEEDING		SCOPE / SCALE		APPROACHES USED		EVALUATION DESIGN		OUTCOME(S) MEASURED		RESULTS ²⁶		P-VALUES / CIs ²⁷	
STUDY															
Akter et al. (2012); Bangladesh		Counseling in facilities by providers; Group education in facilities by providers	1 hospital	Longitudinal – 115 women at six months gestation (57 intervention, 58 control)	% breastfeeding initiation within one hour of birth % EBF at 1 month	75.4% vs. 34.5% 64.9% vs. 37.9%	p=0.001 p=0.003								
Aksu et al. (2011); Turkey		Counseling in homes by peers; Counseling in facilities by providers (BHFI and in facility counseling also given to control group)	1 hospital	RCT – 60 women who gave birth in study hospital (30 intervention, 30 control)	% EBF at 2 weeks % EBF at 6 weeks % EBF at 6 months Duration of EBF (months) Mean duration of breastfeeding (months)	67% vs. 40% 60% vs. 33% 43% vs. 23% 4.7 vs. 3.9 15.1 vs. 12.1	p=0.0038 p=0.038 p=0.04 p=0.014 p=0.001								
Alam et al. (2002); Bangladesh		Counseling in facilities by providers; Support group in facilities by providers and/or lay volunteer; Small media	2 hospitals (1 intervention, 1 control)	Longitudinal – 209 women who gave birth in study hospital (105 intervention, 104 control)	% EBF at 1 month (30 days) % EBF at 2 months (60 days) % EBF at 3 months (90 days) % EBF at 4 months (120 days) % EBF at 5 months (150 days) % EBF > 5 months Median duration of EBF	82.3% vs. 50.0% 63.2% vs. 40.0% 34.7% vs. 21.5% 20.8% vs. 11.4% 16.2% vs. 6.5% 8.1% vs. 6.5% 69.74 vs. 48.4 days	-- -- -- -- -- p<0.001 p<0.001								
Albernaz et al. (2003); Brazil		Small media; Counseling in facilities by providers; Counseling in homes using Hotline	1 city	RCT – 157 newborns (82 intervention, 75 control)	% EBF at 4 months % breastfeeding at 4 months (other food or milk in addition to breast milk) Likelihood of having stopped breastfeeding at 4 months	40% vs. 31% 32% vs. 28% Prevalence ratio: 1.85	NS NS p=0.04 (95% CI: 1.01-3.41)								

STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷
Albernaz et al. (2008); Brazil	Small Media; Counseling in facilities by providers; Counseling in homes using Hotline	1 city	Longitudinal – 421 from 1982 cohort, 561 from 1993 cohort, 310 from 1997-1998 cohort, 317 from 2004 cohort	% EBF at 1 month % EBF at 3 months % EBF at 6 months % breastfeeding at 6 months % breastfeeding at 24 months % breastfeeding at 24 months	Post vs. immediately prior to intervention ³¹ 40% vs. 26% 19% vs. 16% no difference 64% vs. 46% 33% vs. 22% 11% vs. 14%	-- -- -- -- -- --
Alderman (2007); Uganda	Group education in communities by lay volunteers; Mobilization of issue groups; Support group in communities by peers	34 districts	Longitudinal – 2,250 households with a child under 6 (750 IG1, 750 IG2, 750 control)	% of infants weaned before 6 months (~BF at 6 months)	"significant decline"	--
Azad et al. (2010); Bangladesh	Group education in communities by lay volunteers	18 clusters from three rural districts (9 intervention, 9 control)	RCT – 36,113 births (17,514 intervention, 18,599 control)	% EBF for six weeks	68.0% vs. 61.5%	RR: 1.10 (0.98–1.24) Adjusted RR: 1.10 (0.98–1.23)
Balaluka et al. (2012); Democratic Republic of Congo	Mobilization of issue groups; Counseling in communities by peers; Counseling in homes by peers	2 districts (1 intervention, 1 control)	Longitudinal – 385 newborns (208 intervention, 178 control)	Median duration of EBF % EBF at 4 months % EBF at 5 months % EBF at 6 months	6 vs. 4 months 91.8% vs. 50.7% 81.3% vs. 9.6% 57.7% vs. 2.7%	p<0.001 p<0.001 p<0.001 p<0.001
Bang et al. (2005); India	Mobilization of issue groups; Counseling in communities by peers; Counseling in homes by peers	86 villages (39 intervention villages, population: 38,998; 47 control villages, population: 42,149)	RCT – 2,361 neonates; baseline (1995-1996): 763; 1 st follow-up (1996-1997): 685; 2 nd follow-up (1997-1998): 913	% breastfeeding initiation within six hours of birth	2 nd follow-up vs. 1 st follow-up vs. baseline 89.7% vs. 81.9% vs. 47.5%	Significance of trend p<0.001
Baqi et al. (2008a); Bangladesh	Counseling in homes by lay volunteers; Events targeting policy makers and regulators; Mobilization of campaign, event, or special "days"	24 unions (population: approximately 20,000 each) from three rural upazilas of Sylhet district (8 unions per group)	RCT – 14,769 live births from home care intervention, 16,325 live births from community care intervention, 15,350 from control	% breastfeeding initiation within one hour of birth Home care vs. control Community care vs. control	81% vs. 57% 71% vs. 57%	p<0.0001 p=0.0158

31 Note that authors also reported additional time points.

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING		SCOPE / SCALE		APPROACHES USED		EVALUATION DESIGN	
STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷			
Baqui et al. (2008b); India	Counseling in homes by lay volunteers; Counseling in homes by providers; many other interventions to improve current health care	2 districts in Uttar Pradesh state (1 intervention, 1 control)	Repeated cross-sectional – baseline: 14,952 women who had had a live birth or stillbirth within the reference period (8,756 intervention, 6,196 control); endline: 13,826 women who had had a live birth or stillbirth within the reference period (7,812 intervention, 6,014 control)	%breastfeeding initiation within one hour of birth	At baseline: 3.1% vs. 2.4% At endline: 37.7% vs. 5.8%	Difference in differences: p<0.001 ³²			
Bashour et al. (2008); Syria	Counseling in homes by providers	1 hospital in Damascus	RCT – 876 women who had recently given birth (285 in IG1, 294 in IG2, 297 in control)	% EBF at 4 months (using no other fluids except breast milk for the baby)	IG1 vs. IG2 vs. CG ³³ 28.5% vs. 30.1% vs. 20.2%	p=0.023			
Berti et al. (2010); Ethiopia, Ghana, Malawi and Tanzania	Meetings targeting policy makers and regulators; Events targeting policy makers and regulators; Support group in communities; Mobilization of issue groups; Mass media	4 countries, 4 million beneficiaries	Repeated cross-sectional – secondary data from 2-3 time points from program evaluations of moderate or high quality and Demographic Health Surveys (DHS); program survey sample sizes per country were between 900 and 4801 randomly selected households per survey	% EBF for 6 months Ethiopia Ghana Malawi Tanzania	endline vs. midline vs. baseline 49% vs. 38% vs. 25% 49% vs. 27% vs. 17% 70% vs. 47% vs. 15% 21% vs. 15% vs. ---	-- -- -- --			

32 P-value for difference-in-difference test adjusted for age, education, parity, religion and standard-of-living score.

33 IG1 received four home visits on days one, three, seven, and 30 following delivery. IG2 received one home visit on day three. The control group received current standard of care in Syria, which included no home visits following hospital discharge

STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷
Bhandari et al. (2001); India	Counseling in homes by providers	1 community in Delhi	RCT – 418 infants four months of age (96 in food supplement group; 95 in nutritional counseling group; and 96 in visitation group; 100 in control group); data collected when infants were 6, 9 and 12 months of age	% breastfeeding... at 6 months at 9 months at 12 months	Supplement + counseling vs. counseling alone vs. visitation vs. control 93.8% vs. 97.9% vs. 99.0% vs. 93.0%, 92.0% vs. 95.5% vs. 97.9% vs. 91.4% 83.9% vs. 96.9% vs. 96.7% vs. 89.2%	Comparisons with final group (visitation) NS, NS, NS NS, NS, NS p<0.05, NS, NS
Bhandari et al. (2003); India	Group education in communities by providers; Counseling in homes by peers	8 communities (4 intervention, 4 control)	RCT – 1,115 infants born within 9 months of start of intervention; 3 month assessment: 895 infants (483 intervention, 412 control); 6 month assessment: 880 infants (468 intervention, 412 control)	% EBF at 3 months % EBF at 4 months % EBF at 5 months % EBF at 6 months Median duration of EBF EBF among low-birth weight babies	79% vs. 48% 69% vs. 12% 49% vs. 6% 42% vs. 4% 122 days vs. 41 days higher rates at every time point	p-<0.0001 p-<0.0001 p-<0.0001 p-<0.0001 p-<0.0001 p<0.001
Bhandari et al. (2005); India	Counseling in facilities by providers; Counseling in homes by peers; Mobilization of issue groups	8 communities (4 intervention, 4 control)	RCT – 1025 newborns	% EBF at 3 months % EBF at 4 months Mean duration of EBF (days)	0 vs. 1-2 vs. 3+ channels 70.8% vs. 81.3% vs. 93.6% data not reported 114.1 vs. 127.3 vs. 128.7 days	p=0.0002 adj. p=0.002 p=0.001 p=0.090 adj. p= 0.064

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING	BREASTFEEDING								
STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷			
Bhurta et al. (2008b); Pakistan	Group education in communities by providers; Counseling in homes by lay volunteers; Mobilization of issue groups; Small media; Mid-sized media	8 village clusters from 2 sub-districts in Sindh province (4 intervention with a total population of 138,600, 4 control)	Repeated cross-sectional – data were collected at baseline (Jun-Aug 2003) and three other time points; Endline data (Sept 2005) reported are from 395 and 375 women from the intervention and control village clusters	% breastfeeding initiation within one hour of birth % EBF for first 4 months	66.1% vs. 21.1% 64.6% vs. 18.1%	Not reported Not reported			
Bortolini and Vitolo (2012); Brazil	Counseling in homes by providers	1 hospital	RCT – 397 newborns (163 intervention, 234 control)	% EBF at... - < 1 month = or > 4 months = or > 6 months % breastfeeding at... - at 6 months - at 12 months	33.3% vs. 48% 45.1% vs. 28.6% 19.1% vs. 8.2% 66.3% vs. 55.6% 52.8% vs. 41.9%	p=0.004 p=0.001 p=0.001 p=0.04 p=0.04			
Braun et al. (2003); Brazil	Counseling in facilities by providers; Support group in facilities by providers and/or lay volunteers; Small media	1 hospital	Longitudinal – 437 newborns (intervention: 250 born in 1999, 2 years after BFHI implementation; control: 187 born in 1994)	Duration of EBF	2 vs. 1 month	p=0.01			
Coutinho et al. (2005); Brazil	Counseling in homes by lay volunteers	2 hospitals	RCT – 350 women who gave birth in target hospitals (175 intervention, 175 control)	% EBF at 6 months % breastfeeding at 6 months	45% vs. 13% 78% vs. 62%	p<0.0001 p<0.0001			
Crookston et al. (2007); Cambodia	Community/social mobilization; Group education in communities by lay volunteers; Counseling in communities by lay volunteers; Small media; Support group in facilities by providers and/or lay volunteers	4 districts (3 intervention, 1 control)	Repeated cross-sectional – baseline (summer of 2004); 440 women with a child less than 6 months of age (206 intervention, 234 control); 1 year follow-up: 467 women (222 intervention, 245 control)	% breastfeeding initiation within one hour of birth EBF in the previous 24 hours among infants < 6 months of age	At baseline: RR=1.1 At follow-up: RR=1.62 At baseline: RR=1.54 At follow-up: RR=1.81	(95% CI: 0.74–1.68) (95% CI: 1.30–2.01) (95% CI: 1.21–1.96) (95% CI: 1.49–2.21)			
de Oliveira et al. (2006); Brazil	Counseling in facilities by providers; Counseling in homes by providers	1 hospital	RCT – 211 mother-infant pairs (74 intervention, 137 control)	% EBF at 7 days postpartum % EBF at 30 days postpartum	79.7% vs. 82.5% 60.8% vs. 53.3%	NS NS			

STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷
Duyan Camurdan et al. (2007); Turkey	Counseling in facilities by providers; Support group in facilities by providers and/or lay volunteers; Small media	1 hospital	Cross-sectional – 297 babies born in the four months after BFHI (November 2002-February 2003) (intervention) and 258 babies born before BFHI (November 2001-February 2002) (control)	% EBF at 15 days old % EBF at 2 months % EBF-at 4 months % EBF at 6 months Mean duration of breastfeeding (months)	after-BFHI group vs. before-BFHI 97.4% vs. 93.1% 76.1% vs. 67.2% 53.7% vs. 45.6% 9.3% vs. 9.8% 21.17 vs. 17.83 months OR=1.5	NS NS NS NS p=0.0036 (95% CI: 1.16–2.03)
Gogia and Sachdev (2010); India, Pakistan, Bangladesh	Counseling in homes by lay volunteers	varied	Literature review – four RCTs	Breastfeeding initiation within one hour of birth	Pooled RR : 3.35	p=0.012 (95% CI: 1.31-8.59)
Guldan et al. (2000); China	Counseling in homes by peers	4 townships (2 intervention, 2 control)	RCT – newborns were enrolled throughout the year of project implementation, at completion of the year infants had been monitored for 4-12 months; 495 infants born during study period analyzed (250 intervention, 245 control); infants 4-6 months old: 57 intervention, 69 control; infants 7-9 months old: 85 intervention, 76 control; infants 10-12 months old: 108 intervention, 100 control	% breastfeeding initiation within one hour of birth % breastfeeding initiation within 24 hour or more of birth % gave colostrum to infant % breastfeeding at 4-12 months	23% vs. 18% 23% vs. 35% 91% vs. 80% 83% vs. 75%	NS p=0.031 p<0.004 p=0.034
Gupta et al. (2004); Uganda	Mass media	12 districts	Cross-sectional – 212 women aged 15-49 years whose youngest child was under six months of age	EBF for 6 months	No BCC message exposure: OR=2.32 Exposure to I BCC type: OR=1.00 Exposure to >I BCC type: OR=2.79	p<0.05 NS p<0.05

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING	BREASTFEEDING								
STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷			
Guyon et al. (2009); Madagascar	Mobilization of issue groups; Mobilization of campaign, event, or special "days"; Mass media	2 highland provinces; targeted population varied throughout project from 1.4 million in 6 districts to 6 million in 23 districts	Repeated cross-sectional – baseline (2000): 1,200 children under two years old; endline (2005): 1,760 children under two years old	% breastfeeding initiation within one hour of birth % EBF of infants < 6 months old % breastfeeding of children 12-15 months of age % breastfeeding of children 20-23 months of age	endline vs. baseline 68% vs. 33% 70% vs. 42% 94% vs. 89% 73% vs. 43%	p<0.001 p<0.001 p<0.05 p<0.001			
Haider et al. (2000); Bangladesh	Counseling in homes by peers	40 zones in Dhaka (20 intervention, 20 control)	RCT – 573 women in last trimester of pregnancy who completed all five months of study (288 intervention, 285 control)	% breastfeeding initiation within one hour of birth % EBF at 5 months	64% vs. 15% 70% vs. 6%	p<0.001 p<0.0001			
Hall (2011); India, Syria, Pakistan, and Bangladesh	Counseling in communities; Counseling in homes by peers; Group education in communities	varied	Literature review – four RCTs	EBF in low and middle-income countries (effect of community-based interventions)	pooled OR = 5.9	(95% CI: 1.81-18.6)			
Haque et al. (2002); Bangladesh	Counseling in facilities by providers	3 counseling centers	Longitudinal – 114 mother-child pairs completed one-year follow-up (59 intervention, 55 control)	% gave colostrum to infant % EBF for 5 months	100% vs. 98.9% 54.2% vs. 36.4%	-- NS			
Harkins et al. (2008); Honduras	Mobilization of issue groups; Counseling in homes	1 community	Repeated cross-sectional ³⁴ – Honduras: 300 households with children under two years old interviewed in August 2004 and December 2005 (post-intervention)	EBF for 6 months	endline vs. baseline 19% vs. 11%	p<0.05			

STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷
Imdad et al. (2011); various	Counseling; Group education/counseling	varied	Literature review – 53 RCTs and quasi-RCTs	EBF at 4-6 weeks - in developed and developing countries - in developing countries EBF at 6 months - in developed and developing countries - in developing countries	RR=2.37 RR = 1.89 RR=1.43 RR = 6.32	(95% CI: 1.33-4.24) p<0.001 (95% CI: 1.50-2.37) p<0.001 (95% CI: 1.28-1.60) p<0.001 (95% CI: 3.35-11.93) p<0.001
Jolly et al. (2012); various	Counseling in homes by peers; Counseling in communities by peers; Support group in communities by peers	varied	Literature review – 17 RCTs	Breastfeeding at 6 months - in developed and developing countries	RR = 1.12	(95% CI: 1.01 - 1.24)
Khreshneh et al. (2011); Jordan	Counseling in facilities by providers; Counseling in homes by providers (via phone)	2 hospitals	RCT – 90 postpartum women (45 intervention, 45 control)	Risk of not breastfeeding at last study follow-up in low income countries (Peer support vs. none) Risk of not breastfeeding at last study follow-up in low income countries (Peer support vs. none) % EBF at 6 months	RR = 0.63 RR = 0.70 39% vs. 27%	(95% CI: 0.52 - 0.78) (95% CI: 0.60 - 0.82) NS

34 It not clear from the article if this was a longitudinal or repeated cross-sectional study. Given the indicator reported, it is assumed to be repeated cross-sectional.

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING							
STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷			
Kramer et al. (2001); Republic of Belarus	Counseling in facilities by providers; Support group in facilities by providers and/or lay volunteers; Small media	31 maternity hospitals and polyclinics (16 intervention, 15 control)	RCT – 16,442 mother-infant pairs (8,547 intervention, 7,895 control)	% EBF at 3 months % EBF at 6 months % breastfeeding at 12 months	43.3% vs. 6.4% AOR=0.47 7.9% vs. 0.6% 19.7% vs. 11.4% AOR=0.47	p<0.001 (95% CI: 0.32-0.69) p= 0.01 (95% CI: 0.32-0.69)			
Kumar et al. (2008); India	Group Education in communities by lay volunteers; Counseling in homes by lay volunteers; Small media; Traditional media	39 villages (population: 104,123) (13 villages in each group) ³⁵	RCT – 2,601 live births (1,522 intervention, 1,079 control)	% pre-lacteal feed % breastfeeding initiation within one hour of birth	38.4% vs. 79.9% 70.6% vs. 15.5%	Rate ratio: 0.49 (0.42–0.57) p<0.0001 Rate ratio: 4.57 (3.38–6.15) p<0.0001			
Kupratkul et al. (2010); Thailand	Support group in facilities by providers and/or lay volunteer; Counseling in homes by providers; Counseling in homes by providers (via phone)	5 hospitals	RCT – 80 pregnant women of more than 32 weeks' gestation (40 intervention; 40 control)	% EBF at ... - 14 days - 1 month - 2 months - 4 months - 5 months - 6 months % predominant breastfeeding at 6 months % partial breastfeeding at 6 months	82.5% vs. 52.6% 77.5% vs. 52.6% 62.5% vs. 36.8% 35.0% vs. 7.9% 25.0% vs. 2.6% 20.0% vs. 0% 40.0% vs. 5.3% 15.0% vs. 15.8%	p = 0.005 p = 0.021 p = 0.023 p = 0.008 p = 0.012 p = 0.005 p = 0.0002 p = 0.923			
Lassi et al. (2010); various	Events targeting policy makers and regulators; Mobilization of issue groups; Counseling in homes by peers	varied	Literature review – 18 RCTs and quasi-RCTs	BF initiation within one hour of birth	RR = 1.94	p<0.001 (95% CI: 1.56 - 2.42)			
Leite et al. (2005); Brazil	Counseling in homes by peers	8 health centers	RCT – 1,003 women and their newborns (503 intervention, 500 control)	% EBF at 4 months	24.7% vs. 19.4%	p = 0.044			

35 The focus here is on the control group, which “received the usual services of governmental and non-governmental organizations in the area; an intervention group, which received a preventive package of interventions for essential newborn care (birth preparedness, clean delivery and cord care, thermal care [including skin-to-skin care], breastfeeding promotion, and danger sign recognition)” (Kumar et al., 2008).

STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ^{2,6}	P-VALUES / CIs ²⁷
Li et al. (2007); China	Mobilization of issue groups; Mid-sized media; Small media	10 villages (2 from each of five sampled townships in Luxi city (population of approximately 321,000))	Repeated cross-sectional – 352 infants born during reference period	Average time until initiation of breastfeeding (hours) - Male child - Female child - Total % breastfeeding initiation within 30 minutes - Male child - Female child - Total	endline vs. baseline 17.7 vs. 27.8 20.3 vs. 29.8 19.0 vs. 28.5 47.4% vs. 37.6% 42.4% vs. 36.8% 44.9% vs. 37.2%	-- -- -- -- -- --
Mackintosh et al. (2002); Vietnam	Counseling in homes by peers; Group education in communities by lay volunteers	5 communes (4 intervention, 1 control)	Repeated cross-sectional – 46 households in intervention (family had one child who previously participated in the project and one younger child who had not participated), 25 households in control (had no previous exposure to program activities and included an older and younger sibling in the age range of the intervention households)	Mean duration of breastfeeding (months) - Male child - Female child - Total % currently breast-feeding ³⁶ “younger” child Mean duration of breastfeeding (months)	12.0 vs. 12.6 12.9 vs. 12.9 12.5 vs. 12.8 41.3% vs. 20% 16.8 vs. 16.6	-- -- -- NS NS
Manandhar et al. (2004); Nepal	Support group in communities by peers; Mobilization of issue groups; Counseling in homes by peers	42 rural village development committees from one district (21 intervention, 21 control)	RCT – 6,714 (3,190 intervention, 3,524 control)	% breastfeeding initiation within one hour of birth % discarded colostrum	62% vs. 54%, AOR ³⁷ = 1.40 29% vs. 42%, AOR=0.55	(95% CI: 0.52–3.79) (95% CI: 0.27–1.10)

36 Women were asked about current breastfeeding practices of the “younger” child. The mean age of the “younger” child was 26 months in intervention communities and 29 months in control communities. The difference was not statistically significant.

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING							
STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷			
Matovu et al. (2008); Uganda	Counseling in facilities by providers; Group education in facilities by providers; Small media; Mid-sized media	3 health facilities (2 hospitals, 1 center)	Retrospective cross-sectional study – 139 HIV infected women with children 6–12 months old who adhered to EBF for six months, 139 HIV infected women who did not adhere to EBF for six months	EBF for 6 months among HIV+ women (individual vs. group counseling) EBF for 6 months among HIV+ women (at least 4 ANC sessions attended vs. fewer than 4) % EBF for 6 months among HIV+ women (attended at least 6 postnatal counseling sessions vs. fewer than 6) EBF for 6 months among HIV+ women (discussed with health worker decision regarding EBF vs. did not)	OR=3.43 OR=5.95 OR=3.34 OR= 4.97	p<0.05 p<0.05 p<0.05 p<0.05			
Morrow and Guerrero (2001); Mexico	Counseling in homes by peers; Small media	1 community (population of approximately 30,000)	RCT – 130 women 3 months postpartum (44 IG1, 52 IG2, 34 control)		IG1 vs. IG2 vs. control group				
Omer et al. (2008); Pakistan	Traditional media; Counseling in homes by peers	10 communities from 3 districts (5 intervention, 5 control), 8 of which were rural	RCT – 1,070 women who had been pregnant and delivered during the three years prior to the intervention (529 intervention, 541 control)		67% vs. 52% vs. 12% 79.2% vs. 65.3% OR=1.60	p < 0.001, log rank test (95% CI: 1.17–2.18)			
Pachón et al. (2002); Vietnam	Group education in communities by lay volunteers	12 communes from one rural Vietnam (6 intervention, 6 control)	Longitudinal – 238 children 5–25 months old (119 intervention, 119 control)	% breastfeeding previous day at month 0 % breastfeeding previous day at month 12	72.3% vs. 65.5% 13.4% vs. 13.9%	NS NS			

37 Adjusted odds ratio

STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷
Piwoz et al. (2005); Zimbabwe	Counseling in facilities by providers; Counseling in communities by providers; Group education in facilities; Group education in communities; Mid-sized media	14 maternity clinics from greater Harare	RCT – 14,110 women from the Zimbabwe Vitamin A for Mothers and Babies Project clinical (ZVITAMBO) clinical trial; 11,362, 1311, and 1437 were enrolled during the pre, partial, and full intervention period; data were collected at multiple time points	% EBF for at least 3 months	Partial participation: AOR=1.75 Full participation: AOR=8.43 No participation vs. group only vs. individual counseling only vs. group + individual 5.5% vs. 13.4% vs. 15.9% vs. 23.7%	p<0.001 (95% CI: 1.31-2.35) p<0.0001 (95% CI: 6.13–11.59) p<0.0001
Piwoz et al. (2007); Zimbabwe	Group education in facilities by providers; Small media; Mid-sized media; Counseling in facilities by providers	14 maternity clinics from greater Harare	RCT – 437 HIV+ post-intervention women from the ZVITAMBO clinical trial (20 received 3 visits, 108 received 2 visits, 234 received 1 visit, 75 received no visits); used data collected at 6 weeks postpartum, 3 months postpartum, and every 3 months thereafter for up to 24 months	% EBF at 6 weeks % EBF at 3 months % EBF at 6 months	Dose response: 0 vs. 1 vs. 2 vs. 3 visits 8% vs. 15% vs. 14.8% vs. 30% 6.7% vs. 12.8% vs. 17.6% vs. 25% 4.0% vs. 6.0% vs. 4.6% vs. 5.0%	p=0.02 p=0.005 p=0.48
Quinn et al. (2005); Bolivia, Madagascar and Ghana	Individual counseling; Support group; Mass media; Small media; Mobilization	Bolivia - 3 ecoregions in rural and urban areas (1 million people) Ghana – 30 districts (3.5 million people) Madagascar - 10 focus districts of 2 highland provinces (expanded and contracted due to political crises)	Repeated cross-sectional – large repeated surveys in each country	% timely initiation of breastfeeding Bolivia Madagascar Ghana % EBF of infants < 6 months old Bolivia Madagascar Ghana	74% vs. 56% 78% vs. 34% 50% vs. 32% 65% vs. 54% 68% vs. 46% 79% vs. 68%	p<0.001 p<0.001 p<0.05 p<0.001 p<0.001 p<0.001

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING	BREASTFEEDING								
STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷			
Renfrew et al. (2012); various	Individual counseling; Group education / counseling	varied	Literature review – 52 RCTs or quasi-RCTs; 37 in high-income countries, 12 in upper-middle-income countries, 2 in low-middle-income countries, and 2 in low-income countries ³⁸	Risk of having stopped EBF at six months (all countries) Risk of having stopped EBF at 4-6 weeks (all countries)	risk ratios following all forms of extra support together RR = 0.86 RR = 0.74	(95% CI: 0.82 - 0.91) (95% CI: 0.61 - 0.89)			
Salud et al. (2009); Philippines	Counseling in homes by peers;	15 zones from one city (population 25,499)	Longitudinal – 312 women with infants less than 2 months old who were not exclusively breastfeeding at baseline	Duration of breastfeeding (all countries) Risk of stopping breastfeeding before six months (all countries)	positive effect RR = 0.91	-- (95% CI: 0.88 - 0.96)			
Santiago et al. (2003); Brazil	Counseling in facilities by providers; Counseling in facilities by lay volunteers; Group education in facilities by providers	1 clinic	RCT – 101 babies (35 in IG1, 33 in IG2, and 33 in control) ³⁹	% EBF of infants < 3 months old	endline vs. baseline 53.5% vs. 1% Note: baseline = infant < 2 months, endline = 3 weeks later	p<0.001			
Saowakontha et al. (2000); Thailand	Mobilization of campaign, or special "days"; Mid-sized media; Small media	90 villages (target population was approximately 33,000 women of reproductive age)	Repeated cross-sectional – 700	% EBF of infants 4 months old	IG1 vs. IG2 vs. control 82.9% vs. 66.7% vs. 30.3% OR=1.00 vs. OR=0.39 vs. OR=0.11	p<0.001 (95% CI: 0.12-1.36) vs. (95% CI: 0.03- 0.39)			
Sule et al. (2009); Nigeria	Small media; Group education in communities by providers; Counseling in homes by providers	2 rural communities (1 intervention with a population of 5,202, 1 control with a population of 8,121)	Longitudinal – 300 mothers of children aged 0-18 months (150 intervention, 150 control)	% EBF for 6 months among infants were ≥ 6 months	endline vs. baseline 97.2% vs. 65.3%	p=0.000			
				% EBF for 6 months among infants were ≥ 6 months	baseline:59.0% vs. 47.9% endline (6 months later): 66.7% vs. 52%	NS p=0.01			

38 Note that one study was conducted in two countries.

STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷
Sun et al. (2011); China	Small media; Mass media; Mid-sized media; Counseling in facilities by providers	2 counties in Shan'xi province (approximately 6,000 children 6-24 months of age)	Repeated cross-sectional – baseline (June 2008): 226 caregivers and their children 6-24 month-old; endline (January 2010): 221 caregivers and their children 6-24 month-old	% early initiation of breastfeeding % breastfeeding at 12 months % breastfeeding at 24 months	endline vs. baseline 16.8% vs. 8.6% 66.7% vs. 76% 37.0% vs. 42.3%	p=0.01 NS NS
Syed et al. (2006); Bangladesh	Counseling in facilities by providers; Social and community mobilization/ engagement/ empowerment; Counseling in homes by providers	11 <i>upazilas</i> (sub-districts) (10 intervention, 1 control)	Repeated cross-sectional – baseline: 3,325 women with children aged less than one year (2,989 intervention, 336 control); endline: 3,110 women with children aged less than one year (2,782 intervention, 323 control)	% breastfeeding initiation within one hour of birth % gave colostrum to infant	baseline: 38.6% vs. 32.7% endline: 76.2% vs. 46.7% Difference in differences: 23.6 baseline: 86.3% vs. 91.7% endline: 96.5% vs. 93.5% Difference in differences: 8.4	p=0.01 --
Thompson and Harutyunyan (2009); Armenia	Counseling in homes by peers; Support group in communities by peers; Small media; Mid-sized media	16 villages across Martuni region of Gegharkunik marz	Repeated cross-sectional – 600 with at least one child aged 24 months or younger (300 pre-intervention; 300 post-intervention)	% breastfeeding initiation within one hour of birth % EBF in the past 24 hours among infants < 6 months old	endline vs. baseline endline vs. baseline: 66.9% vs. 70.4% exposed vs. unexposed: 72.5% vs. 56.3% endline vs. baseline: 48.1% vs. 16.7% exposed vs. unexposed: 58.1% 37.5%	p<0.05 p<0.05 p<0.05 p<0.05

39 Women in IG1 received advice from a multi-professional breastfeeding team; women in IG2 received advice from a pediatrician trained in breastfeeding; and women in the control group received advice from a pediatrician with no breastfeeding training.

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING							
STUDY	APPROACHES USED	SCOPE / SCALE	EVALUATION DESIGN	OUTCOME(S) MEASURED	RESULTS ²⁶	P-VALUES / CIs ²⁷			
Tripthy et al. (2010); India	Support group in communities by peers	36 clusters (18 intervention, 18 control) with a population of approximately 228,186	RCT – live births identified over study period; analysis of breastfeeding indicators was limited to 16,926 infants alive at 1 month (8,807 intervention; 8,119 control)	% breastfeeding initiation within four hours of birth % EBF for 6 weeks	61% vs. 61% OR= 1.01 ⁴⁰ 80% vs. 69% OR=1.82	(95% CI: 0.38–3.11) (95% CI: 1.14–2.92)			
Tyleskar et al. (2011); Burkina Faso, Uganda, South Africa	Counseling in homes by peers	24 communities in Burkina Faso, 24 in Uganda, and 34 in South Africa (villages randomly assigned in a 1:1 ratio to control or intervention clusters)	RCT – 2,579 mother-infant pairs Burkina Faso: 392 intervention, 402 control Uganda: 396 intervention, 369 control South Africa: 535 intervention, 485 control	% EBF during previous 7 days at 3 months (12 weeks) Burkina Faso Uganda South Africa % EBF during previous 7 days at 6 months (24 weeks) Burkina Faso Uganda South Africa	77% vs. 23% 77% vs. 34% 8% vs. 4%	-- -- --			
					71% vs. 9% OR=3.27 51% vs. 11% OR=2.30 2% vs. <1% OR=1.98	(95% CI: 2.13–5.03) (95% CI: 2.00–2.65) (95% CI: 1.30–3.02)			

40 Odds ratios are adjusted for clustering, stratification, maternal education, assets, and any tribal affiliation.

F Works Cited and Literature Reviewed

- Abolyan, Lyubov V. 2006. "The Breastfeeding Support and Promotion in Baby-Friendly Maternity Hospitals and Not-as-Yet Baby-Friendly Hospitals in Russia." *Breastfeeding Medicine* 1 (2) (June): 71–78.
- Agrasada, Grace V, Jan Gustafsson, Elisabeth Kylberg, and Uwe Ewald. 2005. "Postnatal Peer Counselling on Exclusive Breastfeeding of Low-birthweight Infants: a Randomized, Controlled Trial." *Acta Paediatrica* (94) (8): 1109–1115.
- Aidam, Bridget A, Rafael Pérez-Escamilla, and Anna Lartey. 2005. "Lactation Counselling Increases Exclusive Breast-feeding Rates in Ghana." *The Journal of Nutrition* 135 (7) (July): 1691–1695.
- Aksu, Hilmiye, Mert Küçük, and Gülergün Düzgün. 2011. "The Effect of Postnatal Breastfeeding Education/support Offered at Home 3 Days after Delivery on Breastfeeding Duration and Knowledge: a Randomized Trial." *The Journal of Maternal-fetal & Neonatal Medicine: The Official Journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians* 24 (2) (February): 354–361.
- Akter, S.M., S.K. Roy, S.K. Thakur, M. Sultana, W. Khatun, R. Rahman, S.S. Saliheen, and N. Alam. 2012. "Effects of Third Trimester Counselling on Pregnancy Weight Gain, Birthweight, and Breastfeeding Among Urban Poor Women in Bangladesh." *Food & Nutrition Bulletin* 33 (3) (September): 194–201.
- Alam, M U L, M Rahman, and F Rahman. 2002. "Effectiveness of Baby Friendly Hospital Initiative on the Promotion of Exclusive Breastfeeding Among the Dhaka City Dwellers in Bangladesh." *Mymensingh Medical Journal: MMJ* 11 (2) (July): 94–99.
- Albernaz, Elaine, Cesar G Victora, Hinke Haisma, Antony Wright, and William A Coward. 2003. "Lactation Counselling Increases Breast-feeding Duration but Not Breast Milk Intake as Measured by Isotopic Methods." *The Journal of Nutrition* 133 (1) (January): 205–210.
- Albernaz, Elaine, Cora L Araújo, Elaine Tomasi, Gicele Mintem, Elsa Giugliani, Alicia Matijasevich, Mercedes de Onis, Fernando C Barros, and Cesar G Victora. 2008. "Influence of Breastfeeding Support on the Tendencies of Breastfeeding Rates in the City of Pelotas (RS), Brazil, from 1982 to 2004." *Jornal de Pediatria* 84 (6) (December): 560–564.
- Alderman, H. 2007. "Improving Nutrition through Community Growth Promotion: Longitudinal Study of the Nutrition and Early Child Development Program in Uganda." *World Development* 35 (8): 1376–1389.
- Azad, Kishwar, Sarah Barnett, Biplob Banerjee, Sanjit Shaha, Kasmin Khan, Arati Roselyn Rego, Shampa Barua, Dorothy Flatman, Christina Pagel, Audrey Prost, Matthew Ellis, Anthony Costello. 2010. "Effect of Scaling up Women's Groups on Birth Outcomes in Three Rural Districts in Bangladesh: A Cluster-Randomised Controlled Trial." *The Lancet* 375 (9721) (April): 1193–1202.
- Balaluka, Ghislain B, Pépin S Nabugobe, Prudence N Mitangala, Nickel B Cobohwa, Carole Schirvel, Michèle W Dramaix, and Philippe Donnen. 2012. "Community Volunteers Can Improve Breastfeeding Among Children Under Six Months of Age in the Democratic Republic of Congo Crisis." *International Breastfeeding Journal* 7.
- Bang, Abhay T, Rani A Bang, Hanimi M Reddy, Mahesh D Deshmukh, and Sanjay B Baitule. 2005. "Reduced Incidence of Neonatal Morbidities: Effect of Home-Based Neonatal Care in Rural Gadchiroli, India." *Journal of Perinatology* 25 (March): S51–S61.
- Baqui, Abdullah H, Shams El-Arifeen, Gary L Darmstadt, Saifuddin Ahmed, Emma K Williams, Habibur R Seraji, Ishtiaq Mannan, Syed M Rahman, Rasheduzzaman Shah, Samir K Saha, Uzma Syed, Peter J Winch, Amnesty Lefevre, Mathuram Santosham, Robert E Black, for the Projahnmo Study Group. 2008. "Effect of Community-based Newborn-care Intervention Package Implemented through Two Service-delivery Strategies in Sylhet District, Bangladesh: a Cluster-randomized Controlled Trial." *The Lancet* 371 (9628) (June 7): 1936–1944.

Baqi, Abdullah, Emma K Williams, Amanda M Rosecrans, Praween K Agrawal, Saifuddin Ahmed, Gary L Darmstadt, Vishwajeet Kumar, Usha Kiran, Dharmendra Panwar, Ramesh C Ahuja, Vinod K Srivastava, Robert E Black, and Manthuram Santoshama. 2008. "Impact of an Integrated Nutrition and Health Programme on Neonatal Mortality in Rural Northern India." *Bulletin of the World Health Organization* 86 (10) (October): 796–804, A.

Bashour, Hyam N, Mayada H Kharouf, Asma A Abdulsalam, Khalil El Asmar, Mohammed A Tabbaa, and Salah A Cheikha. 2008. "Effect of Postnatal Home Visits on Maternal/infant Outcomes in Syria: a Randomized Controlled Trial." *Public Health Nursing* 25 (2) (April): 115–125.

Berti, Peter R, Alison Mildon, Kendra Siekmans, Barbara Main, and Carolyn Macdonald. 2010. "An Adequacy Evaluation of a 10-year, Four-country Nutrition and Health Programme." *International Journal of Epidemiology* 39 (2) (April): 613–629.

Bhandari, N, R Bahl, B Nayyar, P Khokhar, J E Rohde, and M K Bhan. 2001. "Food Supplementation with Encouragement to Feed It to Infants from 4 to 12 Months of Age Has a Small Impact on Weight Gain." *The Journal of Nutrition* 131 (7) (July): 1946–1951.

Bhandari, Nita, Rajiv Bahl, Sarmila Mazumdar, Jose Martinez, Robert E Black, and Maharaj K Bhan. 2003. "Effect of Community-based Promotion of Exclusive Breastfeeding on Diarrhoeal Illness and Growth: a Cluster Randomised Controlled Trial." *The Lancet* 361 (9367) (April 26): 1418–1423.

Bhandari, Nita, Sarmila Mazumdar, Rajiv Bahl, José Martinez, Robert E Black, and Maharaj K Bhan. 2005. "Use of Multiple Opportunities for Improving Feeding Practices in Under-twos Within Child Health Programmes." *Health Policy and Planning* 20 (5) (September): 328–336.

Bhutta, Zulfiqar A, Jai K Das, Arjumand Rizvi, Michelle F Gaffey, Neff Walker, Susan Horton, Patrick Webb, Anna Lartey, and Robert E Black. 2013. "Evidence-based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?" *The Lancet* 382 (9890) (August): 452–477.

Bhutta, Zulfiqar A, Tahmeed Ahmed, Robert E Black, Simon Cousens, Kathryn Dewey, Elsa Giugliani, Batool A Haider, Betty Kirkwood, Saul S Morris, H P S Sachdev, Meera Shekar, for the Maternal and Child Undernutrition Study Group. 2008a. "What Works? Interventions for Maternal and Child Undernutrition and Survival." *The Lancet* 371 (9610) (February): 417–440.

Bhutta, Zulfiqar A, Zahid A Memon, Sajid Soofi, Muhammad Suhail Salat, Simon Cousens, and Jose Martinez. 2008b. "Implementing Community-Based Perinatal Care: Results from a Pilot Study in Rural Pakistan." *Bulletin of the World Health Organization* 86 (6) (June): 452–459.

Black, Robert E, Cesar G Victora, Susan P Walker, Zulfiqar A Bhutta, Parul Christian, Mercedes de Onis, Majid Ezzati, Sally Grantham-McGregor, Joanne Katz, Reynaldo Martorell, Ricardo Uauy, and the Maternal and Child Nutrition Study Group. 2013. "Maternal and Child Undernutrition and Overweight in Low-income and Middle-income Countries." *The Lancet* 382 (9890): 427–451.

Black, Robert E, Lindsay H Allen, Zulfiqar A Bhutta, Laura E Caulfield, Mercedes de Onis, Majid Ezzati, Colin Mathers, and Juan Rivera. 2008. "Maternal and Child Undernutrition: Global and Regional Exposures and Health Consequences." *The Lancet* 371 (9608) (January): 243–260.

Bortolini, Gisele Ane, and Márcia Regina Vitolo. 2012. "The Impact of Systematic Dietary Counselling During the First Year of Life on Prevalence Rates of Anemia and Iron Deficiency at 12–16 Months." *Jornal de Pediatria* 88 (1) (February): 33–39.

Braun, Maria Luiza G., Elsa R. J. Giugliani, Maria Emília Mattos Soares, Camila Giugliani, Andréa Proença de Oliveira, and Claudia Maria Machado Danelon. 2003. "Evaluation of the Impact of the Baby-Friendly Hospital Initiative on Rates of Breastfeeding." *American Journal of Public Health* 93 (8) (August): 1277–1279.

Conde-Agudelo A, A Rosas-Bermudez, F Castano, MH Norton. 2012. "Effects of birth spacing on maternal, perinatal, infant, and child health: a systematic review of causal mechanisms." *Studies in Family Planning* 43: 93–114.

- Conde-Agudelo A, A Rosas-Bermudez, AC Kafury-Goeta. 2006. "Birth spacing and risk of adverse perinatal outcomes: a meta-analysis." *The Journal of the American Medical Association* 295: 1809.
- Conde-Agudelo, A. 2006. Birth Spacing and Risk of Adverse Perinatal Outcomes: A Meta-analysis. *The Journal of the American Medical Association* 295 (15): 1809–1823.
- Conde-Agudelo, A., and José M Belizán. 2000. "Maternal Morbidity and Mortality Associated with Interpregnancy Interval: Cross-sectional Study." *BMJ* 321 (7271) (November 18): 1255–1259.
- Conde-Agudelo, Agustín, Anyeli Rosas-Bermudez, Fabio Castaño, and Maureen H Norton. 2012. "Effects of Birth Spacing on Maternal, Perinatal, Infant, and Child Health: a Systematic Review of Causal Mechanisms." *Studies in Family Planning* 43 (2) (June): 93–114.
- Conde-Agudelo, Agustín. 2006. "Birth Spacing and Risk of Adverse Perinatal Outcomes: A Meta-analysis." *The Journal of the American Medical Association* 295 (15) (April 19): 1809.
- Coutinho, Sonia Bechara, Pedro Israel Cabral de Lira, Marília de Carvalho Lima, and Ann Ashworth. 2005. "Comparison of the Effect of Two Systems for the Promotion of Exclusive Breastfeeding." *The Lancet* 366 (9491) (September 24): 1094–1100.
- Crookston, Benjamin T, Kirk A Dearden, Ketsana Chan, Theary Chan, and David D Stoker. 2007. "Buddhist Nuns on the Move: An Innovative Approach to Improving Breastfeeding Practices in Cambodia." *Maternal & Child Nutrition* 3 (1) (January): 10–24.
- De Oliveira, Luciana Dias, Elsa Regina Justo Giugliani, Lílian Córdova do Espírito Santo, and Leandro Meirelles Nunes. 2012. "Impact of a Strategy to Prevent the Introduction of Non-breast Milk and Complementary Foods During the First 6 Months of Life: a Randomized Clinical Trial with Adolescent Mothers and Grandmothers." *Early Human Development* 88 (6) (June): 357–361.
- De Oliveira, Luciana Dias, Elsa Regina Justo Giugliani, Lílian Córdova do Espírito Santo, Maristela Cavalheiro Tamborindeguy França, Enilda Maria Lara Weigert, Celina Valderez Feijó Kohler, and Ana Lúcia de Lourenzi Bonilha. 2006. "Effect of Intervention to Improve Breastfeeding Technique on the Frequency of Exclusive Breastfeeding and Lactation-related Problems." *Journal of Human Lactation: Official Journal of International Lactation Consultant Association* 22 (3) (August): 315–321.
- Debes, Amanda K, Anjalee Kohli, Neff Walker, Karen Edmond, and Luke C Mullany. 2013. "Time to Initiation of Breastfeeding and Neonatal Mortality and Morbidity: a Systematic Review." *BMC Public Health* 13 (Suppl 3): S19.
- Dewey, Kathryn. 2003. *Guiding Principles for Complementary Feeding of the Breastfed Child*. Washington, DC, USA: PAHO/WHO, Division of Health Promotion and Protection/Food and Nutrition Program.
- Dewey, K G, R J Cohen, K H Brown, and L L Rivera. 2001. "Effects of Exclusive Breastfeeding for Four Versus Six Months on Maternal Nutritional Status and Infant Motor Development: Results of Two Randomized Trials in Honduras." *The Journal of Nutrition* 131 (2) (February): 262–267.
- Duyan Camurdan, A, S Ozkan, D Yüksel, F Pasli, F Sahin, and U Beyazova. 2007. "The Effect of the Baby-friendly Hospital Initiative on Long-term Breastfeeding." *International Journal of Clinical Practice* 61 (8) (August): 1251–1255.
- Ghosh, Shanti, Asha Kilaru, and Saraswathy Ganapathy. 2002. "Nutrition Education and Infant Growth in Rural Indian Infants: Narrowing the Gender Gap?" *Journal of the Indian Medical Association* 100 (8) (August): 483–484, 486–488, 490.
- Gogia, Siddhartha, and Harshpal Singh Sachdev. 2010. "Home Visits by Community Health Workers to Prevent Neonatal Deaths in Developing Countries: a Systematic Review." *Bulletin of the World Health Organization* 88 (9) (September 1): 658–666B.
- Guldan, G S, H C Fan, X Ma, Z Z Ni, X Xiang, and M Z Tang. 2000. "Culturally Appropriate Nutrition Education Improves Infant Feeding and Growth in Rural Sichuan, China." *The Journal of Nutrition* 130 (5) (May): 1204–1211.

Gupta, Neeru, Charles Katende, and Ruth Bessinger. 2004. "An Evaluation of Post-campaign Knowledge and Practices of Exclusive Breastfeeding in Uganda." *Journal of Health, Population, and Nutrition* 22 (4) (December): 429–439.

Guyon, Agnès B, Victoria J Quinn, Michael Hainsworth, Priscilla Ravonimanantsoa, Voahirana Ravelojoana, Zo Rambelison, and Luann Martin. 2009. "Implementing an Integrated Nutrition Package at Large Scale in Madagascar: The Essential Nutrition Actions Framework." *Food and Nutrition Bulletin* 30 (3) (September): 233–244.

Haider, R, A Ashworth, I Kabir, and S R Huttly. 2000. "Effect of Community-based Peer Counsellors on Exclusive Breastfeeding Practices in Dhaka, Bangladesh: a Randomised Controlled Trial." *The Lancet* 356 (9242) (November 11): 1643–1647.

Hall, Jennifer. 2011. "Effective Community-based Interventions to Improve Exclusive Breastfeeding at Four to Six Months in Low- and Low-middle-income Countries: a Systematic Review of Randomised Controlled Trials." *Midwifery* 27 (4) (August): 497–502.

Haque, M F, M Hussain, A Sarkar, M M Hoque, Fakir Anjuman Ara, and S Sultana. 2002. "Breast-feeding Counselling and Its Effect on the Prevalence of Exclusive Breast-feeding." *Journal of Health, Population, and Nutrition* 20 (4) (December): 312–316.

Harkins, Thomas, Christopher Drasbek, Juan Arroyo, and Michael McQuestion. 2008. "The Health Benefits of Social Mobilization: Experiences with Community-based Integrated Management of Childhood Illness in Chao, Peru and San Luis, Honduras." *Promotion & Education* 15 (2) (June): 15–20.

Horta, B, R Bahl, J Martines, C Victora. "Evidence on the long-term effects of breastfeeding." Geneva: World Health Organization, 2007.

Imdad, Aamer, Mohammad Yawar Yakoob, and Zulfiqar A Bhutta. 2011. "Effect of Breastfeeding Promotion Interventions on Breastfeeding Rates, with Special Focus on Developing Countries." *BMC Public Health* 11 (Suppl 3): S24.

Jolly, Kate, Lucy Ingram, Khalid S Khan, Jonathan J Deeks, Nick Freemantle, and Christine MacArthur. 2012. "Systematic Review of Peer Support for Breastfeeding Continuation: Metaregression Analysis of the Effect of Setting, Intensity, and Timing." *BMJ (Clinical Research Ed.)* 344: d8287.

Khreshch, Reham, Aida Suhaimat, Fawzia Jalamdeh, and Lesley Barclay. 2011. "The Effect of a Postnatal Education and Support Program on Breastfeeding Among Primiparous Women: A Randomized Controlled Trial." *International Journal of Nursing Studies* 48 (9) (September): 1058–1065.

Kramer, M S, B Chalmers, E D Hodnett, Z Sevkovskaya, I Dzikovich, S Shapiro, J P Collet, I Vanilovich, I Mezen, T Ducruet, G Shishko, V Zubovich, D Mknuk, E Gluchanina, V Dombrovskiy, A Ustinovitch, T Kot, N Bogdanovich, L Ovchinkova, E Helsing; and PROBIT Study Group. 2001. "Promotion of Breastfeeding Intervention Trial (PROBIT): a Randomized Trial in the Republic of Belarus." *The Journal of the American Medical Association* 285 (4): 413–420.

Kramer, Michael S, and Ritsuko Kakuma. 2004. "The Optimal Duration of Exclusive Breastfeeding: a Systematic Review." *Advances in Experimental Medicine and Biology* 554: 63–77.

Kumar, Vishwajeet, Saroj Mohanty, Aarti Kumar, Rajendra P Misra, Mathuram Santosham, Shally Awasthi, Abdullah H Baqui, Pramod Singh, Vivek Singh, Ramesh C Ahuja, Jai Vir Singh, Gyanendra Kumar Malik, Saifuddin Ahmed, Robert E Black, Mahendra Bhandari, Gary L Darmstadt, for the Saksham Study Group. 2008. "Effect of Community-Based Behaviour Change Management on Neonatal Mortality in Shivgarh, Uttar Pradesh, India: A Cluster-Randomised Controlled Trial." *The Lancet* 372 (9644): 1151–1162.

Kupratakul, Jutamart, Surasak Taneepanichskul, Nipunporn Voramongkol, and Vorapong Phupong. 2010. "A Randomized Controlled Trial of Knowledge Sharing Practice with Empowerment Strategies in Pregnant Women to Improve Exclusive Breastfeeding during the First Six Months Postpartum." *Journal of the Medical Association of Thailand = Chotmaibet Thangphaet* 93 (9) (September): 1009–1018.

- Lassi, Zohra S, Batoool A Haider, and Zulfiqar A Bhutta. "Community-Based Intervention Packages for Reducing Maternal and Neonatal Morbidity and Mortality and Improving Neonatal Outcomes." In *Cochrane Database of Systematic Reviews 2010*, edited by The Cochrane Collaboration and Zulfiqar A Bhutta. Chichester, UK: John Wiley & Sons, Ltd.
- Leite, Alvaro J Madeiro, Rosana Fiorini Puccini, Alvaro N Atalah, Antonio L Alves Da Cunha, and Márcia Tavares Machado. 2005. "Effectiveness of Home-based Peer Counselling to Promote Breastfeeding in the Northeast of Brazil: a Randomized Clinical Trial." *Acta Paediatrica* 94 (6): 741–746.
- Li, Yan, Masanaka Hotta, Anping Shi, Zhi Li, Jianzhong Yin, Guangping Guo, Kimiko Kawata, and Hiroshi Ushijima. 2007. "Malnutrition Improvement for Infants Under 18 Months Old of Dai Minority in Luxi, China." *Pediatrics International* 49 (2) (April): 273–279.
- Mackintosh, U Agnes Trinh, David R Marsh, and Dirk G Schroeder. 2002. "Sustained Positive Deviant Child Care Practices and Their Effects on Child Growth in Viet Nam." *Food and Nutrition Bulletin* 23 (4 Suppl) (December): 18–27.
- Manandhar, Dharma S, David Osrin, Bhim Prasad Shrestha, Natasha Mesko, Joanna Morrison, Kirti Man Tumbahangphe, Suresh Tamang, Sushma Thapa, Dej Shrestha, Bidur Thapa, Jyoti Raj Shrestha, Angie Wade, Josephine Borghi, Hilary Standing, Madan Manandhar, Anthony M de L Costello, and members of the MIRA Makwanpur trial team. 2004. "Effect of a Participatory Intervention with Women's Groups on Birth Outcomes in Nepal: Cluster-randomized Controlled Trial." *The Lancet* 364 (9438): 970–979.
- Matovu, A, B Kirunda, G Rugamba-Kabagambe, N M Tumwesigye, and F Nuwaha. 2008. "Factors Influencing Adherence to Exclusive Breast Feeding among HIV Positive Mothers in Kabarole District, Uganda." *East African Medical Journal* 85 (4): 162–70.
- Morrow, A L, and M L Guerrero. 2001. "From Bioactive Substances to Research on Breast-feeding Promotion." *Advances in Experimental Medicine and Biology* 501: 447–455.
- Nunes, Leandro Meirelles, Elsa Regina Justo Giughiani, Lilian Cordova do Espírito Santo, and Luciana Dias de Oliveira. 2011. "Reduction of Unnecessary Intake of Water and Herbal Teas on Breast-fed Infants: a Randomized Clinical Trial with Adolescent Mothers and Grandmothers." *The Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine* 49 (3) (September): 258–264.
- Omer, Khalid, Sharmila Mhatre, Noor Ansari, Jorge Laucirica, and Neil Andersson. 2008. "Evidence-based Training of Front-line Health Workers for Door-to-door Health Promotion: a Pilot Randomized Controlled Cluster Trial with Lady Health Workers in Sindh Province, Pakistan." *Patient Education and Counselling* 72 (2) (August): 178–185.
- Pachón, Helena, Dirk G Schroeder, David R Marsh, Kirk A Dearden, Tran Thu Ha, and Tran Thi Lang. 2002. "Effect of an Integrated Child Nutrition Intervention on the Complementary Food Intake of Young Children in Rural North Viet Nam." *Food and Nutrition Bulletin* 23 (4 Suppl) (December): 62–69.
- Piwoz, Ellen G, Peter J Iliff, Naume Tavengwa, Lorrie Gavin, Edmore Marinda, Kevin Lunney, Clare Zunguza, Kusum J Nathoo, and Jean H Humphrey. 2005. "An Education and Counseling Program for Preventing Breast-Feeding-Associated HIV Transmission in Zimbabwe: Design and Impact on Maternal Knowledge and Behavior." *The Journal of Nutrition* 135 (4): 950–55.
- Piwoz, Ellen G., Jean H. Humphrey, Naume V. Tavengwa, Peter J. Iliff, Edmore T. Marinda, Clare D. Zunguza, Kusum J. Nathoo, Kuda Mutasa, Lawrence H. Moulton, and Brian J. Ward. 2007. "The Impact of Safer Breastfeeding Practices on Postnatal HIV-1 Transmission in Zimbabwe." *American Journal of Public Health* 97 (7): 1249–54.
- Quinn, Victoria J, Agnès B Guyon, Joan W Schubert, Maryanne Stone-Jiménez, Michael D Hainsworth, and Luann H Martin. 2005. "Improving Breastfeeding Practices on a Broad Scale at the Community Level: Success Stories from Africa and Latin America." *Journal of Human Lactation: Official Journal of International Lactation Consultant Association* 21 (3) (August): 345–354.

Renfrew, Mary J, Felicia M McCormick, Angela Wade, Beverley Quinn, and Therese Dowswell. "Support for Healthy Breastfeeding Mothers with Healthy Term Babies." In *Cochrane Database of Systematic Reviews 2012*, edited by The Cochrane Collaboration and Felicia M McCormick. Chichester, UK: John Wiley & Sons, Ltd.

Rutstein, Shea O., and Macro International Inc. "Further Evidence of the Effects of Preceding Birth Intervals on Neonatal, Infant, and Under-Five-Years Mortality and Nutritional Status in Developing Countries: Evidence from the Demographic and Health Surveys." 41. *DHS Working Papers*. Calverton, Maryland, USA: USAID, 2008.

Salud, M. A. L. B., J. I. Gallardo, J. A. Dineros, A. F. Gammad, J. Basilio, V. Borja, A. Iellamo, L. Worobec, H. Sobel, and J.-M. Olive. 2009. "People's Initiative to Counteract Misinformation and Marketing Practices: The Pembo, Philippines, Breastfeeding Experience, 2006." *Journal of Human Lactation* 25 (3): 341–49. doi:10.1177/0890334409334605.

Santiago, Luciano B, Heloisa Bettiol, Marco A Barbieri, Manoel R P Guttierrez, and Luiz A Del Ciampo. 2003. "Promotion of Breastfeeding: The Importance of Pediatricians with Specific Training." *Jornal de Pediatria* 79 (6) (December): 504–512.

Saowakontha, S, P Pongpaew, N Vudhivai, R Tungtrongchitr, P Sanchaisuriya, U Mahaweerawat, W Laohasiriwong, C Intarakhao, P Leelapanmetha, K Chaisiri, V Vatanasapt, A Merkle, and FP Schlep. 2000. "Promotion of the Health of Rural Women Towards Safe Motherhood--an Intervention Project in Northeast Thailand." *The Southeast Asian Journal of Tropical Medicine and Public Health* 31 Suppl 2: 5–21.

Singh K, P Srivastava. 1992. "The effect of colostrum on infant mortality: Urban rural differentials." *Health and Population* 15 (3&4):94–100

Sule, S, A Onayade, T C Abiona, A O Fatusi, E O Ojofeitimi, O A Esimai, and K T Ijadunola. 2009. "Impact of Nutritional Education on Nutritional Status of Under-five Children in Two Rural Communities of South-west Nigeria." *The Nigerian Postgraduate Medical Journal* 16 (2) (June): 115–125.

Sun, Jing, Yaohua Dai, Shuaiming Zhang, Jian Huang, Zhenyu Yang, Junsheng Huo, and Chunming Chen. 2011. "Implementation of a Programme to Market a Complementary Food Supplement (Ying Yang Bao) and Impacts on Anaemia and Feeding Practices in Shanxi, China." *Maternal & Child Nutrition* 7 Suppl 3 (October): 96–111.

Syed, Uzma, S K Asiruddin, M S I Helal, Imteaz I Mannan, and John Murray. 2006. "Immediate and Early Postnatal Care for Mothers and Newborns in Rural Bangladesh." *Journal of Health, Population, and Nutrition* 24 (4) (December): 508–518.

Thompson, Michael E, and Tsovinar L Harutyunyan. 2009. "Impact of a Community-based Integrated Management of Childhood Illnesses (IMCI) Programme in Gegharkunik, Armenia." *Health Policy and Planning* 24 (2) (March): 101–107.

Tripathy, Prasanta, Nirmala Nair, Sarah Barnett, Rajendra Mahapatra, Josephine Borghi, Shibanand Rath, Suchitra Rath, et al. 2010. "Effect of a Participatory Intervention with Women's Groups on Birth Outcomes and Maternal Depression in Jharkhand and Orissa, India: A Cluster-Randomised Controlled Trial." *The Lancet* 375 (9721) (April): 1182–1192.

Tylleskär, Thorkild, Debra Jackson, Nicolas Meda, Ingunn Marie S Engebretsen, Mickey Chopra, Abdoulaye Hama Diallo, Tanya Doherty, Eva-Charlotte Ekström, Lars T Fadnes, Ameena Goga, Chipepo Kankasa, Jørn I Klungsoyr, Carl Lombard, Victoria Nankabirwa, Jolly K Nankunda, Philippe Van de Perre, David Sanders, Rebecca Shanmugam, Halvor Sommerfelt, Henry Wamani, James K Tumwine, for the PROMISE-EBF Study Group. 2011. "Exclusive Breastfeeding Promotion by Peer Counsellors in sub-Saharan Africa (PROMISE-EBF): a Cluster-randomized Trial." *The Lancet* 378 (9789) (July 30): 420–427.

Uruakpa, F O, M A H Ismond, E N T Akobundu. 2002. "Colostrum and its benefits: a review" *Nutrition Research*, Volume 22, Issue 6, June 2002, Pages: 755-767.

USAID Infant and Young Child Nutrition (IYCN) Project. *Community Interventions to Promote Optimal Breastfeeding: Evidence on Early Initiation, Any Breastfeeding, Exclusive Breastfeeding, and Continued Breastfeeding*. Washington, DC: USAID, 2012.

World Health Organization. *Indicators for assessing infant and young child feeding practices: conclusions of a consensus meeting held 6–8 November 2007 in Washington D.C., USA*. Geneva: World Health Organization Press, 2008.

3.3. Evidence of Effective SBCC Approaches to Improve Complementary Feeding Practices

A. Background

At the age of six months, breast milk alone is no longer sufficient to meet the nutritional requirements of a growing child (World Health Organization (WHO)/UNICEF, 1998). Timely and appropriate complementary feeding is critical to a child's growth and development. According to the 2008 maternal and child undernutrition series in *The Lancet*, the adoption of optimal complementary feeding practices and other supportive strategies at scale could result in a 17% relative reduction in the prevalence of stunting at 24 months, and avert 5.5 million disability-adjusted life years (DALY) (Bhutta, 2008a). In a similar series in 2013, *The Lancet* reiterated the association between appropriate complementary feeding and nutritional outcomes, citing a study by Ruel and Menon (2002) that found a positive, statistically significant association between feeding practices and height-for-age in five Latin American countries. Finally, in an analysis of datasets from 14 low income countries, Marriott et al. (2012) reported that “consumption of a minimum acceptable diet

with dietary diversity reduced the risk of both stunting and underweight whereas minimum meal frequency was associated with lower risk of underweight only.”

Despite the promise of timely appropriate complementary feeding, global coverage of optimal complementary feeding practices remains low. According to an analysis of 2002-2008 data on complementary feeding practices in 46 countries, just one-third of children aged 6-23 months received the recommended dietary diversity,⁴¹ approximately half received the recommended number of feeds, and only 20% received the minimum acceptable diet (Lutter, 2012).⁴²

This chapter focuses on the effectiveness of Social and Behavior Change Communication (SBCC) approaches to improving complementary feeding practices of children 6-24 months of age. **The chapter focuses on the WHO guiding principles for complementary feeding for the breastfed**

- 41 This refers to the number of food groups consumed over a given period indicating variety as stated in the guidance. Household level dietary diversity is an indicator for household food security (though this indicator is more accurate when aggregated to reflect the food security of the survey area), while individual dietary diversity is an indicator of dietary quality for an individual (usually measured for women or young children).
- 42 Minimal acceptable diet is a composite of dietary diversity and meal frequency.

Table 3.3.1: WHO Guiding Principles for complementary feeding of the breastfed child

What	When	How
Timely introduction of appropriate complementary foods	Start at six months of age	Start with small amounts of food, increase quantity as child gets older. At six months, infants can eat pureed, mashed or semi-solid foods; at eight months, most can eat “finger foods;” by 12 months, most can eat “family foods.”
Dietary diversity	After six months, daily	Feed a variety of foods: meat, poultry, fish or eggs; vitamin A-rich fruits and vegetables; diets with adequate fat content. ⁴³
Supplementation or fortification	After six months of age, as needed	Use fortified complementary foods or vitamin-mineral supplements for the infant, preferably mixed with or fed with food.
Increased meal frequency and/or energy density	Gradual age-dependent increase	Increase the number of times that a child is fed as he or she gets older: for the “average” child, 2-3 times/day at 6-8 months; 3-4 times/day at 9-23 months. Additional nutritious snacks may be offered 1-2 times per day.
Active and responsive feeding	Always	Feed infants directly; assist older children in feeding themselves; minimize distractions during meals; talk to children during feeding with eye-to-eye contact.
Safe food preparation and storage practices	Always	Store foods safely and serve immediately after preparation; use clean utensils, cups and bowls; avoid using baby bottles.
Feeding during and after illness	Always	Increase fluid intake during illness; including more frequent breastfeeding; and encourage the child to eat soft, varied, appetizing, favorite foods. After illness, give food more often than usual and encourage the child to eat more.

Adapted from PAHO/WHO (2003).

43 The dietary diversity of complementary foods helps to ensure that the nutrient needs of infants and young children are met. For example, evidence shows that the adequate consumption of fruits and dark green, leafy vegetables alone can meet the vitamin A requirements for infants and young children (ACC/SCN, 2001). However, plant-based complementary foods alone are not sufficient to meet the breadth of nutrient requirements of infants and young children, unless fortified foods or supplements are also consumed. Animal products, including meat, poultry, fish and eggs, should be consumed on a daily basis (Dewey, 2003). Meat and fish provide more absorbable iron and increase the absorption of non-haem iron (ACC/SCN, 2001).

child (Pan-American Health Organization (PAHO)/ WHO, 2003). See Table 3.3.1.

B. Search Results

Thirty peer-reviewed studies met the literature review inclusion criteria.⁴⁴ A complete list of the studies reviewed, including a summary of the SBCC approach(es) utilized, the study design, practices measured, and levels of significance is provided in Table 3.3.5 at the end of this chapter.

Twenty-five studies reported a statistically significant change in at least one of the recommended complementary

⁴⁴ See the introductory chapter of this literature review for a full description of search procedures and inclusion/exclusion criteria.

feeding practices. Each of those articles is described in greater detail below. Studies reporting a statistically significant change in more than one of the prioritized practices and/or utilizing more than one SBCC approach are cited

and discussed multiple times. Where this occurs, we have provided a detailed description of the study in the first reference, and only discuss results in subsequent references.

The findings are organized by practices targeted, SBCC approach(es) utilized, and study design. This organization enables the reader to derive an independent judgment regarding findings from each study. In addition, implementation processes followed are discussed.

Table 3.3.2: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by recommended practice and study design

Practice	Sub-practice	Literature reviews with meta-analysis	RCTs	Longitudinal studies	Repeated cross-sectional studies	Cross-sectional studies	Total
Timely introduction of complementary foods		0	1 (1)	1 (0)	3 (1)	0	5 (2)
Dietary diversity	Feeding children animal source foods	0	7 (7)	4 (3)	2 (2)	1 (1)	14 (13)
	Feeding children fruits and vegetables	0	3 (3)	3 (2)	3 (3)	1 (1)	10 (9)
	Feeding children a minimum number of food groups	0	2 (0)	0	2 (1)	2 (1)	6 (2)
Micronutrient supplementation or fortification		0	4 (1)	0	1 (1)	0	5 (2)
Increased meal frequency and/or density	Increasing frequency of feeding children	0	3 (2)	2 (2)	3 (2)	2 (1)	10 (7)
	Adding fats or oils to children's foods	0	5 (4)	0	0	0	5 (4)
	Enhancing the consistency of children's foods	0	2 (2)	1 (0)	0	0	3 (2)
	Increasing the quantity fed to children at each meal	0	3 (2)	1 (1)	0	0	4 (3)
Responsive/active feeding		0	2 (2)	1 (0)	0	0 (0)	3 (2)
Feeding during and after illness		0	1 (1)	0	2 (0)	0	3 (1)

* Note that columns do not sum to the "total" since some articles reported on multiple practices.

Of the 30 studies reviewed for this chapter, eleven were randomized controlled trials (RCT), nine were longitudinal studies (five with control groups and four with no control group), and ten were repeated cross-sectional studies (five with control groups and five with no control group). See Table 3.3.2.

C. Overview of the Evidence, by Practice

With the release of the PAHO/WHO's *Guiding Principles for Complementary Feeding of Breastfed Children* (2003), the need to develop standardized indicators to capture the breadth of recommended complementary feeding practices was established. This recognition resulted in the development of five standardized indicators of complementary feeding: introduction of solid, semi-solid or soft foods, minimum dietary diversity, minimum meal frequency, minimum acceptable diet (MAD), and consumption of iron-rich or iron-fortified foods (WHO, 2008).

The studies reviewed in this chapter, however, revealed very little consistency in how complementary feeding practices were measured, and few employed the standardized indicators described above. The review is therefore focused on the WHO Guiding Principles rather than the “recommended” indicators. See Table 3.3.1. The guiding principle related to the safe preparation and storage of food was considered beyond the scope of this review.

Of the 30 studies reviewed, five measured the introduction of complementary foods (mean age at or the frequency of introduction of foods at specified ages); 20 explored the nutrient content of foods; five studied the use or consumption of fortified products or supplements; 16 measured meal frequency, energy density, or energy intake; three looked at how children were fed (responsively or actively), and three measured feeding practices during and after illness. See Table 3.3.2.

Timely introduction of appropriate complementary foods

Of the five studies looking at the introduction of complementary foods or particular food types, two reported at least one statistically significant result. Each of the studies measured the practice differently, and neither reported on the recommended standard indicator, namely the “propor-

tion of infants 6-8 months of age who receive solid, semi-solid or soft foods” (WHO, 2008).

De Oliveira et al. (2012) conducted an RCT measuring the mean age of introduction of complementary foods in a hospital in Brazil. The intervention included client-provider counseling in the facility and follow-up home visits. At the conclusion of the study period, the mean age at introduction of complementary foods was 153 days in the intervention group, compared with 95 days in the control group. Similarly, 22.8% of children were introduced to complementary foods at four months of age in the intervention group, compared with 41% in the control group. However, the authors found that “at 6 months, the prevalence of infants receiving complementary foods was similar for the two groups: 87.1% for the intervention group and 88.4% for the control group.”

Li et al. (2007) conducted a repeated cross-sectional study looking at the mean age of introduction of seven weaning foods in five townships in Yunan Province, China. The intervention included one-on-one counseling, food preparation demonstrations, peer education, growth monitoring from birth through 17 months, and dissemination of a maternal and child nutrition video and pamphlet. The project also supported the strengthening of integrated management of childhood illness (IMCI)-related services, and provided thiamine to women just before or after delivery. Following the intervention, the age of introduction of all food groups except cow's milk had increased.

Dietary diversity

Of the 20 studies that looked at the nutrient content of complementary foods, 15 reported statistically significant results. Of those reporting statistically significant findings, 13 reported on the feeding of animal source foods, nine reported on the feeding of fruits and vegetables, and three reported on dietary diversity. Just one article (Sun et al., 2011) reported on the recommended standard indicator, “proportion of children 6-23 months of age who receive foods from 4 or more food groups.” (WHO, 2008)

Feeding children animal source foods

Of the 14 studies that measured the feeding or consumption of animal source foods, all but one reported statisti-

cally significant results. The outcomes measured, however, varied considerably among studies. There was little consistency among studies with respect to the meat product promoted (meat, cow's milk, buffalo milk, eggs, positive deviance (PD) foods including animal source foods, and/or "iron-rich foods"), the measurement of milk intake (quantity consumed and frequency of consumption), and measurement of egg consumption (mean number of times consumed and percentage of children fed three or more eggs). Furthermore, reference periods and age ranges varied considerably among studies.

Randomized controlled trials

Seven of the studies reporting statistically significant results were RCTs. Bhandari et al. (2004) looked at the consumption of milk, fruit, and vegetables in India. The intervention involved "monthly home visits for new births until aged 12 months and weighing once every 3 months for children under 2 years of age conducted by *Angamwadi* workers, immunization clinics run by the auxiliary nurse midwives and sick child contacts with health care providers." Additionally, auxiliary nurse midwives discussed key messages during monthly meetings with community representatives who, in turn, shared them during monthly neighborhood meetings. Following the intervention, the percentage of children nine months of age consuming any type of milk was 91.8% in the intervention group, compared with 82.6% in the control group. This finding was statistically significant. While the difference at 18 months of age was not statistically significant, differences in mean energy intake from milk between the intervention and control group were statistically significant at both 9 month and 18 months – 837kcal vs. 607kcal at 9 months of age and 2021kcal vs. 1289kcal at 18 months of age.

Bortolini and Vitolo (2012) looked at mean intake of cow's milk and meat among children 12 to 16 months of age in Rio Grande do Sul, Brazil. Women in the intervention group received monthly home visits during their child's first six months of life, and follow up visits when the children reached 8, 10 and 12 months of age. Following the intervention, the proportion of women postponing the introduction of cow's milk was higher in the intervention group (50.9%) than the control group (36.6%). Furthermore, mean intake of cow's milk and meat in children 6-12 months of age was higher in the intervention group (588.1

ml and 54.3 g, respectively) than in the control group (501.6 ml and 47.3 g, respectively).

Guldan et al. (2000) looked at the frequency of feeding children eggs, meat, and fish or meat broth in rural Sichuan, China. The intervention included counseling by community health workers (CHW) during monthly growth monitoring sessions, and visits to the homes of pregnant women and women with children under the age of one. During the home visits "nutrition educators disseminated a feeding guidebook and growth chart to each family, [provided] age-appropriate breastfeeding and complementary feeding suggestions and advice, answered questions and weighed each infant, marking the infant's weight on the growth chart." Following the intervention, the percentage of children ages 4-6 months and 7-9 months that were fed eggs was 37% and 66% respectively in the intervention group, compared with 16% and 41% respectively in the control group. The percentage of children ages 7-9 months and 10-12 months that were fed fish or meat broth on a daily basis was 9% and 13% respectively in the intervention group, compared with 1% and 3% respectively in the control group, while the proportion of children ages 7-9 months and 10-12 months that were fed meat was 19% and 23% respectively in the intervention group, compared with 8% and 9% in the control group.

Penny et al. (2005) looked at the consumption of egg, chicken liver, or fish in Trujillo, Peru. The intervention aimed to "enhance the quality of nutrition counseling through training and provision of simple, standardized, age-appropriate messages to be used at all points of contact with young children [or their caregivers] in the facility." Data were collected on a cohort of children from intervention and control facilities from birth to age 18 months. Following the intervention, a higher proportion of women in the intervention group reported feeding egg, chicken, liver, or fish across the six measurement points (at 6, 8, 9, 12, 15, and 18 months of age) than women in the control group; however, results were only significant at six and eight months of age. The practice of feeding animal foods improved in the immediate period following counseling; but diminished over time.

Roy et al. (2007) looked at the feeding of eggs, the addition of oil to children's food, the feeding of energy and protein

rich local complementary foods rich in micronutrients,⁴⁵ and the feeding of children from a separate pot in Bangladesh. The intervention included the delivery of nutrition education sessions to small groups of women through trained community health workers. The groups met weekly for the first three months and biweekly for the second three months. Formative research guided development of messages, and the sessions included food preparation demonstrations. In addition to the mothers groups, men and older family members were targeted through monthly community/social mobilization efforts. Following the intervention, the percentage of children receiving three or more eggs increased from 11.3% to 29.8% in the intervention group and from 10% to 11.9% in the control group. Furthermore, the percentage of caregivers reporting feeding an animal-based complementary food increased from 30.4% to 88.5% in the intervention group and declined from 31% to 24.5% in the control group.

Vazir et al. (2013) looked at consumption of iron-rich foods among children 9-15 months of age in 60 villages in India. The intervention, implemented over a period of 12 months, included regular home visits by trained village women (twice a month or four times a month depending on the age of the infant). The complementary feeding group (CFG), received eleven nutrition education messages on sustained breastfeeding and complementary feeding, while the responsive complementary feeding and play group (RCF&PG), received these same messages as well as eight messages on responsive feeding and eight messages on developmental stimulation using five simple toys. The control group received routine services provided under India's Integrated Child Development Services program.

At nine months of age, 30.7% of children in the CFG and 25.6% of children in the RCF&PG consumed goat or chicken liver during the previous week compared with 2.3%

45 This complementary food is called kichuri in Bangladesh. According to the authors, "Khichuri is a home-based transitional complementary food made with locally available inexpensive items in which rice and lentils complement each other to provide limiting amino acids (lysine and methionine, respectively), and the addition of an egg further increased the protein quality. Moreover, egg yolk and vegetables increased the vitamin A, carotene, and other micronutrient contents of khichuri. Although animal-origin foods are a rich source of iron, they were not affordable to a large proportion of the families in our study population. During the intervention, there was a sharp increase in the use of khichuri as the main complementary food, but subsequently the practice decreased to some extent, largely due to the increase in age of the study children, when they were already habituated to the family foods." (Roy et al., 2007)

of children in the control group. In addition, 22.3% of children in the CFG and 11.3% of children in the RCF&PG consumed goat meat during the previous week compared with 4.5% of children in the control group. At 15 months of age, 43.5% of children in the CFG group and 44% in the RCF&PG group consumed liver compared with 13.1% of children in the control group, while 37.5% of children in the CFG group and 45.2% of children in the RCF&PG group had consumed poultry in the previous week compared with 18.9% in the control group. The findings were statistically significant. The authors found no statistical difference with respect to intake of eggs.

Finally, Zaman et al. (2008) looked at the feeding of eggs, meat, and liver, the addition of ghee or butter to children's foods, and feeding of a fortified complementary food in Lahore, Pakistan. The intervention was introduced as part of an IMCI program, and included counseling of sick women and children seeking care at a local health center. The counseling was provided by trained health workers equipped with counseling cards that had been adapted to the local culture and language. Eight to 14 days after recruitment, the proportion of women offering their children eggs was 16 percentage points higher among children in the intervention compared with those in the control group. Six months after recruitment, the difference was 21 percentage points. The proportion of women offering children chicken, beef, or mutton 8-14 days after recruitment was approximately 18 percentage points higher in the intervention group than the control group. These findings were statistically significant. The authors found no statistically significant differences in the feeding of chicken, beef or mutton six months after recruitment, or in the feeding of liver during any period of follow up.

Longitudinal studies

Pachón et al. (2002) conducted a longitudinal randomized study looking at the consumption of locally available PD foods in rural Vietnam.⁴⁶ The intervention was based on

46 PD foods included: crab, fish, fruit, peanut, sesame seed, vegetables, eggs, shrimp, tofu, beans, cassava, meat, potatoes, rice, snail, clams, corn, sweet potatoes, bananas, green vegetables, oranges, papaya, starches, and tangerines.

the PD/Hearth approach.⁴⁷ The authors identified several locally available highly nutritious foods, which were then promoted in intensive nutrition rehabilitation sessions for mothers of malnourished children. Women attended the sessions for two weeks each month for up to nine months. During the intensive intervention period (months 2-6) children under the age of three in the intervention group were fed PD foods an average of 4.1 times per day compared with an average of 3.6 times per day among children in the control group.

Palwala et al. (2009) conducted a longitudinal study without controls looking at mean intake of cow's milk, eggs, meat, legumes, fruits, and vegetables in Mumbai, India. Trained fieldworkers worked with groups of 8-10 mothers using what the authors describe as "innovative modules and demonstrations." The workers then followed up weekly using "a simple checklist ... to assess impact, identify practices not adopted, and provide further inputs." By the end of the study period, mean intake of milk among children 6-36 months of age had increased from 134 mL to 202 mL, while mean intake of egg had increased from 20 g to 29 g, and mean intake of meat (mutton, chicken, or fish) had increased from 4 g to 9 g.

Repeated cross-sectional studies

Aboud et al. (2008) looked at mean egg, fish, and cow's milk consumption among children in Sripur, Bangladesh. Both intervention and control groups received 12 education sessions on child development, including five on complementary feeding. The intervention group received an additional six sessions on responsive feeding. Although both the intervention and control groups participated in sessions on complementary feeding, at the five month follow up children in the intervention group consumed a mean of 0.28 eggs during the previous 24 hours, while children in the control group consumed just 0.09 eggs in the previous 24 hours. The difference was statistically significant. Differ-

47 According to the CORE Group's Resource Guide for Sustainably Rehabilitating Malnourished Children, "a Positive Deviance/Hearth Nutrition Program is a home- and neighborhood-based nutrition program for children who are at risk for protein-energy malnutrition in developing countries. The program uses the "positive deviance" approach to identify those behaviors practiced by the mothers or caretakers of well-nourished children from poor families and to transfer such positive practices to others in the community with malnourished children. The "Hearth" or home is the location for the nutrition education and rehabilitation sessions" (McNulty, 2005).

ences in the consumption of fish and cow's milk were not significantly different.

Mackintosh et al. (2002) conducted a repeated cross-sectional study with controls looking at consumption of specific foods,⁴⁸ hygiene, and health practices in Tan Hoah, Vietnam. The intervention included growth monitoring and promotion (GMP) for all children under three years of age, and a PD/Hearth nutrition rehabilitation program for malnourished children that involved education and demonstration with their caretakers. At the conclusion of the study period, 93.3% of children in the intervention group had consumed shrimp in the previous week compared with 76% of children in the control group, and 97.8% of children in the intervention group had consumed eggs in the past week, compared with 72% in the control group. These findings were statistically significant. Similarly, the mean frequency of shrimp and egg consumption in the intervention group (3.2 and 4.0, respectively) was significantly greater than consumption in the control group (1.0 and 1.5, respectively). Differences in the consumption of meat and fresh fish were not statistically significant.

Sun et al. (2011) measured the percentage of children fed iron-rich foods (defined here as meat, fish, poultry, liver and iron supplements) before and after an eight month behavior change communication (BCC) intervention in Shan'xi, China. The program, which was primarily aimed at increasing children's consumption of a multiple micronutrient powder, included formative research and development of messaging and materials. The BCC materials included infant and young child feeding (IYCF) handbooks for parents, booklets for health workers, and television spots. Caregivers "were educated about [IYCF] (including the use of YYB) during their children's regular village doctor visits. Brochures were also distributed by pediatricians to families with infants and young children during sick and well child visits at maternal and child health care hospitals." Data from the endline survey revealed that the percentage of children fed iron-rich foods had increased from 19.2% to 56.8%; however, the lack of baseline values or a control group makes it difficult to attribute these differences to the intervention.

48 Foods included locally identified PD foods (peanuts, sesame, dried fish, snails, shrimp, crab, and greens) and other foods (sweet potatoes, soy beans, eggs, fresh fish, meat, fruit, and oil/fat).

Cross-sectional studies

Ghosh et al. (2002) looked at the consumption of animal milk, the number of food groups consumed, and feeding frequency among children in a cross-sectional study conducted in 13 villages in India. The intervention included monthly home visits by trained workers for a period of four to six months. Comparisons were made between infants included in the baseline study who reached 12 months of age before the intervention began (control group) and those who were less than six months old at the start of the intervention and continued to participate until the child reached 12 months of age (intervention group). By the end of the study period, 53.2% of children between six and 10 months of age in the intervention group had been fed animal milk in the previous 24 hours compared with 31.9% of children in the control group.

Feeding children fruits and vegetables

Of the ten studies that measured fruit and vegetable intake, nine reported statistically significant results. The indicators measured varied considerably between studies, making comparisons across studies difficult.

Randomized controlled trials

Bhandari et al. (2004) conducted an RCT looking at vegetable and fruit consumption among children in India. At the end of the study period, the percentage of children nine months of age consuming any type of vegetables was 6.7% in the intervention group, compared with 2% in the control group. This difference was statistically significant. The authors found no statistically significant differences between the intervention group and control group with respect to fruit consumption, or children's consumption of vegetables at 18 months of age.

Guldan et al. (2000) looked at the consumption of fruits and vegetables in rural Sichuan, China. Following a peer counseling intervention, the percentage of children in the intervention group consuming fruit exceeded the percentage among controls in all age groups (26% vs. 10% at 4-6 months of age, 68% vs. 42% at 7-9 months of age, and 79% vs. 52% at 10-12 months of age). These findings were statistically significant. Vegetable consumption among children in the intervention group was significantly greater than

the control group in children 7-9 months of age (79% vs. 65%), but not in children 4-6 or 10-12 months of age.

Finally, Vazir et al. (2013) looked at the consumption of bananas and spinach by children in India. The study included two different intervention groups: a CFG and an RCF&PG. At nine months of age, 60.9% of children in the CFG and 59.4% of children in the RCF&PG consumed bananas during the previous week, compared with 38.6% of children in the control group, while 20.1% of children in the CFG and 14.4% of children in the RCF&PG consumed spinach during the previous week, compared with 5.1% of children in the control group. Both findings were statistically significant. At 15 months of age, 79.3% of children in the CFG group and 78.3% in the RCF&PG group consumed bananas, compared with 61.9% of children in the control group, while 42.4% of children in the CFG group and 45.2% of children in the RCF&PG group had consumed spinach in the previous week, compared with 29.5% in the control group.

Longitudinal studies

Pachón et al. (2002) children under three in the intervention group were fed PD foods,⁴⁹ including vegetables, green vegetables, sweet potatoes, bananas, oranges, papayas, and tangerines, an average of 4.1 times per day compared with only 3.6 times per day among children in the control group. This finding was statistically significant.

Palwala et al. (2009) measured children's mean consumption of fruits and the proportion of children consuming vegetables in Mumbai, India. By the end of the study period, mean intake of fruit in children between six and 36 months of age had increased from 41g to 82g, the percentage of children consuming green leafy vegetables had increased from 16.7% to 87.6%, and the percentage of children consuming carrots had increased from 8.3% to 52.1%. The results were statistically significant.

Repeated cross-sectional studies

About et al. (2008) conducted a repeated cross-sectional study looking at mean fruit and vegetable intake among chil-

49 PD foods identified through a PD inquiry included: crab, fish, fruit, peanut, sesame seed, vegetables, eggs, shrimp, tofu, beans, cassava, meat, potatoes, rice, snail, clams, corn, sweet potatoes, bananas, green vegetables, oranges, papaya, starches, and tangerines.

dren in Sripur, Bangladesh. Five months after the responsive feeding intervention, the mean number of times children consumed fruit and vegetables during the previous day was .6 and 1.37 (respectively) in the intervention group, compared with .32 and .8 (respectively) in the control group.

Mackintosh et al. (2002) looked at consumption of greens, sweet potatoes, and fruit in Thanh Hoa, Vietnam. At the conclusion of a GMP and PD/Hearth intervention, 100% of children in the intervention group consumed fruit in the previous week, compared with 88% in the control group. Similarly, the mean frequency of fruit consumption in the previous week was 5.4 in the intervention group, compared with 1.5 in the control group. These findings were statistically significant. Differences in the consumption of greens and sweet potatoes were not statistically significant, although the authors did report an increase in the mean frequency of sweet potato consumption (6.7 times/week in the intervention group vs. 3.2 times/week in the control group).

Parvanta et al. (2007) looked at child feeding practices, particularly associated with iron-rich foods, in northwest Bangladesh. Intervention group 1 (IG1) included home-based counseling (once in a three month period) by health educators to pregnant women and mothers of children 6–24 months old. Intervention group 2 (IG2) included discussion of role modeling stories facilitated by peer group leaders during gardening group or credit group meetings. Participants were asked to share these stories with related women who fell into the eligibility categories mentioned above. Following the intervention, 52% of women in IG2 reported feeding children 6–24 months of age the recommended portion of green leafy vegetables, compared with 33% of women in IG1, and 17% of women in the control group.

Cross-sectional studies

Finally, Kilaru et al. (2005) looked at the consumption of bananas and dietary diversity in rural Karnataka, India. The intervention included monthly counseling (referred to as “education” in the article) for caregivers of infants from birth through a child’s second birthday. The nutrition education was provided in the home by trained field research staff (high school or college educated fieldworkers who live in close proximity to the study villages). “After administering the monthly questionnaire, the field staff would discuss

reported feeding practices with the primary caregiver. The total time for the questionnaire and counseling was about 1½ hours. Field staff would review dietary information from the questionnaires and talk about ways of improving the quality and quantity of the diet through questions and probes asked in a friendly manner. The field staff would often provide personal examples of how to overcome challenges in feeding young children, including the kind of communication skills needed to coax young children to eat.” Following the intervention, 33% of caregivers in the intervention group reported feeding children 7–11 months of age bananas, compared with 4% in the control group.

Feeding children a minimum number of food groups (dietary diversity)

Two of six studies that measured dietary diversity reported statistically significant results. Sun et al. (2011) conducted a repeated cross-sectional study looking at dietary diversity in Shan’xi, China. Following a provider counseling and media intervention, the percentage of women reporting that they fed their six to 24 month old children more than four food groups⁵⁰ had increased from 57.5% to 74.1% among breastfed children, and from 27.6% to 53.9% among non-breastfed children. Furthermore, the percentage of children fed a minimal acceptable diet had increased from 42.1% to 73.5% among breastfed children and from 25.0% to 45.0% among non-breastfed children. There was no control group included in the study.

Kilaru et al. (2005) conducted a cross-sectional analysis looking at dietary diversity in Karnakaka, India. Following a home-based counseling intervention, the percentage of children 11 months of age consuming at least five different food groups was 42% in the intervention group, compared with 19% in the control group.

Micronutrient supplementation or fortification

Although we identified many studies reporting on the consumption of micronutrient supplements or fortified products, only five presented results in a way that enabled an examination of the distinct effect of specific SBCC

⁵⁰ The authors did not explain if dietary data were based on a food recall and, if so, the recall period.

approaches on uptake. Two of these reported statistically significant results.

Bonvecchio et al. (2007) conducted an RCT looking at the impact of a behavior change intervention designed to improve the utilization of a multi-micronutrient nutritional supplement (*papilla*) among children 6-23 months of age in Mexico. *Papilla* was provided as part of the *Oportunidades* Program free of charge, but conditional upon mothers' participation in monthly education sessions on health and nutrition in all study communities. In intervention communities, these education sessions were complemented by home visits in which volunteers conveyed four key messages related to the preparation and use of *papilla*, and demonstrated its preparation. Health care service providers conveyed similar messaging during consultations, and videos on these topics were screened in health facility waiting rooms. Posters were mounted in multiple sites, including health centers, stores, community centers, and churches, while megaphones mounted on trucks broadcast messages and announcements. At follow up, the authors reported a net increase of 43.5 percentage points in proper preparation of *papilla* in intervention communities compared with control communities, a net increase of 64.4 percentage points in daily provision of *papilla*, and a net increase of 61.5 percentage points in those providing *papilla* between breakfast and dinner.

Dongre et al. (2011) conducted a repeated cross-sectional study with controls focused on increasing coverage of iron supplementation among children under the age of three in 23 villages in India. The intervention included nutritional education sessions conducted during the *Bal Suraksha Divas* (child health day) celebration and during home visits, free distribution of iron syrup, and monthly village-level community/social mobilization meetings. Furthermore, "a photograph of locally available iron-rich foods and citrus fruits was shown to mothers to increase their awareness of sources of iron. [...]" After three months, the percentage of children under the age of three who took iron supplementation increased from 8.8% to 41.6%. It is important to note that this intervention distributed the iron syrup free of charge.

Increased meal frequency and/or energy density

Sixteen studies measured meal frequency and energy density and 12 of them reported statistically significant results. Four broad categories of practices were reported: seven studies reported on frequency of feeding, four reported on the addition of fats or oils to children's foods, two reported on enhancing the energy density of children's foods (i.e. decreasing water content), and three reported on increasing quantity fed to children at each meal.

Increasing frequency of feeding children

Seven of eleven studies that looked at the frequency or number of meals fed to children over a specified period of time reported statistically significant results.

Randomized controlled trials

Bhandari et al. (2004) looked at meal frequency among children at nine and 18 months of age in India. At the conclusion of the facility and home based counseling intervention, children nine months of age in the intervention group consumed a mean of 4.4 meals in the previous 24 hours, compared with a mean of 3.9 meals in the control group, while children 18 months of age in the intervention group consumed a mean of 5.9 meals in the previous 24 hours, compared with a mean of 5.4 among children in the control group. Both differences were statistically significant. Mean energy intake in the previous 24 hours was higher among children in the intervention group than in the control group (1556 kilojoule (kJ) of energy vs. 1025 kJ among 9 month olds, and 3807 kJ vs. 2577 kJ among 18 month olds).

Roy et al. (2007) looked at children fed three or more times per day in Bangladesh. At the conclusion of the group education and small media intervention, 83.8% of children in the intervention group were fed three or more times per day compared with 19.4% of children in the control group. These differences remained statistically significant at follow up six months later (88.5% vs. 24.5% respectively).

Longitudinal studies

Pachón et al. (2002) looked at meal frequency among children under the age of three in rural Vietnam. After two to six months of a PD/Hearth group education intervention, children in the intervention group were fed a mean of 4.6 times per day compared with a mean of 4.2 times per day among children in the control group. After 12 months of the intervention, children in the intervention group consumed a mean of 4.9 meals per day compared with a mean of 4.6 meals per day among children in the control group. Furthermore, during the intensive intervention period (months two to six) children in the intervention group were more likely to meet energy intake requirements (kcal/kg) than those in the control group (49.0% vs. 35.1%). This difference was statistically significant. At the 12 month follow-up period, however, the difference in the percentage of children meeting the recommended intake was not statistically significant.

Repeated cross-sectional studies

Guyon et al. (2009) looked at the impact of interventions designed to increase food intake during pregnancy and lactation and feeding frequency in children in two highland provinces in Madagascar. The intervention included training of health workers, interpersonal communication, community/social mobilization, and the use of mass media. At the end of the study period, “the proportion of breastfed children 6-23 months of age fed the recommended number of times increased from 87% to 92%. There was no increase in the rate of feeding the recommended times per day among children 6-8 months of age, but there was a significant increase among children 9 to 23 months of age (from 85% to 93%).”

Kimmons et al. (2004) reported on several studies assessing the feasibility of different approaches for improving complementary feeding practices in rural Bangladesh. Each study was conducted for seven days among approximately 30 women. One tested the feasibility and effectiveness of educational messages to increase the frequency of meals fed to children. Women were asked to feed at least three meals per day, and more if possible. They were advised that snack foods (amounts less than 10 g) were not to be considered meals, and they were encouraged to continue to give snacks as usual. By the end of the seven day trial, the number of meals provided to children in the previous 24 hours

had increased from a mean of 2.2 to a mean of 4.1. The second study focused on increasing the quantity of food offered to, and consumed by, infants at each meal. This trial did not have an effect on meal frequency, but did improve the quantity of food consumed by children (see below in discussion of quantity fed to children at each meal). In the third small study, women were taught to decrease viscosity of children’s food (and therefore increase food or energy consumption) by “changing the recipe or adding amylase, increasing energy density by adding sugar or oil, or changing the food’s organoleptic characteristics.”

Mackintosh et al. (2002) conducted a repeated cross-sectional study looking at feeding frequency among children in Tan Hoa, Vietnam. Following a PD/Hearth intervention, children in the intervention group consumed a mean of 2.9 full meals per day compared with a mean of 2.2 meals per day among children in the control group, and children in the intervention group consumed a mean of 2.5 snacks per day compared with a mean of 1.6 snacks per day in the control group.

Cross-sectional studies

Kilaru et al. (2005) looked at the frequency of feeding in two age groups in India. Following a provider counseling intervention, the percentage of children 7 to 11 months of age that were fed at least four times in addition to breast milk in the previous 24 hours was 78% in the intervention group and 51% in the control group.

Adding fats or oils to children’s foods

Five studies looked at the addition of oil, butter, or other fat to children’s diets to increase energy density, and all but one reported statistically significant results. Bhandari et al. (2004) conducted an RCT looking at the addition of oil or butter to infant foods in India. Following an intervention that included home visits and counseling at the facility level, the percentage of children nine months of age consuming foods with added oil or butter was 8.6% in the intervention group compared with 0.5% in the control group, and the percentage of children 18 months of age consuming foods with added oil or butter was 24.1% in the intervention group compared with 5.8% in the control group. The researchers found a corresponding change in energy intake from oil (kJ per 24 hours) among children nine months and 18 months of age.

In a second RCT, Mackintosh et al. (2002) conducted a repeated cross-sectional study in Tan Hoa, Vietnam. Among other foods, they looked at the consumption of oil/fat by children between 7-9 months of age. Following a PD/Hearth intervention, children in the intervention group were fed oil/fat 6.6 times per week on average compared with 2.8 times among children in the control group.

Roy et al. (2007) looked at the addition of oil to children's food in Bangladesh. Following the intervention, the percentage of children at six months of age that received food with added oil was 69.8% in the intervention group compared with 20.9% in the control group, and the percentage of children at 12 months of age that received food with added oil was 61.3% in the intervention group compared with 21.5% in the control group.

Finally, Vazir et al. (2013) looked at the addition of fat to complementary foods and the energy intake of children in India. The study included two different intervention groups: a CFG and an RCF&PG. At nine months of age, 51.4% of children in the CFG and 44.4% of children in the RCF&PG consumed added fat during the previous week compared with 24.4% of children in the control group. At 15 months of age, 42.4% of children in the CFG and 52.5% of children in the RCF&PG consumed added fat during the previous week compared with 29.5% of children in the control group. Similar differences in median energy intake following intervention were also reported. At nine months of age, median energy intake among children in the CFG group was 348 kcal and 331kcal in the RCF&PG group, compared with 209 kcal in the control group. At 15 months of age, median energy intake among children in both intervention groups was 569 kcal compared with 460 kcal among children in the control group.

Enhancing the consistency of children's foods

Four studies evaluated the effect of an SBCC intervention on energy density of complementary food by enhancing the consistency of foods. Two reported statistically significant results. Zaman et al. (2008) conducted an RCT looking at the feeding of *kitchuri*, a thick complementary food in Lahore, Pakistan. At 8 to 14 days after recruitment, 61.6% of women in the intervention group had offered their children *kitchuri* compared with 45% of women in the control

group, and at 180 days after recruitment, 65.9% of women had offered their children *kitchuri* compared with 44.3% in the control group. Findings 8 to 14 days after recruitment were not statistically significant, while findings from 180 days after recruitment were statistically significant.

Penny et al. (2005) conducted an RCT looking at the feeding of thick consistency foods among six age groups in Trujillo, Peru. A significantly higher percentage of caregivers in the intervention group compared with the control group fed food of a thick consistency to their children at measurements taken at six months of age (31% vs. 20%), at nine months of age (35% vs. 17%), and at 12 months of age (42% vs. 26%). Differences at the ages of 8, 15, and 18 months were not statistically significant.

Increasing the quantity fed to children at each meal

While several studies measured energy intake among children, only three reported statistically significant results specifically relating to increasing the quantity of food fed to children at each meal. Two studies reported on the use of a separate feeding pot, and one article reported on an increase in the quantity of food offered and time allocated for feeding children.

Roy et al. (2005) conducted an RCT looking at the use of a separate feeding pot for malnourished children 6 to 24 months of age in rural Chandpur, Bangladesh. The intervention took place within the Bangladesh Integrated Nutrition Project (BINP), and included two intervention groups of mothers. In the first group, women received intensive nutrition education (INE group) twice each week for three months. In the second group, women received the same nutrition education as well as supplementary feeding (INE+SF group). The control group received standard BINP services of twice-monthly nutrition education. After three months, 99% of women in the INE group and 100% of women in the INE+SF group reported the use of a separate pot for children, compared with 47% in the control group. At the end of six months of observation, 100% of women in both intervention groups reported use of separate pots for children, compared with 48% in the control group.

Roy et al. (2007) also looked at the use of a separate feeding pot for children 6 to 9 months of age in four *upazilas* (administrative units within districts) in four geographic regions of Bangladesh. Following the intervention, the authors reported an increase of 14.3% in the proportion of children served from their own pots.

Finally, Kimmons et al. (2004) conducted a longitudinal study looking at the quantity of food and duration of feeding in Bangladesh. Following an intervention in which field workers encouraged women to increase the quantity of food fed to their children and allocate more time for meals, the researchers observed no statistically significant difference in the amount of food offered. However, they did observe a statistically significant difference in the quantity of food consumed between day one of the study (40 g) and day 7 (64 g), and in the duration of the meal – from six to 13 minutes.

Responsive and active feeding

Three studies looked at responsive or active feeding and two (both RCTs) reported statistically significant results. Bhandari et al. (2004) looked at several active feeding practices in Indian children at nine and 18 months of age. The intervention included provider counseling, peer counseling, and group education to mothers. At nine months of age, 34.8% of women in the intervention group reported active encouragement, compared with 7.7% in the control group. At 18 months of age, 89.7% of women in the intervention group reported active encouragement, compared with 49.0% in the control group. Differences between the intervention group and control group held across a series of specific practices, including feeding with love and affection (41% vs. 11%), trying repeatedly if the child did not eat (15.4% vs. 1%), woman feeding her child herself (34.9% vs. 26.4%), woman making the child sit in her lap (18.2% vs. 6.6%), and feeding the child with other family members (12.4% vs. 2.5%).

Zhang et al. (2013) looked at active feeding and feeding during illness among infants in rural Lashui, China. Children were enrolled at two to four months of age and were assessed at 6, 9, 12, 15 and 18 months of age. The intervention included group training sessions conducted

by trained township doctors for mothers, grandmothers, and fathers, and home visits by trained providers every three months “with the purpose of identifying possible feeding problems and providing individual counselling.” The project disseminated child feeding booklets, and conducted demonstrations of food preparation using locally available, affordable, acceptable and nutrient-dense foods. After 18 months of the intervention, 88.0% of women in the intervention group encouraged their children to eat when they refused food, compared with 53.9% in the control group.

Feeding during and after illness

Three studies measured practices related to complementary feeding of sick or malnourished children, but only one reported statistically significant results. Zhang et al. (2013) conducted an RCT looking at feeding of breast milk and easy-to-digest foods to sick children in rural Laishui, China. Following the intervention, 88.8% of women reported feeding breast milk and easy-to-digest foods to their children with diarrhea, compared with 65% of women in the control group, while 67.3% of women in the intervention group reported preparing easy-to-digest food separately for their children with diarrhea, compared with 32.8% in the control group.

D. Summary of the Evidence

SBCC approaches utilized

For the purposes of analysis, we organized SBCC activities into three primary categories or approaches: interpersonal communication, media, and community/social mobilization. These approaches and the specific activities associated with each are described in further detail in the introductory chapter.

The studies reviewed included a broad range of approaches to promote optimal complementary feeding practices. Most included more than one specific SBCC activity and many utilized more than one approach.

Of the 25 studies reporting statistically significant findings, 24 utilized interpersonal communication (IPC) approaches,

Table 3.3.3: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design

SBCC approaches and activities	Literature reviews with meta-analysis	RCTs	Longitudinal studies	Repeated cross-sectional studies	Cross-sectional studies	TOTAL
Interpersonal Communication	0	12 (12)	8 (7)	7 (4)	2 (2)	29 (25)
One-on-One Counseling	0	10 (6)	4 (0)	5 (1)	2 (2)	21 (9)
Counseling in facilities	0	5 (3)	1 (0)	0	2 (2)	8 (5)
Counseling in communities	0	0	0	1 (1)	0	1 (1)
Counseling in homes (home visits)	0	7 (3)	3 (2)	3 (1)	0	13 (6)
Counseling in other settings	0	0	0	1 (0)	0	1
Group Education	0	4 (3)	5 (5)	4 (3)	0	13 (11)
Education in facilities	0	0	1 (1)	0	0	1 (1)
Education in communities	0	4 (3)	4 (4)	3 (2)	0	11 (9)
Education in other settings	0	0	0	1 (0)	0	1
Support Group	0	0	0	3 (2)	0	3 (2)
Support group in facilities	0	0	0	0	0	0
Support group in communities	0	0	0	2 (1)	0	2 (1)
Support group in other settings	0	0	0	1 (0)	0	1
Media	0	7 (7)	2 (2)	5 (4)	0	14 (13)
Mass media	0	0	0	2 (2)	0	2 (2)
Mid-sized media (community radio / video, local billboards)	0	0	0	4 (3)	0	4 (3)
Small media (posters, flyers, calendars, reminder stickers)	0	7 (7)	2 (2)	4 (3)	0	13 (12)
Traditional media (songs, drama)	0	0	0	1 (1)	0	1 (1)
Social media (Twitter, Facebook, etc.)	0	0	0	0	0	0
Community/Social Mobilization	0	2 (2)	0	4 (3)	0	6 (5)
Campaign, event, special "days"	0	0	0	2 (2)	0	2 (2)
Issue groups	0	0	0	4 (3)	0	4 (3)
Other	0	2 (2)	0	0	0	2 (2)

12 utilized some form of media, and five employed community/social mobilization. Group education in communities was the most commonly used IPC approach; small media was the most commonly used media approach; and issue groups were the most commonly used forms of community/social mobilization. See Table 3.3.3.

The breadth of evidence regarding the effectiveness of SBCC in changing complementary feeding practices varies by type approach. Below, we discuss the evidence associated with each of the primary SBCC approaches utilized to promote complementary feeding practices. Table 3.3.4 provides a consolidated summary of these findings.

Interpersonal communication

We identified no previous reviews looking at the effectiveness of IPC on uptake of optimal complementary feeding practices, but did identify 24 primary research studies reporting statistically significant outcomes associated with interventions that included IPC. One study reported a positive effect with respect to the timely introduction of complementary foods, 15 reported a positive effect with respect to dietary diversity, two documented a positive effect with respect to supplementation or fortification, 12 reported a positive effect with respect to meal frequency or density, two reported a positive effect with respect to responsive or active feeding, and one reported a positive effect with respect to feeding during or after illness. Twelve of these studies measured the effectiveness of IPC independent of other SBCC approaches, including four RCTs. Indicators and study design varied considerably between studies, making consolidation of findings difficult. In the only study comparing the effectiveness of different IPC approaches in changing complementary feeding practices, Parvanta et al. (2007) compared individual stage-based counseling by a trained agent and education through storytelling led by a group leader. They found that “twice as many women who met with the trained agent (in contrast to those who met with the group leaders) demonstrated feeding a portion of green vegetables equal to or surpassing the recommended quantity.” Though statistical significance of this difference was not reported, it was suggested in the authors’ analysis.

Media

We identified no previous reviews documenting the effectiveness of media-related interventions on complementary feeding outcomes, but did identify 13 primary research studies that reported positive outcomes associated with interventions including media-based SBCC approaches. One study reported a positive effect with respect to the timely introduction of complementary foods, nine studies reported a positive effect with respect to dietary diversity, one study documented a positive effect with respect to supplementation or fortification, seven reported a positive effect with respect to meal frequency or density, one study reported a positive effect with respect to responsive or active feeding, and one study reported a positive effect with respect to feeding during or after illness.

None of these studies, however, measured the effect of media interventions independent of other SBCC approaches, making it difficult to make definitive conclusions regarding the effectiveness of media related interventions on complementary feeding outcomes.

Community/social mobilization

We identified no reviews documenting the effectiveness of community/social mobilization approaches on complementary feeding outcomes, but did identify five primary research studies reporting statistically significant outcomes that included community/social mobilization approaches: One study reported a positive effect with respect to the timely introduction of complementary foods, one reported a positive effect with respect to dietary diversity, one documented a positive effect with respect to supplementation or fortification, two reported a positive effect with respect to meal frequency or density, one reported a positive effect with respect to responsive or active feeding, and one reported a positive effect with respect to feeding during or after illness.

None of these studies measured the effectiveness of community/social mobilization independent of other SBCC approaches. It is therefore difficult to derive conclusions regarding the effectiveness of community/social mobilization with respect to uptake of complementary feeding practices.

Table 3.3.4: Number of studies reviewed (with number of studies reporting statistically significant results in parentheses), by SBCC approach and study design

SBCC approach	Dietary diversity			Micronutrient supplementation or fortification	Increased meal frequency and/or density				Responsive/active feeding	Feeding during and after illness
	Feeding children animal source foods	Feeding children fruits and vegetables	Feeding children a minimum number of food groups		Increasing frequency of feeding children	Adding fats or oils to children's foods	Enhancing the consistency of children's foods	Increasing the quantity of children at each meal		
Interpersonal Communication	4 (1) 1 RCT (age at introduction)	10 (9) 3 RCTs (2 fruits, 2 vegetables; banana and spinach) 2 Longitudinal (1 PD, 1 vegetables)	6 (2) 1 Repeated cross-sectional (>= 4 food groups) 1 Cross-sectional (>= 5 food groups)	5 (2) 1 RCT (fortified complementary food) 1 Longitudinal (iron supplementation coverage)	10 (7) 2 RCTs (>= 3 meals; # of meals) 2 Longitudinal (2 # of meals) 2 Repeated cross-sectional (# of meals)	5 (4) 4 RCTs (2 added fat/oil/butter; vegetable oil daily; lard daily; woman added fat to her children's food)	4 (2) 1 RCT (thick foods) 1 Repeated cross-sectional (thick foods)	4 (3) 2 RCTs (separate pot) 1 Longitudinal (meal duration)	3 (2) 2 RCTs (encouragement)	3 (1) 1 RCT (feeding during diarrhea)

Multiple SBCC approaches

We identified no reviews documenting the effectiveness of multiple SBCC approaches on complementary feeding outcomes. Of the 25 primary research studies reporting statistically significant results with respect to complementary feeding outcomes, one study reported a positive effect with respect to timely introduction of complementary foods, seven reported a positive effect with respect to dietary diversity, two reported a positive effect with respect to micronutrient supplementation and fortification, six reported a positive effect with respect to meal frequency and/or density, one reported a positive effect with respect to responsive or active feeding, and one reported a positive effect with respect to feeding during or after illness.

No studies compared the effect of different SBCC approaches or measured the effect of the utilization of more than one SBCC approach compared with the utilization of just one approach. One must use caution, therefore, in deriving conclusions regarding the effectiveness of interventions employing multiple approaches vis-à-vis those employing just one approach.

Implementation processes followed

None of the studies reviewed in this chapter assessed the effect of implementation processes (e.g. intensity and timing of communications; type and training of person communicating messages, or target audience) on the effectiveness of the SBCC approach on complementary feeding practices, nor did they consistently report all aspects of the implementation processes.

The intensity of communications ranged from one to 24 visits/sessions, conducted weekly or monthly for various lengths of time. However, none of the studies compared the effect of timing or frequency.

In terms of target audiences, all of the studies reviewed in this chapter targeted the mother or primary caregiver of the child. Among the 25 studies reporting statistically significant results, fourteen targeted only the mother/caregiver while eleven targeted an additional audience as well. Eight also targeted direct influencers, eight targeted local community actors, and one targeted actors of the enabling environment.

None of the studies compared the effect of targeting one vs. multiple audiences or of targeting different audiences.

E. Conclusions

The evidence of the effect of SBCC on complementary feeding practices is quite broad, and clearly indicates that SBCC interventions can improve a wide range of complementary feeding practices. While the literature may reflect a bias to publish positive results, it also underscores the important role of SBCC approaches in improving nutrition practices – practices which have been shown to have an impact on nutritional status of women, infants, and children.

There is very little consistency in how complementary practices are defined, the normative standards followed for them, and the indicators used to measure them. This is the case, even with the existence of globally recognized indicators and measurement guidance from the WHO. An additional challenge is that behaviors are highly context-specific when it comes to complementary feeding – with different food taboos and different foods available that are appropriate for complementary feeding. If behaviors aren't standardized, a project may improve behaviors but it will be difficult to attribute changes in outcomes to those behaviors.

Similarly, there is **considerable variation in the description of SBCC interventions – the interactions or combinations with other interventions, target groups, content, messages, scale and coverage, length and intensity, as well as context.**

SBCC interventions to promote complementary feeding practices are suited to iterative programming, because even if standards for behaviors aren't met, there can be significant movement toward the standard.

In a hypothetical example, the target number of families introducing leafy green vegetables at six months might not be met, but many families may have begun introducing by eight months, whereas before the intervention they were not introducing until one year. **Iterative interventions can learn what supported that move in the right direction, and build on them.**

Interpersonal communication is the most prevalent SBCC approach used and researched, and is consistently effective

at improving complementary feeding practices. **All but one of the studies in this chapter used IPC, and half of these measured the effectiveness of IPC independent of other SBCC approaches.** While media and community/social mobilization were used, they were always used with at least one other communication approach. **No studies compared the effectiveness between different approaches or between one versus multiple SBCC channels or specific activities.** This may be due to the difficult and cost of implementing multiple arms of a study or disaggregating the contribution of single channels or specific activities within a multi-channel intervention. Whatever the reason, it is important for SBCC practitioners and researchers to consider whether this line of research is worth the effort it will require.

All of the studies reporting statistically significant results targeted the mother of the child herself. More than half of those targeted one or more other audiences or influencers as well. **No studies were identified that compared the effect of targeting one vs. multiple audiences or of targeting different audiences.**

Little was mentioned in the articles reviewed regarding the timing of communications. The intensity of communications ranged from one to 24 visits or sessions, conducted weekly or monthly for various lengths of time. None of the studies compared the effect of timing or intensity of communications.

Most studies were implemented on a relatively small scale, within only a few communities and typically having fewer than 300 study participants per group.

Finally, differences in local context (including social norms, culture, and environmental factors) as well as differences in the implementation and scale of implementation affect the success of interventions. This underscores the importance of proper context assessments, formative research and/or ethnographic study prior to SBCC implementation.

Due to the lack of standardization in the way research related to SBCC is designed and described, it is challenging to make conclusions beyond the fact that projects with SBCC will result in uptake of promoted practices. While there is much to be learned from this body of literature to aid us in developing future programs, a number of questions remain. These include questions related to:

- the positive (or negative) effect of using multiple SBCC approaches compared with focusing on only one;
- the positive (or negative) effect of targeting multiple audiences or influencers of the behaviors being promoted, rather than focusing on just one target population;
- the role of context, in other words, the effect of the same SBCC intervention implemented in different contexts;
- the effectiveness of different approaches (including intensity and targeting) for different behaviors;
- the cost and cost effectiveness of various SBCC approaches (particularly as it relates to scalability); and
- the effectiveness and sustainability of these approaches when implemented at scale.

Table 3.3.5: Studies reporting on complementary feeding practices

Color coding key

- Introduction of complementary foods
- Providing supplements or fortified products
- Feeding responsively or actively
- Ensuring nutrient content of foods
- Providing adequate meal frequency and energy density
- Feeding during and after illness

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Aboud et al. (2008); Bangladesh	Group education in communities by lay volunteers	36 village clusters in a rural Sripur sub-district (18 intervention, 18 control)	Repeated cross-sectional – 183 women with children 12 to 24 months old (91 intervention, 92 control); data collected at baseline and 5 month follow-up	Mean number of times foods were eaten by child yesterday -animal (fish) -egg -cow's milk	0.86 vs. 1.01 0.28 vs. 0.09 0.85 vs. 0.73	NS ⁵³ p=0.02 NS
Aboud et al. (2009); Bangladesh	Group education in communities by lay volunteers	37 village clusters in a rural Jalakha sub-district (19 intervention, 18 control)	Repeated cross-sectional – 203 women with children 8 to 20 months old (108 intervention; 95 control)	Mean number of times fruit was eaten by child yesterday Mean number of times vegetables were eaten by child yesterday	1.37 vs. 0.80	p=0.04 p=0.004
				Mean number of food types eaten (of seven) by children as reported by mother Mean number of food types eaten (of seven) by children as reported by mother	3.25 vs. 2.93 2.22 vs. 2.26	NS NS
				Mean number of mouthfuls of food taken by children at midday meal -Pre-test -Post-test -Follow-up	13.77 vs. 15.10 20.78 vs. 20.11 21.23 vs. 21.62	NS NS NS

⁵¹ Comparison is intervention vs. control group, unless indicated otherwise.

⁵² Differences reported as not significantly different are indicated by “NS”. Differences for which statistical significance was not reported are indicated by “-”.

⁵³ NS = not significant either according to what is reported in the original article or p<0.05.

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING							
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²			
Bhandari et al. (2001); India	Counseling in homes by providers	1 community in Delhi	RCT – 418 infants four months of age (96 in food supplement group; 95 in nutritional counseling group; 100 in control group; and 96 in visitation control group); data collected when infants were 6, 9 and 12 months of age	Median energy (kJ) intake/day from usual foods among children - at 26 weeks - at 38 weeks - at 52 weeks Median total energy (kJ) intake/ day among children - at 26 weeks - at 38 weeks - at 52 weeks	Supplement + counseling vs. counseling alone vs. visitation vs. control 171 vs. 472 vs. 192 vs. 268 476 vs. 978 vs. 430 vs. 577 761 vs. 1417 vs. 665 vs. 924 1409 vs. 472 vs. 192 vs. 268 2169 vs. 978 vs. 430 vs. 577 2922 vs. 1417 vs. 665 vs. 924	Comparisons with final group (visitation control) NS, p<0.05, NS NS, p<0.05, NS NS, p<0.05, NS NS, p<0.05, NS NS NS			

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Bhandari et al. (2004); India	Counseling in facilities by providers; Group education in communities by providers; Counseling in homes by peers	8 communities (4 intervention, 4 control)	RCT – 1,025 newborns (552 intervention, 473 control); data collected every 3 months for 18 months	% of children who consumed any milk - at 9 months - at 18 months Mean energy intake from milk, kJ/24 hrs - at 12 months - at 18 months % of children who consumed vegetables - at 12 months - at 18 months % of children who consumed fruits - at 12 months - at 18 months	91.8% vs. 82.6% 98.6% vs. 95.9% 837 vs. 607 2021 vs. 1289 6.7% vs. 2% 26% vs. 24.1% 16.2% vs. 11.9% 44.8% vs. 40.4%	p<0.01 NS p<0.01 p<0.001 p<0.05 NS NS
				Energy intake (all foods), kJ/24 h - at 9 months - at 18 months Energy intake from oil, kJ/24 h - at 9 months - at 18 months % of children who consumed added oil or butter to recipes - at 9 months - at 18 months Mean number of meals consumed by child in the previous 24 hours - at 9 months - at 18 months	1556 vs. 1025 3807 vs. 2577 134 vs. 58 335 vs. 184 8.6% vs. 0.5% 24.1% vs. 5.8% 4.4 vs. 3.9 5.9 vs. 5.4	p<0.001 p<0.001 p<0.001 p<0.001 p<0.01 p<0.001 p<0.01 p<0.01

FINDINGS		PREGNANCY AND LACTATION		METHODS	INTRODUCTION	EXECUTIVE SUMMARY
COMPLEMENTARY FEEDING	BREASTFEEDING					
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
				<ul style="list-style-type: none"> - % of women that reported actively encouraging their children to eat more - at 9 months - at 18 months <p>At 18 months...</p> <ul style="list-style-type: none"> - % of women that reported feeding their children with love - % of women that reported trying repeatedly if their child did not eat - % of women that reported feeding their child herself - % of women that reported making her child sit in her lap - % of women that reported feeding their child with other family members 	<p>34.8% vs. 7.7%</p> <p>89.7 vs. 49%</p> <p>41% vs. 11%</p> <p>15.4% vs. 1%</p> <p>34.9 vs. 26.4%</p> <p>18.2% vs. 6.6%</p> <p>12.4% vs. 2.5%</p>	<p>p<0.0001</p> <p>p<0.0001</p> <p>p<0.0001</p> <p>p<0.0001</p> <p>p<0.0001</p> <p>p<0.0001</p> <p>p<0.0001</p>

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING	BREASTFEEDING	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ^{§1}	P-VALUES / CIs ^{§2}		
Bortolini and Vitolo (2012); Brazil	Counseling in homes by providers	1 hospital	RCT – 397 newborns (163 intervention, 234 control)	Based on a 24 hour dietary recall among children 12-16 months old, mean intake of...	<ul style="list-style-type: none"> - cow's milk (mL) - meat (g) - iron (mg) - heme iron (mg) - non-heme iron (mg) 	<ul style="list-style-type: none"> 501.6 vs. 588.1 54.3 vs. 47.3 5.1 vs. 5.4 1.5 vs. 1.2 3.8 vs. 4.5 	<ul style="list-style-type: none"> p=0.03 p=0.024 p=0.22 p=0.003 p=0.002 		
Colecraft et al. (2004); Ghana	Group education in facilities by providers	four primary health care facilities in Accra with a functioning day-care nutrition rehabilitation center (NRC)	Longitudinal – 108 caregivers and their 116 children who were newly enrolled in an NRC between November 1999 and July 2000	<ul style="list-style-type: none"> % iron supplementation of children at 0-6 months % iron supplementation of children at 6-12 months 	<ul style="list-style-type: none"> baseline vs. endline vs. follow up 24.1% vs. 23.6% vs. 14.3% 49.1% vs. 58.2% vs. 50.0% 39.3% vs. 25.5% vs. 11.9% 18.7% vs. 14.6% vs. 4.8% 13.4% vs. 23.6% vs. 38.1% 	<ul style="list-style-type: none"> NS NS p=0.007 NS NS 			

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
De Oliveira et al. (2012); Brazil	Counseling in facilities by providers	1 hospital	RCT – data from 255 adolescent girls delivering in the hospital analyzed (132 mother-child pairs intervention, 123 control); data collected at baseline and monthly for six months postpartum	Mean age of introduction of non-breast milk and complementary foods (days) % of children fed complementary foods at 4 months % of children fed complementary foods at 6 months	153 (95% CI, 114.6–191.4) vs. 95 days (95% CI, 8.7–111.3) 22.8% (95% CI: 15.9–29.7) vs. 41% (95% CI: 32.8–49.2) 87.1% (95% CI: 81.4–92.8) vs. 88.4% (95% CI: 82.9–93.9)	CIs did not overlap CIs did not overlap CIs overlap
Dongre et al. (2011); India	Mobilization of campaign, event, or special “days”; Mobilization of issue groups	23 villages	Repeated cross sectional – children 6 to 35 months of age (baseline: 261; endline / 3 months follow-up: 372)	% iron supplementation among children 6–35 months of age	endline vs. baseline 41.6% vs. 8.8%	p=0.001
Ghosh et al. (2002); India	Counseling in homes by providers	13 villages	Cross sectional – infants aged less than six months were enrolled on an on-going basis between 1997–1999; 242 infants 5–11 months old were included in this analysis (173 infants < 6 months of age at baseline formed intervention group, 69 infants who reached 12 months prior to the intervention formed control group); data collected monthly until the child reached 24 months of age	% of children 6–10 months of age fed animal milk Mean number of different food groups fed in a 24-hour period - at 9 months - at 10 months - at 11 months Mean number of child feeds in the previous 24 hours - at 9 months - at 10 months - at 11 months	53.2% vs. 31.9% 3.87 vs. 3.1 4.34 vs. 3.4	p<0.01 Not reported
					3.7 vs. 2.71 4.17 vs. 3.03 4.28 vs. 3.09	Not reported

54 P-values are for mean increments from baseline to endline in intervention sites compared with control sites.

FINDINGS		PREGNANCY AND LACTATION		METHODS	INTRODUCTION	EXECUTIVE SUMMARY
COMPLEMENTARY FEEDING	BREASTFEEDING					
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Guldan et al. (2000); China	Counseling in homes by peers	4 townships (2 intervention, 2 control)	RCT – newborns were enrolled throughout the year of project implementation, at completion of the year; infants had been monitored for 4-12 months; 495 infants born during study period analyzed (250 intervention, 245 control); infants 4-6 months old: 57 intervention, 69 control; infants 7-9 months old: 85 intervention, 76 control; infants 10-12 months old: 108 intervention, 100 control	<p>% of children fed eggs daily</p> <ul style="list-style-type: none"> - at 4-6 months - at 7-9 months - at 10-12 months <p>% of children fed fish/meat broth daily</p> <ul style="list-style-type: none"> - at 4-6 months - at 7-9 months - at 10-12 months <p>% of children fed meat daily</p> <ul style="list-style-type: none"> - at 4-6 months - at 7-9 months - at 10-12 months <p>% of children fed vegetables daily</p> <ul style="list-style-type: none"> - at 4-6 months - at 7-9 months - at 10-12 months <p>% of children fed fruit daily</p> <ul style="list-style-type: none"> - at 4-6 months - at 7-9 months - at 10-12 months 	<p>37% vs. 16%</p> <p>66% vs. 41%</p> <p>66% vs. 62%</p> <p>4% vs. 0%</p> <p>9% vs. 1%</p> <p>13% vs. 3%</p> <p>4% vs. 0%</p> <p>19% vs. 8%</p> <p>23% vs. 9%</p> <p>35% vs. 32%</p> <p>79% vs. 65%</p> <p>89% vs. 89%</p> <p>26% vs. 10%</p> <p>68% vs. 42%</p> <p>79% vs. 52%</p>	<p>p<0.01</p> <p>p<0.01</p> <p>NS</p> <p>NS</p> <p>p<0.05</p> <p>p<0.01</p> <p>NS</p> <p>p<0.05</p> <p>NS</p> <p>p<0.05</p> <p>p<0.01</p> <p>p<0.001</p>
				% of children fed vegetable oil daily	<p>32% vs. 29%</p> <p>65% vs. 58%</p> <p>82% vs. 82%</p> <p>9% vs. 4%</p> <p>31% vs. 9%</p> <p>46% vs. 28%</p>	<p>NS</p> <p>NS</p> <p>NS</p> <p>NS</p> <p>p<0.01</p> <p>p<0.01</p>

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Guyon et al. (2009); Madagascar	Mobilization of issue groups; Mobilization of campaign, event, or special "days"; Mass media	2 highland provinces; targeted population varied throughout project from 1.4 million in 6 districts to 6 million in 23 districts	Repeated cross-sectional – baseline (2000): 1,200 children under two years old; endline (2005): 1,760 children under two years old	% of children fed the minimum recommended number of meals per day at 6-23 months % of children (6-8 months) fed complementary foods in the previous 24 hours % sick infants and children (6-23 months) fed more than usual during illness in previous 2 weeks % sick infants and children (6-23 months) fed more than usual after illness	endline vs. baseline 92% vs. 87%	p<0.001 NS NS NS
Haque et al. (2002); Bangladesh	Counseling in facilities by providers	3 centers (2 breastfeeding counseling centers and 1 main center)	Longitudinal – 59 child-mother pairs in intervention completed one-year follow-up, 55 in control	% of women who introduced complementary foods at 6 months of age	88% vs. 53%	NS
Harkins et al. (2008); Peru	Mobilization of issue groups; Counseling in homes	1 community (population: 25,000)	Repeated cross-sectional – Peru: 78 women ⁵⁵ interviewed in 2002 and in 2004 (after intervention)	% of sick children fed more frequently and in smaller quantities	endline vs. baseline 61% vs. 22%	Not reported

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING							
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²			
Kilaru et al. (2005); India	Counseling in homes by providers	13 villages	Cross-sectional – infants aged less than six months were enrolled on an on-going basis between 1997-1999; 242 infants 5-11 months old were included in this analysis (173 infants < 6 months of age at baseline formed intervention, 69 infants who reached 12 months prior to the intervention formed control); data collected longitudinally, monthly until the child reached 24 months of age, however analysis is cross-sectional	% of caregivers feeding children (7-11 months) bananas % of caregivers feeding children (11 months) at least 5 different food groups ⁵⁶ % of children (7-11 months) fed at least 4 times in addition to breast milk in the previous 24 hours	33% vs. 4% adjusted OR = 3.23 42% vs. 19% adjusted OR = 10.00 78% vs. 51% adjusted OR=4.35	p<0.001 (95% CI: 1.28 -7.69) p=0.01 (95% CI: 2.78 - 33.33) p<0.001 (95% CI: 1.96-10.00)			
			NOTE: These are the same data analyzed by Ghosh et al. (2002) used here to report on different indicators.						

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Kimmons et al. (2004); Bangladesh	Group education in communities by lay volunteers	several small rural villages	Longitudinal – 30 mothers with infants 6–12 months of age in the meal quantity study; 30 in the meal frequency study	Meal quantity study: <ul style="list-style-type: none"> - Quantity of food offered (g) - Quantity of food consumed (g) - Mean number of meals fed to children in the previous 24 hours - Duration of meal (minutes) - Viscosity of food fed to children⁵⁷ Meal frequency study: <ul style="list-style-type: none"> - Mean number meals during which complementary food was to children in the previous 24 hours 	Day 7 vs. day 1 (baseline) 95 vs. 67 64 vs. 40 2.9 vs. 2.3 13 vs. 6 3.1 vs. 3.7 4.1 vs. 2.2	NS p<0.05 NS p<0.05 NS p<0.05
Li et al. (2007); China	Mobilization of issue groups; Mid-sized media; Small media	10 villages (2 from each of five sampled townships in Luxi city (population of approximately 321,000)	Repeated cross-sectional – 352 infants (age group not clear from article)	Average age (in months) of introduction for each weaning food <ul style="list-style-type: none"> -Egg -Pork -Fish -Animal liver -Milk -Vegetable -Fruit 	endline vs. baseline 9.0 vs. 6.5 7.5 vs. 6.2 10.6 vs. 8.3 10.1 vs. 9.5 5.9 vs. 7.5 7.7 vs. 6.3 8.4 vs. 6.6	p<0.01 p<0.01 p<0.01 p<0.05 p<0.01 p<0.01 p<0.01

55 It is not clear from the article, but based on the indicators reported one would assume these are mothers of children under the age of two years.

FINDINGS		PREGNANCY AND LACTATION		METHODS	INTRODUCTION	EXECUTIVE SUMMARY
COMPLEMENTARY FEEDING	BREASTFEEDING					
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Mackintosh et al. (2002); Vietnam	Counseling in communities by peers; Group education in communities by lay volunteers	5 communes (4 intervention, 1 control)	Repeated cross-sectional – 46 children in intervention group (family had one child who previously participated in the project and one younger child who had not participated), 25 households in control group (had no previous exposure to program activities and included an older and younger sibling in the age range of the intervention households)	% of women reporting feeding their child... - dried fish - shrimp - fresh fish - meat - eggs - greens - sweet potatoes - fruit Mean # of times/wk woman reported feeding her child... - dried fish - shrimp - fresh fish - meat - eggs - greens - sweet potatoes - fruit Mean # of main meals/day fed to child % of women that report feeding their child snacks Mean # of snacks fed/day fed to child	20.9% vs. 64.0% 93.3% vs. 76.0% 95.6% vs. 96.0% 97.8% vs. 92.0% 97.8% vs. 72.0% 93.3% vs. 96.0% 97.7% vs. 88.0% 100.0% vs. 88.0% 2.3 vs. 0.8 3.2 vs. 1.0 5.6 vs. 4.6 2.6 vs. 0.7 4.0 vs. 1.5 6.9 vs. 6.4 6.7 vs. 3.2 5.4 vs. 1.5 2.9 vs. 2.2 95.7% vs. 52% 2.5 vs. 1.6	p<0.01 p<0.05 NS NS p<0.01 NS NS p<0.05 p<0.05 p<0.01 NS p<0.01 p<0.01 NS p<0.01 p<0.01 p<0.001 p<0.001 p<0.001

56 Food groups examined were dairy, cereal, protein, fruit, vegetables, oil and fat, sugar and savory snacks.

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Pachón et al. (2002); Vietnam	Group education in communities by lay volunteers	12 communes from one rural Vietnam (6 intervention, 6 control)	Longitudinal – 238 children 5-25 months old (119 intervention, 119 control)	<p>Frequency of consuming PD foods (times per day)</p> <ul style="list-style-type: none"> - baseline - month 2-6 of intervention - month 12 of intervention <p>Quantity of food consumed (g)</p> <ul style="list-style-type: none"> - baseline - month 2-6 of intervention - month 12 of intervention <p>Meal time frequency (per day)</p> <ul style="list-style-type: none"> - baseline - month 2-6 of intervention - month 12 of intervention <p>Energy intake (kcal)</p> <ul style="list-style-type: none"> - baseline - month 2-6 of intervention - month 12 of intervention <p>Proportion met energy (kcal/kg) requirements</p> <ul style="list-style-type: none"> - baseline - month 2-6 of intervention - month 12 of intervention 	<p>4.3 vs. 4.2</p> <p>4.1 vs. 3.6</p> <p>3.8 vs. 3.7</p> <p>262.2 vs. 243.5</p> <p>299.7 vs. 254.5</p> <p>409.8 vs. 340.3</p> <p>4.6 vs. 4.4</p> <p>4.6 vs. 4.2</p> <p>4.9 ± 1.5 vs. 4.4</p> <p>629.2 vs. 596.6</p> <p>662.7 vs. 597.4</p> <p>826.9 vs. 718.4</p> <p>66.4% vs. 62.2%</p> <p>49.0% vs. 35.1%</p> <p>31.3% vs. 23.5%</p>	<p>NS</p> <p>p<0.05</p> <p>NS</p> <p>NS</p> <p>p<0.01</p> <p>NS</p> <p>p<0.01</p> <p>NS</p> <p>NS</p> <p>NS</p> <p>NS</p> <p>NS</p> <p>p<0.01</p> <p>NS</p>

⁵¹ Scale ranges from 1 (like tea) to 4 (like cooked rice).

FINDINGS		PREGNANCY AND LACTATION		METHODS	INTRODUCTION	EXECUTIVE SUMMARY
COMPLEMENTARY FEEDING	BREASTFEEDING					
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ^{§1}	P-VALUES / CIs ^{§2}
Palwala et al. (2009); India	Group education in communities by providers; Small media	5 communities in Mumbai	Longitudinal – 398 women with children 6-36 months old	<p>Mean amounts of food-stuffs fed to children</p> <p>Milk (mL)</p> <ul style="list-style-type: none"> - baseline vs. 1st follow-up - 1st follow-up vs. 2nd follow-up - 2nd follow-up vs. 3rd follow-up <p>Egg (g)</p> <ul style="list-style-type: none"> - baseline vs. 1st follow-up - 1st follow-up vs. 2nd follow-up - 2nd follow-up vs. 3rd follow-up <p>Mutton/ chicken/ fish (g)</p> <ul style="list-style-type: none"> - baseline vs. 1st follow-up - 1st follow-up vs. 2nd follow-up - 2nd follow-up vs. 3rd follow-up <p>Mean amount of fruit (g) fed to children</p> <ul style="list-style-type: none"> - baseline vs. 1st follow-up - 1st follow-up vs. 2nd follow-up - 2nd follow-up vs. 3rd follow-up <p>% of children fed green leafy vegetables (baseline vs. 3rd follow-up)</p>	<p>134 vs. 153</p> <p>153 vs. 196</p> <p>196 vs. 202</p> <p>20 vs. 21</p> <p>21 vs. 26</p> <p>26 vs. 29</p> <p>4 vs. 7</p> <p>7 vs. 9</p> <p>9 vs. 9</p> <p>41 vs. 61</p> <p>61 vs. 79</p> <p>79 vs. 82</p> <p>16.7% vs. 87.6%</p>	<p>p<0.05</p> <p>p<0.05</p> <p>NS</p> <p>p<0.05</p> <p>p<0.05</p> <p>NS</p> <p>p<0.05</p> <p>p<0.05</p> <p>NS</p> <p>p<0.05</p> <p>p<0.05</p> <p>NS</p> <p>p<0.001</p>

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Parvanta et al. (2007); Bangladesh	Traditional media; Mid-sized media; Small media; Counseling in homes by peers; Support group in communities by peers	northwest Bangladesh	Repeated cross-sectional – 428 women with children 6-24 months old (IGI=144, IG2=141, Control group=143)	<p>% of children fed carrot (baseline vs. 3rd follow-up)</p> <p>% of children fed tomato (baseline vs. 3rd follow-up)</p> <p>% of children fed vitamin c/ beta-carotene-rich fruits (baseline vs. 3rd follow-up)</p> <p>% of children fed other fruits (baseline vs. 3rd follow-up)</p> <p>% of children fed dal of thick consistency (1;2-3)</p> <p>- Baseline vs. 1st follow-up</p> <p>- 1st follow-up vs. 2nd follow-up</p> <p>- 2nd follow-up vs. 3rd follow-up</p>	<p>8.3% vs. 52.1%</p> <p>52.0% vs. 81.3%</p> <p>25.8% vs. 50.5%</p> <p>62.5% vs. 85.4%</p> <p>4.2% vs. 34%</p> <p>34% vs. 37.5%</p> <p>37.5% vs. 39.5%</p> <p>IGI vs. IG2⁵⁸ vs. CG</p> <p>74% vs. 75% vs. 58%</p> <p>33% vs. 52% vs. 17%</p> <p>42.5g vs. 40g vs. 30g</p> <p>25g vs. 25g vs. 20g</p>	<p>p<0.001</p> <p>p<0.001</p> <p>p<0.05</p> <p>Not reported</p> <p>Not reported</p> <p>Not reported</p> <p>p=0.003</p> <p>p=0.001</p> <p>p=0.001</p> <p>p=0.004⁵⁹</p>

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING							
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²			
Penny et al. (2005); Peru	Counseling in facilities by providers; Small media	1 city (Trujillo) with a population of 600,000	RCT – 377 newborns (187 intervention, 190 control)	% of children eating thick food as first main meal at meal times (i.e., not just giving soup) at... - 6 months - 8 months - 9 months - 12 months - 15 months - 18 months % of children consuming egg, chicken liver, or fish at... - 6 months - 8 months % of children consuming breast milk + 2 thick preparations + animal source food at 9 months % of children fed breast milk + 2 thick preparations + animal source food at 9 months	31% vs. 20% 21% vs. 27% 35% vs. 17% 42% vs. 26% 42% vs. 34% 44% vs. 38% 65% vs. 51% 61% vs. 49% 34% vs. 23% 34% vs. 23%	p=0.03 NS p=0.000 p=0.003 NS NS p=0.009 p=0.019 NS at 9, 12, 15, or 18 months p=0.029 NS at 6, 8, 12, 15, or 18 months p=0.029 NS at months 6, 8, 12, 15, or 18			

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Roy et al. (2005); Bangladesh	Group education in communities by lay volunteers; Small media	rural Bangladesh	RCT – 282 moderately malnourished children 6-23 months (93 in INE group, 99 in INE-SF group, and 90 in control group)	Use of feeding pots by mothers - At baseline - After 3 month intervention - After 6 month observation Children fed > 3 times/day - At baseline - After 3 month intervention - After 6 month observation	INE vs. INE-SF vs. Control 43% vs. 66% vs. 43% 99% vs. 100% vs. 47% 100% vs. 100% vs. 48% 3% vs. 13% vs. 15% 98% vs. 99% vs. 54% 97% vs. 100% vs. 58%	NS p<0.0001 p<0.0001 NS NS NS

58 IG1 included home-based counseling (once in a three-month period) by health educators to pregnant women and mothers of children 6–24 months old. IG2 included discussion of role modeling stories facilitated by peer group leaders during gardening group or credit group meetings.

59 It is not clear for which comparison this is the p-value. The authors' interpretation was as follows: "Mothers in the intervention groups (1 and 2) were more likely to report feeding any vegetables, and reported feeding a larger portion of vegetables using a food model, than mothers in the control group (3). These relationships were statistically significant... This result also indicates the seasonal availability of green vegetables and lack of yellow vegetables. On this level, it appears as if the interventions performed by groups 1 and 2 were nearly equal in their impact."

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING	BREASTFEEDING								
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²			
Roy et al. (2007); Bangladesh	Group education in communities by lay volunteers; Small media	121 Community Nutrition Centers (CNCs) of the Bangladesh Integrated Nutrition Project (BINP) in four regions	RCT – 576 normal and mildly malnourished children 6-9 months old (294 intervention, 282 control)	% of children fed < 3 eggs per week - baseline - endline (6 months) - follow-up (12 months) % of children fed 3 or more eggs per week - baseline - endline (6 months) - follow-up (12 months)	89.3% vs. 90% 51.5% vs. 83.7% 70.3% vs. 88.1% 11.3% vs. 10% 38.5% vs. 16.2% 29.8% vs. 11.9%	NS p<0.01 p<0.01 NS NS p<0.01			
				% of women who reported adding extra oil to their children's food - baseline - endline (6 months) - follow-up (12 months) CF fed to infant = or > 3 times/day - baseline - endline (6 months) - follow-up (12 months) Separate pot for child - baseline - endline (6 months) - follow-up (12 months)	1.6% vs. 22.8% 69.8% vs. 20.9% 61.3% vs. 21.5% 30.4% vs. 31.0% 83.8% vs. 19.4% 88.5% vs. 24.5% 52.5% vs. 52.3% 91.6% vs. 76.8% 91.8% vs. 76.8%	NS p<0.0001 p<0.0001 NS p<0.0001 p<0.0001 NS p<0.0001 p<0.0001			
Santos et al. (2001); Brazil	Small media; Counseling in facilities by providers	28 government health centers in a Southern Brazil city (14 intervention and 14 control)	RCT – 424 children less than 18 months old (218 intervention, 206 control)	Mean nutrient intake (kj) at 2nd follow-up (45-days post consultation) among infants	endline vs. baseline 3827.5 vs. 3546.8	NS			

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Sun et al. (2011): China	Small media; Mass media; Mid-sized media; Counseling in facilities by providers	2 counties in Shan'xi province (approximately 6,000 children 6-24 months of age)	Repeated cross-sectional – baseline (June 2008): 226 caregivers and their children 6-24 month-old; endline (January 2010): 221 caregivers and their children 6-24 month-old	<p>% of caregivers who introduced solid, semi-solid or soft foods after 6 months</p> <p>% of breastfed children fed minimal dietary diversity >4 groups</p> <p>% of non-breastfed children fed minimal dietary diversity >4 groups</p> <p>% of caregivers that knew about YYB</p> <p>Of those that knew about YYB, the % who ever purchased it</p> <p>Of those who ever purchased YYB, % of children consumed it...</p> <p>- every day</p> <p>- every other day</p> <p>% of breastfed children fed minimal meal frequency</p> <p>% of non-breastfed children fed minimal meal frequency</p> <p>% of breastfed children fed minimal acceptable diet</p> <p>% of non-breastfed children fed minimal acceptable diet</p>	<p>endline vs. baseline</p> <p>71.1% vs. 92.9%</p> <p>74.1% vs. 57.5%</p> <p>53.9% vs. 27.6%</p> <p>59.6% (endline)</p> <p>13.5% (endline)</p> <p>55.6% (endline)</p> <p>40.7% (endline)</p> <p>51.0% vs. 53.7%</p> <p>53.4% vs. 47.1%</p> <p>73.5% vs. 42.1%</p> <p>45% vs. 25.0%</p>	<p>NS</p> <p>p=0.007</p> <p>p=0.008</p> <p>Not reported</p> <p>Not reported</p> <p>Not reported</p> <p>Not reported</p> <p>NS</p> <p>NS</p> <p>p < 0.01</p> <p>p = 0.025</p>

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING							
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²			
Thompson and Harutyunyan (2009); Armenia	Counseling in homes by peers; Support group in communities by peers; Small media; Mid-sized media	16 villages	Repeated cross-sectional – 300 women with at least one child aged 24 months and younger at pre- and post-intervention	% of infants aged 6-9 months receiving breastmilk and CFs	endline vs. baseline 48.1% vs. 16.7%	NS			
Vazir et al. (2013); India	Counseling in homes by lay volunteers; Small media	60 villages from three Integrated Child Development Services (ICDS) Project areas in Andhra Pradesh (20 villages per group)	RCT – 600 women enrolled in third trimester of pregnancy and followed through child's 15 months of age (170 in CFG, 145 in RCF&PG, 168 in CG) ⁶⁰	% of children consuming goat/ chicken liver ⁶¹ - 9 months - 15 months % of children consuming goat meat - 9 months - 15 months % of children consuming poultry - 9 months - 15 months % of children consuming buffalo milk - 9 months - 15 months % of children consuming egg - 9 months - 15 months	CFG vs. CG, RCF&PG vs. CG 30.7% vs. 2.3%, 25.6% vs. 2.3% 38% vs. 13.1%, 33.7% vs. 13.1% 22.3% vs. 4.5%, 11.3% vs. 4.5% 43.5% vs. 33%, 44% vs. 33% 4.5% vs. 1.7%, 4.4% vs. 1.7% 37.5% vs. 18.9%, 45.2% vs. 18.9% 98.6% vs. 100%, 99.2% vs. 100% 81.5% vs. 72.7%, 78.9% vs. 72.7% 55.3% vs. 17.6%, 51.9% vs. 17.6% 73.9% vs. 54%, 77.7% vs. 54%	p<0.05, p<0.05 p<0.05, p<0.05 p<0.05, p<0.05 NS, NS NS, NS p<0.05, p<0.05 NS, NS NS, NS p<0.05, p<0.05 p<0.05, p<0.05 p<0.05, p<0.05			

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
				% of children consuming any banana - at 9 months - at 15 months	60.9% vs. 38.6%, 59.4% vs. 38.6% 79.3% vs. 61.9%, 78.3% vs. 61.9%	p<0.05, p<0.05 p<0.05, p<0.05
				% of children consuming any spinach - at 9 months - at 15 months	20.1% vs. 5.1%, 14.4% vs. 5.1% 42.4% vs. 29.5%, 45.2% vs. 29.5%	p<0.05, p<0.05 p<0.05, p<0.05
				Median energy intake (kcal) among children - at 9 months - at 15 months	348 vs. 209, 331 vs. 209 569 vs. 460, 569 vs. 460	p<0.05, p<0.05 p<0.05, p<0.05
				% of children consuming added fat - at 9 months - at 15 months	51.4% vs. 24.4%, 44.4% vs. 24.4% 42.4% vs. 29.5%, 52.5% vs. 29.5%	p<0.05, p<0.05 p<0.05, p<0.05

FINDINGS		PREGNANCY AND LACTATION		METHODS		INTRODUCTION		EXECUTIVE SUMMARY	
COMPLEMENTARY FEEDING		BREASTFEEDING							
STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁶¹	P-VALUES / CIs ⁶²			
Zaman et al. (2008); Pakistan	Counseling in facilities by providers; community/ social mobilization	36 health centers (18 per group)	RCT – 375 mothers and their children aged 6-24 months recruited 8-14 days after recruitment: 320 mother-child pairs (151 intervention, 169 control); 180 days after recruitment: 266 mother-child pairs (129 intervention, 137 control)	% of women who reported increasing the amount of milk offered to children ⁶² - At 8-14 days after recruitment - At 180 days after recruitment % of children offered eggs - At 8-14 days after recruitment - At 180 days after recruitment % of children offered chicken/ beef /mutton - At 8-14 days after recruitment - At 180 days after recruitment % of children offered liver - At 8-14 days after recruitment - At 180 days after recruitment	38.41% vs. 24.26% 48.0% vs. 29.2% 49.67% vs. 31.95% 60.32% vs. 39.69% 49.67% vs. 31.95% 60.32% vs. 39.69% 17.22% vs. 9.47% 30.95% vs. 19.85%	p= 0.0352 p= 0.0324 p= 0.0368 p= 0.0428 p= 0.0155 p= 0.0508 p= 0.0934 p= 0.1589			

60 CFG = Complementary feeding; RCF&PG = Responsive complementary feeding & play group; CG = Control group

61 Consumption is based on a Food Frequency Questionnaire used to assess the frequency of micronutrient-rich vegetable and animal foods consumed by infants during the previous week.

STUDY	APPROACHES USED	SCALE/SCOPE	EVALUATION METHODS	OUTCOME(S) MEASURED	RESULTS ⁵¹	P-VALUES / CIs ⁵²
Zhang et al. (2013); China	Group education in communities by providers; Counseling in homes by providers; community/social mobilization; Small media	8 townships (4 intervention, 4 control) in Laishui county	RCT – at baseline: 599 infants aged 2-4 months old (294 intervention, 305 control); 492 at 18 months of age (251 intervention, 241 control); data collected at baseline, 6, 9, 12, 15 and 18 months of age	% of women who reported adding ghee/ butter/oil to children's food - At 8-14 days after recruitment - At 180 days after recruitment % of women who reported offering children thick kitchuri - At 8-14 days after recruitment - At 180 days after recruitment % of women who encouraged children to eat when they refused food ⁶³ % of women who fed breast milk and easy-to-digest foods for children with diarrhea % of women who cooked easy-to-digest food separately for their children with diarrhea	30.46% vs. 24.85% 53.97% vs. 38.17% 61.59% vs. 44.97% 65.87% vs. 44.27% 88.0% vs. 53.9% 88.8% vs. 65.0% 67.3% vs. 32.8%	p= 0.5616 p= 0.1736 p= 0.0682 p=0.0441 p<0.05 p<0.05 p<0.05

⁶³ The authors also reported statistically significant differences between intervention and control groups at each time point in the infant and child feeding index (ICFI) which included breastfeeding, bottle-feeding, dietary diversity, food frequency, variety of food groups and frequency of consumption of different food groups. However, since no other articles reported on this indicator, this has not been emphasized in this review

F Works Cited and Literature Reviewed

Aboud, Frances E, Anna C Moore, and Sadika Akhter. 2008. "Effectiveness of a Community-based Responsive Feeding Programme in Rural Bangladesh: a Cluster Randomized Field Trial." *Maternal & Child Nutrition* 4 (4) (October): 275–286.

Aboud, Frances E, Sohana Shafique, and Sadika Akhter. 2009. "A Responsive Feeding Intervention Increases Children's Self-feeding and Maternal Responsiveness but Not Weight Gain." *The Journal of Nutrition* 139 (9) (September): 1738–1743.

ACC/SCN. 2001. *What Works? A Review of the Efficacy and Effectiveness of Nutrition Interventions*, Allen LH and Gillespie SR. ACC/SCN: Geneva in collaboration with the Asian Development Bank, Manila.

Arimond, Mary, and Marie T Ruel. 2004. "Dietary Diversity Is Associated with Child Nutritional Status: Evidence from 11 Demographic and Health Surveys." *The Journal of Nutrition* 134 (10) (October): 2579–2585.

Atwood, Stephen J., and Karen Codling. *Strategy to Reduce Maternal and Child Undernutrition*. Bangkok: UNICEF, East Asia and Pacific Regional Office, 2003.

Bhandari, N, R Bahl, B Nayyar, P Khokhar, J E Rohde, and M K Bhan. 2001. "Food Supplementation with Encouragement to Feed It to Infants from 4 to 12 Months of Age Has a Small Impact on Weight Gain." *The Journal of Nutrition* 131 (7) (July): 1946–1951.

Bhandari, Nita, Sarmila Mazumder, Rajiv Bahl, Jose Martines, Robert E Black, and Maharaj K Bhan. 2004. "An Educational Intervention to Promote Appropriate Complementary Feeding Practices and Physical Growth in Infants and Young Children in Rural Haryana, India." *The Journal of Nutrition* 134 (9) (September): 2342–2348.

Bhutta, Zulfiqar A, Jai K Das, Arjumand Rizvi, Michelle F Gaffey, Neff Walker, Susan Horton, Patrick Webb, Anna Lartey, and Robert E Black. 2013. "Evidence-based Interventions for Improvement of Maternal and Child Nutrition: What Can Be Done and at What Cost?" *The Lancet* 382 (9890) (August): 452–477.

Bhutta, Zulfiqar A, Tahmeed Ahmed, Robert E Black, Simon Cousens, Kathryn Dewey, Elsa Giugliani, Batool A Haider, et al. 2008a. "What Works? Interventions for Maternal and Child Undernutrition and Survival." *The Lancet* 371 (9610) (February): 417–440.

Black, Robert E, Cesar G Victora, Susan P Walker, Zulfiqar A Bhutta, Parul Christian, Mercedes de Onis, Majid Ezzati, Sally Grantham-McGregor, Joanne Katz, Reynaldo Martorell, Ricardo Uauy, and the Maternal and Child Nutrition Study Group. 2013. "Maternal and Child Undernutrition and Overweight in Low-income and Middle-income Countries." *The Lancet* 382 (9890): 427–451.

Bonvecchio, Anabelle, Gretel H Peltó, Erika Escalante, Erick Monterrubio, J P Habicht, Fernanda Nava, Maria-Angeles Villanueva, Margarita Safdie, and J A Rivera. 2007. "Maternal Knowledge and Use of a Micronutrient Supplement Was Improved with a Programmatically Feasible Intervention in Mexico." *The Journal of Nutrition* 137 (2) (February): 440–446.

Bortolini, Gisele Ane, and Márcia Regina Vitolo. 2012. "The Impact of Systematic Dietary Counselling During the First Year of Life on Prevalence Rates of Anemia and Iron Deficiency at 12-16 Months." *Jornal de Pediatria* 88 (1) (February): 33–39.

Bruyeron, Olivier, Mirr dyn Denizeau, Jacques Berger, and Serge Trèche. 2010. "Marketing Complementary Foods and Supplements in Burkina Faso, Madagascar, and Vietnam: Lessons Learned from the Nutrived Program." *Food and Nutrition Bulletin* 31 (2 Suppl) (June): S154–167.

Colecraft, Esi K, Grace S Marquis, Alfred A Bartolucci, LeaVonne Pulley, W Bruce Owusu, and H Michael Maetz. 2004. "A Longitudinal Assessment of the Diet and Growth of Malnourished Children Participating in Nutrition Rehabilitation Centres in Accra, Ghana." *Public Health Nutrition* 7 (4) (June): 487–494.

De Oliveira, Luciana Dias, Elsa Regina Justo Giugliani, Lilian Córdova do Espírito Santo, and Leandro Meirelles Nunes. 2012. "Impact of a Strategy to Prevent the Introduction of Non-breast Milk and Complementary Foods During the First 6 Months of Life: a Randomized Clinical Trial with Adolescent Mothers and Grandmothers." *Early Human Development* 88 (6) (June): 357–361.

Dewey, Kathryn G., and Seth Adu-Afarwuah. 2008. "Systematic Review of the Efficacy and Effectiveness of Complementary Feeding Interventions in Developing Countries." *Maternal & Child Nutrition* 4 (s1) (April): 24–85.

Dewey, Kathryn. *Guiding Principles for Complementary Feeding of the Breastfed Child*. Washington, DC, USA: PAHO/WHO, Division of Health Promotion and Protection/Food and Nutrition Program, 2003.

Dickey, Vanessa C, Helena Pachón, David R Marsh, Tran Thi Lang, David R Claussenius, Kirk A Dearden, Tran Thu Ha, and Dirk G Schroeder. 2002. "Implementation of Nutrition Education and Rehabilitation Programs (NERPs) in Viet Nam." *Food and Nutrition Bulletin* 23 (4 Suppl) (December): 78–85.

Dongre, Amol R, Pradeep R Deshmukh, and Bishan S Garg. 2011. "Community-led Initiative for Control of Anemia Among Children 6 to 35 Months of Age and Unmarried Adolescent Girls in Rural Wardha, India." *Food and Nutrition Bulletin* 32 (4) (December): 315–323.

Ghosh, Shanti, Asha Kilaru, and Saraswathy Ganapathy. 2002. "Nutrition Education and Infant Growth in Rural Indian Infants: Narrowing the Gender Gap?" *Journal of the Indian Medical Association* 100 (8) (August): 483–484, 486–488, 490.

Gibson, Rosalind S, and Victoria P Anderson. 2009. "A Review of Interventions Based on Dietary Diversification or Modification Strategies with the Potential to Enhance Intakes of Total and Absorbable Zinc." *Food and Nutrition Bulletin* 30 (1 Suppl) (March): S108–143.

Guldan, G S, H C Fan, X Ma, Z Z Ni, X Xiang, and M Z Tang. 2000. "Culturally Appropriate Nutrition Education Improves Infant Feeding and Growth in Rural Sichuan, China." *The Journal of Nutrition* 130 (5) (May): 1204–1211.

Guyon, Agnès B, Victoria J Quinn, Michael Hainsworth, Priscilla Ravonimanantsoa, Voahirana Ravelojoana, Zo Rambelison, and Luann Martin. 2009. "Implementing an Integrated Nutrition Package at Large Scale in Madagascar: The Essential Nutrition Actions Framework." *Food and Nutrition Bulletin* 30 (3) (September): 233–244.

Haque, M F, M Hussain, A Sarkar, M M Hoque, Fakir Anjuman Ara, and S Sultana. 2002. "Breast-feeding Counselling and Its Effect on the Prevalence of Exclusive Breast-feeding." *Journal of Health, Population, and Nutrition* 20 (4) (December): 312–316.

Harkins, Thomas, Christopher Drasbek, Juan Arroyo, and Michael McQuestion. 2008. "The Health Benefits of Social Mobilization: Experiences with Community-based Integrated Management of Childhood Illness in Chao, Peru and San Luis, Honduras." *Promotion & Education* 15 (2) (June): 15–20.

Imdad, Aamer, Mohammad Yawar Yakoob, and Zulfiqar A Bhutta. 2011. "Impact of Maternal Education About Complementary Feeding and Provision of Complementary Foods on Child Growth in Developing Countries." *BMC Public Health* 11 (Suppl 3): S25.

Kilaru, A, P L Griffiths, S Ganapathy, and Shanti Ghosh. 2005. "Community-based Nutrition Education for Improving Infant Growth in Rural Karnataka." *Indian Pediatrics* 42 (5) (May): 425–432.

Kimmons, Joel E, Kathryn G Dewey, Emdadul Haque, J Chakraborty, Saskia J M Osendarp, and Kenneth H Brown. 2004. "Behavior-change Trials to Assess the Feasibility of Improving Complementary Feeding Practices and Micronutrient Intake of Infants in Rural Bangladesh." *Food and Nutrition Bulletin* 25 (3) (September): 228–238.

Li, Yan, Masanaka Hotta, Anping Shi, Zhi Li, Jianzhong Yin, Guangping Guo, Kimiko Kawata, and Hiroshi Ushijima. 2007. "Malnutrition Improvement for Infants Under 18 Months Old of Dai Minority in Luxi, China." *Pediatrics International* 49 (2) (April): 273–279.

Lutter, CK, B M Daelmans, M de Onis, M Kothari, M T Ruel, M Arimond, M Deitchler, K G Dewey, M Blossner, and E Borghi. (2007). "Undernutrition, poor feeding practices, and low coverage of key nutrition interventions." *Pediatrics*. 128(6), e1418-1427.

Mackintosh, U Agnes Trinh, David R Marsh, and Dirk G Schroeder. 2002. "Sustained Positive Deviant Child Care Practices and Their Effects on Child Growth in Viet Nam." *Food and Nutrition Bulletin* 23 (4 Suppl) (December): 18–27.

Marriott, Bernadette P, Alan White, Louise Hadden, Jayne C. Davies, and John C. Wallingford. 2012. "World Health Organization (WHO) Infant and Young Child Feeding Indicators: Associations with Growth Measures in 14 Low-income Countries: WHO Core Feeding Indicators and Growth." *Maternal & Child Nutrition* 8 (3) (July): 354–370.

Mason, John B, Lisa S Saldanha, and Reynaldo Martorell. 2012. "The Importance of Maternal Undernutrition for Maternal, Neonatal, and Child Health Outcomes: An Editorial." *Food and Nutrition Bulletin* 33 (2 Suppl) (June): S3–5.

McNulty J. and CORE Group. *Positive Deviance / Hearth Essential Elements: A Resource Guide for Sustainably Rehabilitating Malnourished Children (Addendum)*, Washington, D.C.: CORE Group, 2005.

Pachón, Helena, Dirk G Schroeder, David R Marsh, Kirk A Dearden, Tran Thu Ha, and Tran Thi Lang. 2002. "Effect of an Integrated Child Nutrition Intervention on the Complementary Food Intake of Young Children in Rural North Viet Nam." *Food and Nutrition Bulletin* 23 (4 Suppl) (December): 62–69.

Palwala, Misba, Shweta Sharma, Shobha A Udipi, Padmini S Ghugre, Gopa Kothari, and Pradeep Sawardekar. 2009. "Nutritional Quality of Diets Fed to Young Children in Urban Slums Can Be Improved by Intensive Nutrition Education." *Food and Nutrition Bulletin* 30 (4) (December): 317–326.

Parvanta, C F, K K Thomas, and KS Zaman. 2007. "Changing Nutrition Behavior in Bangladesh: Successful Adaptation of New Theories and Anthropological Methods." *Ecology of Food and Nutrition* 46 (3/4): 221–244.

Penny, Mary E, Hilary M Creed-Kanashiro, Rebecca C Robert, M Rocio Narro, Laura E Caulfield, and Robert E Black. 2005. "Effectiveness of an Educational Intervention Delivered through the Health Services to Improve Nutrition in Young Children: a Cluster-Randomised Controlled Trial." *The Lancet* 365 (9474) (June 28): 1863–1872.

Roy, S K, G J Fuchs, Zeba Mahmud, Gulshan Ara, Sumaya Islam, Sohana Shafique, Syeda Sharmin Akter, and Barnali Chakraborty. 2005. "Intensive Nutrition Education with or without Supplementary Feeding Improves the Nutritional Status of Moderately-Malnourished Children in Bangladesh." *Journal of Health, Population, and Nutrition* 23 (4): 320–30.

Roy, Swapan Kumar, Saira Parveen Jolly, Sohana Shafique, George J Fuchs, Zeba Mahmud, Barnali Chakraborty, and Suchismita Roy. 2007. "Prevention of Malnutrition among Young Children in Rural Bangladesh by a Food-Health-Care Educational Intervention: A Randomized, Controlled Trial." *Food and Nutrition Bulletin* 28 (4): 375–83.

Ruel, Marie T, and Purnima Menon. 2002. "Child Feeding Practices Are Associated with Child Nutritional Status in Latin America: Innovative Uses of the Demographic and Health Surveys." *The Journal of Nutrition* 132 (6) (June): 1180–1187.

Santos, I, C G Victora, J Martines, H Gonçalves, D P Gigante, N J Valle, and G Pelto. 2001. “Nutrition Counselling Increases Weight Gain Among Brazilian Children.” *The Journal of Nutrition* 131 (11) (November): 2866–2873.

Sun, Jing, Yaohua Dai, Shuaiming Zhang, Jian Huang, Zhenyu Yang, Junsheng Huo, and Chunming Chen. 2011. “Implementation of a Programme to Market a Complementary Food Supplement (Ying Yang Bao) and Impacts on Anaemia and Feeding Practices in Shanxi, China.” *Maternal & Child Nutrition* 7 Suppl 3 (October): 96–111.

Thompson, Michael E, and Tsovinar L Harutyunyan. 2009. “Impact of a Community-based Integrated Management of Childhood Illnesses (IMCI) Programme in Gegharkunik, Armenia.” *Health Policy and Planning* 24 (2) (March): 101–107.

Vazir, Shahnaz, Patrice Engle, Nagalla Balakrishna, Paula L Griffiths, Susan L Johnson, Hilary Creed-Kanashiro, Sylvia Fernandez Rao, Monal R Shroff, and Margaret E Bentley. 2013. “Cluster-randomized Trial on Complementary and Responsive Feeding Education to Caregivers Found Improved Dietary Intake, Growth and Development Among Rural Indian Toddlers.” *Maternal & Child Nutrition* 9 (1) (January): 99–117.

World Health Organization. *Indicators for assessing infant and young child feeding practices: conclusions of a consensus meeting held 6–8 November 2007 in Washington D.C., USA*. Geneva: World Health Organization, 2008.

World Health Organization/UNICEF. *Complementary feeding of young children in developing countries: a review of current scientific knowledge*. Geneva: World Health Organization, 1998.

Zaman, Shakila, Rifat N Ashraf, and José Martines. 2008. “Training in Complementary Feeding Counselling of Healthcare Workers and Its Influence on Maternal Behaviours and Child Growth: a Cluster-randomized Controlled Trial in Lahore, Pakistan.” *Journal of Health, Population, and Nutrition* 26 (2) (June): 210–222.

Zhang, Jingxu, Ling Shi, Da-Fang Chen, Jing Wang, and Yan Wang. 2013. “Effectiveness of an Educational Intervention to Improve Child Feeding Practices and Growth in Rural China: Updated Results at 18 Months of Age.” *Maternal & Child Nutrition* 9 (1) (January): 118–129.

APPENDIX: SBCC LITERATURE REVIEW SEARCHING SETS

The following search terms were used for this review. They are organized according to the original conceptualization of categories of nutrition practices and SBCC approaches. Over time, these search terms evolved, so they do not precisely align with the current chapters but they do provide evidence of all terms that were searched. Note that the asterisk (“*”) was used to call up variations in word endings.

A. PRACTICES

1. Optimal maternal nutrition practices

((pregnancy OR lactation) AND ((diet OR consumption) OR (energy intake) OR (energy expenditure) OR (micronutrient intake) OR (iron supplement*) OR (diet* diversity) OR (nutrition practice))

2. Optimal infant and young child nutrition practices

a) Breastfeeding

((breast feed*) OR (infant feeding) OR (rooming-in care) OR (rooming-in) OR (early initiation of breast feed*) OR (initiation of breast feed*) OR (timely initiation of breast feed*) OR (exclusive breast feed*) OR (breast milk substitute) OR (length of feeding) OR (breast feed* on both breast) OR (feed* on demand) OR (breast feed* frequency) OR (duration of breast feed*))

NOTE: Our interest in breast milk substitutes is limited to circumstances where breast feeding is not possible.

b) Complementary feeding

((child) OR (infant)) AND ((complementary food*) OR (complementary feeding) OR (introduction of complementary food) OR ((frequency) AND (feeding)) OR (active feeding) OR (dietary diversity) OR (protein) OR (energy) OR (food-based intervention) OR ((food*) AND ((liquid) OR (soft) OR (semi-solid) OR (solid) OR (amount) OR (quantity) OR (quality) OR (consistency) OR (density))))

3. IYCF of the sick and/or malnourished and/or HIV+ child

((child*) OR (infant*)) AND ((illness) OR (malaria) OR (pneumonia) OR (HIV) OR (diarrhea) OR (malnutrition) OR (stunt*) OR (wast*) OR (underweight)) AND ((breast feed*) OR (feeding) OR (rooming-in care) OR (breast milk substitute) OR (complementary food*) OR (complementary feeding) OR (food-based intervention) OR (IMCI food box) OR (recuperative feeding) OR (Ready-to-use Therapeutic Food) OR (Ready-to-use Supplementary Food))

4. Control and prevention of MN deficiencies

((child OR wom*n) AND ((intake OR consumption) AND (food) AND ((vitamin A rich) OR (vitamin A fortified) OR (animal source) OR (iron rich))) OR (Purchase of fortified food) OR (micronutrient powder) OR (sprinkles) OR (iron intake) OR (zinc intake) OR (anemia) OR (fortified complementary food) OR (micronutrient powder) OR (ITN) OR (insecticide-treated nets) OR (lipid-based nutrient supplement) OR (ready-to-use food) OR (de-worm*) OR (deworm*) OR (helminth*) OR (malaria prophylaxis) OR (intermittent preventive therapy) OR (IPT) OR (Lactational amenorrhea method) OR (Lactational amenorrhoea method) OR (LAM)))

5. WASH

((hygiene) OR (handwash*) OR (hand-wash*) OR (wash hand*) OR (food prepar*) OR ((safe handl*) AND food) OR ((safe water) AND use*) OR (boil* water) OR (chlorine AND water) OR (use* AND latrine))

B. SBCC APPROACHES

1. Broad and cross-cutting approaches

((behavior change) OR (behavior-centered) OR (behaviour change) OR (behaviour-centered) (communication channels) OR (communication) OR (essential nutrition actions) OR (information education and communication) OR (IEC) OR (social change) OR (social mobiliz*) OR (social movement) OR (social network*) OR (social norm*) OR (social support) OR (strategic communication))

NOTE: Search results that reference essential nutrition actions must include a communications/counseling component.

2. Community-based approaches

((baby friendly community initiative) OR (baby-friendly community initiative) OR (behavior signal*) OR (care group) OR (community defined quality) OR (community engagement) OR (community intervention) OR (community leader) OR (community mobilization) OR (community outreach) OR (community role-play) OR (community-led) OR (counsel) OR (dance) OR (demonstration*) OR (drama) OR (group education) OR (model breastfeeding community) OR (mother* group) OR (music) OR (positive deviance) OR (public opinion leader) OR (religious leader) OR (support group) OR (trials of improved practices) OR (TIPS))

NOTES: Search results that reference community defined quality or trials of improved practices (TIPS) must include a communications/counseling component. Supports groups may include peer, mother, mother-to-mother and other types.

3. Facility-based approaches

((community health worker) OR (frontline health worker) OR (midwives) OR (nurse*) OR (nutrition worker) OR (physician) OR (traditional birth attendant) OR (partnership defined quality) OR (PDQ) OR (provider defined quality) OR (quality AND communications) OR (quality AND counseling) OR (quality assurance) OR (quality improvement) OR (baby friendly hospital initiative) OR (baby-friendly hospital initiative) OR (BFHI) OR (baby-friendly) OR (nutrition assessment counseling and support) OR (NACS) OR (prevention of mother to child transmission) OR (PMTCT))

NOTE: Search results that reference Partnership Defined Quality (PDQ), Provider Defined Quality, quality assurance, quality improvement, and prevention of mother-to-child transmission (PMTCT) must include a communications/counseling component.

4. Interpersonal communication approaches

((caregiver contact) OR (client-provider interaction) OR (patient-provider interaction) OR (physician-patient interaction) OR (provider-client interaction) OR (provider-patient interaction) OR (clinic talks) OR (counsel*) OR (facilitated discussion) OR (growth promot*) OR (home visit) OR (household outreach) OR (outreach) OR (interpersonal communication) OR (job aid) OR (negotiat*) OR (peer educat*) OR (persuas*) OR (promot*) OR (role play))

NOTES: Counsel* includes but is not limited to peer counseling. Job aid references must include a communications/counseling component.

5. Mass media and social marketing

((advocacy) OR (marketing) OR (mass media) OR (print media) OR (radio) OR (SMS) OR (social franchising) OR (social marketing) OR (social media) OR (television) OR (text messag*) OR (video))

NOTE: References to social franchising and social marketing must include a communications/counseling component.

C. ASSESSMENT / EVALUATION TERMS

((review) OR (effectiv*) OR (evaluat*) OR (evidence) OR (impact) OR (improv*) OR (meta-analysis) OR (randomized controlled trial) OR (RCT))

D. COUNTRY EXCLUSION

NOT (United States)

NOTE: All studies conducted in all other high income countries were individually excluded during the review process.



USAID
FROM THE AMERICAN PEOPLE

SPRING
Strengthening Partnerships, Results,
and Innovations in Nutrition Globally