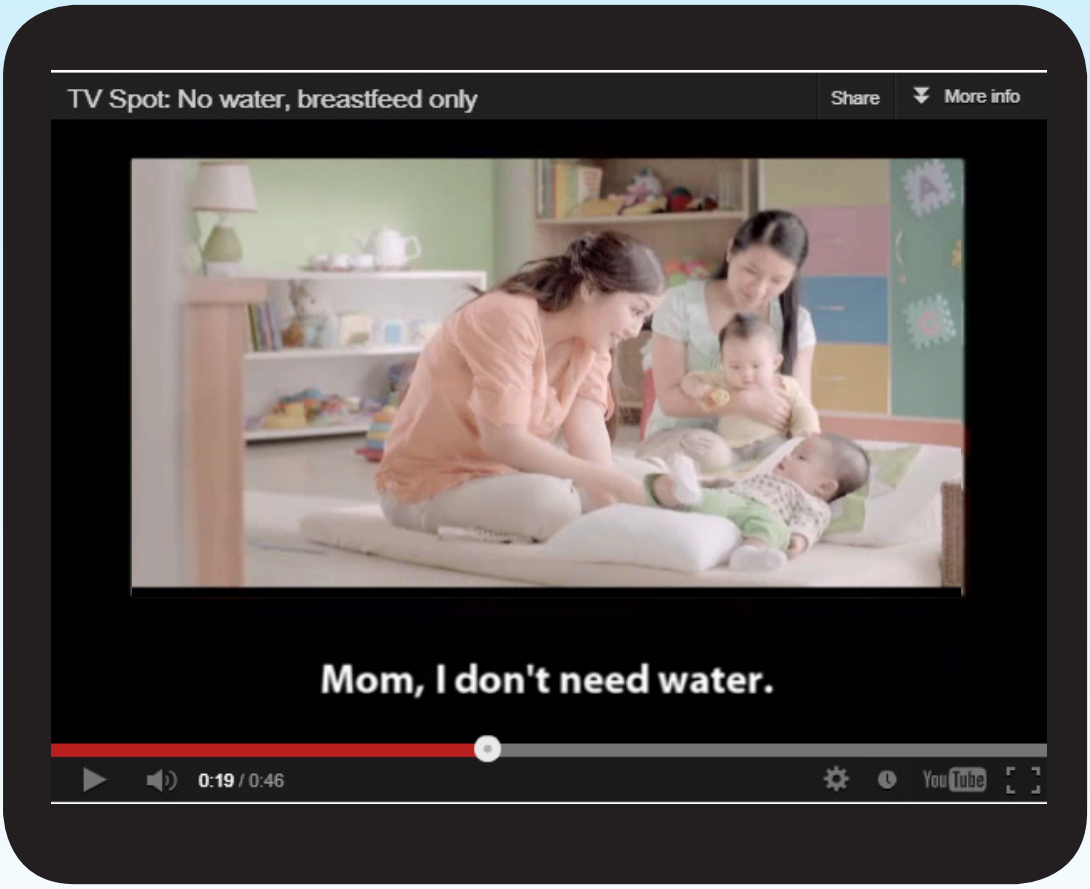
Using behavioral theory to evaluate the impact of mass media on breastfeeding practices in Viet Nam

Evaluation plan and baseline findings

August 2013



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Alive & Thrive (A&T) is a six-year (2009-2014) initiative to improve infant and young child feeding practices by increasing rates of exclusive breastfeeding and improving complementary feeding practices. The first 2 years of life provide a window of opportunity to prevent child deaths and ensure healthy growth and brain development. Alive & Thrive aims to reach more than 16 million children under 2 years old in Bangladesh, Ethiopia, and Viet Nam through various delivery models. Learnings are shared widely to inform policies and programs throughout the world. Alive & Thrive is funded by the Bill & Melinda Gates Foundation and managed by FHI 360. Other members of the A&T consortium include BRAC, GMMB, IFPRI, Save the Children, World Vision, and UC-Davis.

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Many contributed to the design of the evaluation plan for Alive & Thrive's Viet Nam mass media campaign for improved breastfeeding practices. In particular, we thank Dr. Robert Hornik of the Annenberg School for Communication, University of Pennsylvania, who generously contributed his time to review our draft plan and for a provocative discussion that helped us refine the design. We thank Nadra Franklin of FHI 360 for her ongoing leadership to ensure the rigor this evaluation requires.

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And, of course, this evaluation would not be possible without several thousand Vietnamese mothers who trusted us enough to share details about their lives and their children.

Acronyms

A&T	Alive & Thrive
BF	Breastfeeding
EBF	Exclusive breastfeeding
HIV	Human immunodeficiency virus
ISMS	Institute of Social and Medical Studies
IYCF	Infant and young child feeding
MTBT	*Mat Troi Be Tho,* Little Sun franchise (for IYCF counseling)
NIN	National Institute of Nutrition
OR	Odds ratio
PSU	Primary sampling unit
TIPs	Trials of improved practices
UNICEF	The United Nations Children's Fund
WHO	World Health Organization

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Executive Summary

The Bill & Melinda Gates Foundation asked the question: To what extent can a national mass media campaign alone change breastfeeding behaviors?

Alive & Thrive (A&T) Viet Nam had, from the initial program design, planned to take advantage of the country's sophisticated media environment in its promotion of improved breastfeeding practices. In a country of more than 87 million, TV viewership is almost universal and Internet use is growing by leaps and bounds (from media audit conducted by Ogilvy in 2009 for A&T). Mass media is a logical tool for reaching enough families to have a population-wide effect on health behaviors. Yet there is a dearth of evidence on mass media's impact on breastfeeding. A 2010 Lancet review of mass media for health promotion noted that, for breastfeeding media campaigns, "reviews from the 1990s onwards seem scarce or non-existent." (Wakefield, Loken, & Hornik, 2010)

The Foundation was eager to invest in a mass media campaign, but asked that a portion of the investment be used to mount a rigorous evaluation of that campaign to shed light on the role of mass media in effecting behavior change on a large scale. This report lays out that evaluation plan and shows how a series of surveys over 3 years will assess the media campaign's impact on exclusive breastfeeding. Initial analyses of the baseline data show how these early findings are aiding in refining this mass media evaluation plan, particularly the items to track over the life of the campaign, and in identifying the precise triggers of breastfeeding behaviors.

In Viet Nam, only about 20 percent of infants under 6 months are exclusively breastfed, as recommended by WHO. Exclusive breastfeeding is not a behavior in itself, but the result of a series of component behaviors: not offering water or other liquids, not giving infant formula, and not feeding solid or semisolid foods. The evaluation will capture changes in overall rates of exclusive breastfeeding and of its component behaviors.

Numerous factors influence a mother's breastfeeding practices. A&T's formative research teased out the complex factors that tip mothers toward giving up too early on breastfeeding. In Viet Nam, the baby's grandmothers and father hold powerful sway. Health providers may tell the mother she is incapable of producing enough milk, even for baby's first day. The mother watches what others like her are doing, including giving baby water. Despite restrictions on advertising of breastmilk substitutes, she is bombarded with marketing of infant formula.

A&T's mass media evaluation is built on behavioral theory and formative findings. It includes creation, testing, and refinement of questions to measure the likely behavioral determinants. The analyses of baseline data demonstrate that many of the specific factors measured, to assess knowledge and the mother's beliefs towards the behaviors—her attitudes, perceived social norms, and perceived behavioral control, are strongly associated with exclusive breastfeeding and its component behaviors. Yet in at least one case, data from the baseline survey show that a particular factor assumed to prompt behavior change is not, after all, associated with the behaviors. The evaluation will provide ongoing tracking of mothers' knowledge and beliefs. Sharing of the methods refined for measuring these determinants and the early findings can help move the nutrition field forward into practical application of behavioral science to strategic program design.

A&T's mass media campaign benefits from high level expertise, starting with the completion of formative research by the Hanoi Medical University followed by support from the cross-cultural marketing firm Huemanitas to gain insights into

Vietnamese cultural constraints and supports for breastfeeding. Market research and pretesting by Indochina Research, concept development and production by Ogilvy & Mather, and media placement by MAXUS Viet Nam contributed to a strong campaign strategy. Two entertaining TV spots cut through the media clutter by showing live, talking babies doling out advice to their mothers on how and why to breastfeed exclusively. A popular and beautiful celebrity plays the loving mother, and colors, visuals, and the sweet voices of children make the spots emotionally appealing. The first spot addresses the need to avoid giving babies water and affirms that with breastmilk alone, the baby will get enough liquid to avoid being thirsty. The second spot assures mothers that they can produce breastmilk that is sufficient in both quality and quantity to offer their babies complete nourishment for 6 months. Both spots stress messages that pretesting showed appeal to a Vietnamese mother: breast- milk contains all the water and nutrients babies need for 6 months; exclusive breastfeeding makes children smart and healthy; the advice is based on scientific evidence from global experts; and other Vietnamese mothers exclusively breastfeed.

Scholars offer evidence that public health communication—even mass media alone—can result in positive changes in behaviors (Hornik, 2002). After consultation with experts in the field of communication evaluation from the Annenberg School for Communication/ University of Pennsylvania, A&T developed a solid evaluation plan that accommodates the reality of an evolving mass media campaign. Since mass media reach is almost universal in Viet Nam, it is not possible to establish a control group that is unexposed to the campaign's messages. To compensate for lack of a control group, the evaluation plan comprises four approaches. Each approach has methodological limitations. But if the approaches support consistent conclusions, together they can provide strong evidence for campaign effects. This report describes those four approaches.

The baseline survey, which included 6,175 mothers of infants 0-5.9 months in 11 provinces, measured mothers' reported exposure to different sources of information on and support for breastfeeding. Repeated surveys in October 2012, April 2013, and October 2013 will measure trends mothers' exposure to the media campaign's messages and allow us to identify associations between exposure and breastfeeding behaviors as well as between exposure and behavioral determinants.

The analysis of these baseline data began to refine the design of the mass media evaluation plan itself. Already, data analysis has allowed for a reduction of the questions used to measure behavioral determinants, and preliminary establishment of associations between those determinants and the behaviors promoted. This report on the evaluation plan and baseline findings offers support for others as they consider ways to use and evaluate mass media for improved infant and young child feeding.

Using behavioral theory to evaluate the impact of mass media on breastfeeding practices in Viet Nam: Evaluation plan and baseline findings

By Silvia Alayón, Danielle Naugle, Ann Jimerson, Jesse Lamarre-Vincent, Nguyen Thanh Tuan, Nemat Hajeebhoy, Nguyen Huong Giang, and Carol Baume

BACKGROUND

In 2008, global health experts confirmed that proper nutrition can prevent one in five deaths of children under five years of age. If mothers were to practice early and exclusive breastfeeding for the baby's first 6 months of life, it could afford infants a six times greater chance for survival. Adequate nutrition in the first 2 years of life would save millions of lives and set millions of children on the course to optimal growth and development (Bhutta, et al., 2008).

Other health programs (e.g., HIV, family planning, and vaccine promotion) have demonstrated the impact that traditional mass media—television, radio, and outdoor advertising—can have on health behaviors. However, a recent review in *The Lancet* of the use of mass media campaigns to change health behavior noted: "Although mass media programmes to promote breastfeeding have been mounted, reviews from the 1990s onwards seem scarce or non-existent" (Wakefield, Loken, & Hornik, 2010).

Given relatively low funding levels and lack of clarity about "what works," most child feeding interventions have been small, local, and limited in scope. In 2009, the Bill & Melinda Gates Foundation awarded the Alive & Thrive (A&T) project to develop models for improving infant and young child feeding practices at scale and to document what does and does not work to improve child feeding, including exclusive breastfeeding.[1] Three diverse countries with large populations—Bangladesh, Ethiopia, and Viet Nam—were selected to develop and implement comprehensive program models that work through policy advocacy, mass media, community mobilization, interpersonal communication, and service delivery.

Viet Nam is a sophisticated media market with nearly universal access to television. Data from a survey conducted by A&T in four provinces in 2011 revealed that about 99 percent of mothers with children under two had access to television. Over 90 percent of them reported watching TV weekly (Nguyen P, 2011). The wide reach of mass media provides a unique opportunity to deliver child feeding messages at scale. In Viet Nam, A&T aims to reach nearly 1 million children under 2 years of age with intensive activities such as one-to-one and group counseling and another 1.5 million through a carefully designed mass media campaign, which aims to increase the rates of exclusive breastfeeding among infants under 6 months of age.

EVALUATION DESIGN

Given the dearth of rigorous studies on the effect of mass media on breastfeeding promotion, the Bill & Melinda Gates Foundation expressed an interest in learning the extent to which mass media could be used to influence breastfeeding behaviors. In response, A&T paired the mass media campaign with a rigorous evaluation, which is expected to add to the body of knowledge on the use of mass media as an intervention to increase exclusive breastfeeding and related behaviors. This report describes the approaches

1 For more information about the Alive & Thrive project, visit: http://www.aliveandthrive.org

that are being used to evaluate the A&T mass media campaign in Viet Nam, presents data from the baseline survey, and discusses next steps for the evaluation.

The goal of the evaluation is to document the effect of the mass media campaign on breastfeeding behaviors in Viet Nam. A major challenge in designing this evaluation was the nationwide reach of the mass media campaign and the near-universal coverage of television, which made it impossible to establish an unexposed control or comparison group. To overcome this challenge, A&T consulted with experts in public health communication research[2] to design an evaluation that would allow the project to understand the effect of its mass media campaign on exclusive breastfeeding rates. The evaluation aims to respond to the following questions:

- To what extent can mass media alone change breastfeeding behaviors?
- What is the impact of mass media combined with interpersonal interventions on the same behaviors?

The data will also allow A&T to explore the following:

- **Reach.** How wide is the reach of A&T's campaign? What percentage of the target audience recalls seeing or hearing the campaign messages?
- **Behavior change.** Can we link exposure to the campaign to increases in specific breastfeeding behaviors?
- **Behavioral determinants of exclusive breastfeeding.** The evaluation will contribute to knowledge about what the important determinants for exclusive breastfeeding are: knowledge, attitudes, perceived advantages/disadvantages, outcome expectation, self-efficacy, and norms.
- **Role of media campaign.** How does exposure to the media campaign compare with exposure to other elements of the program (e.g., social franchises for face-to-face nutrition counseling)? How does the mass media component intersect with other components?
- **Rural-urban.** Does the impact of mass media vary for urban and rural populations?

A&T works in 15 of the 63 provinces and municipalities in Viet Nam. The overall structure of the evaluation is a modified continuous measurement design. To economize, the evaluation's baseline data collection in 2011 was coordinated with a previously planned survey in 11 provinces. Three interim surveys, in 2012 and 2013, are timed to correspond to the media bursts. An endline survey will be conducted in 2014.

To compensate for the inability to establish a control group, four different approaches will be integrated into the mass media evaluation. Each of the approaches, briefly described below, has methodological limitations. However, if the approaches support consistent conclusions, together they can provide strong evidence for campaign effects. The first approach simply assesses the rate of change in the outcome of interest—exclusive breastfeeding—before, during, and after the campaign. Data are available from before the campaign, and A&T will have several data points during the campaign to construct these trends. The expectation with this approach is that the slope of the trend in breastfeeding rates observed during and after the campaign will be steeper than the slope observed before the media campaign. The second approach will explore whether there is an association between exposure to the campaign and exclusive breastfeeding, while controlling for as many

2 Dr. Robert Hornik, Wilbur Schramm Professor of Communication at Annenberg School for Communication, University of Pennsylvania; Dr. Carol Baume, independent consultant and expert on communication evaluation; and Danielle Naugle, PhD student at Annenberg School for Communication, University of Pennsylvania

confounders as possible. This approach also measures whether knowledge, beliefs, and social norms addressed by the campaign are associated with exposure and behavior, more so than those that are not addressed by the campaign. The third approach is a constructed cohort design; it will use baseline data to predict exposure to the mass media campaign. Based on predicted exposure, individuals will be classified into two groups—high and low exposure—and their rates of exclusive breastfeeding will be compared over time. In a successful campaign, the rate of exclusive breastfeeding is expected to increase more quickly in the high exposure group. The fourth approach is also a constructed cohort design, using baseline data to create and compare high and low exposure geographical areas. All of these approaches are described in more detail in Annex A.

VIET NAM CONTEXT

Although Viet Nam is a lower middle-income country, stunting of children under 5 years of age is still prevalent. In 2010, the Viet Nam National Institute of Nutrition (NIN) reported that 29 percent of children under 5 years of age are stunted. While most mothers (98 percent) in Viet Nam breastfeed for a period of time, practices are suboptimal. Only 62 percent practice "early initiation," putting the baby to breast within the first hour of life. Many mothers give their children water, use infant formula, and/or introduce soft and semisolid foods too early (i.e., before 6 months of age). Consequently, 20 percent of infants under 6 months of age, are exclusively breastfed, as recommended by WHO and UNICEF (National Institute of Nutrition, UNICEF, Alive & Thrive Viet Nam, 2010).

Alive & Thrive Viet Nam

In Viet Nam, A&T has established a network of almost 800 *Mat Troi Be Tho* (MTBT) or The Little Sun franchises to deliver individual and group counseling on infant and young child feeding (IYCF) within existing government health facilities. In addition, IYCF support groups have been established in 225 villages not served by the franchises. All interpersonal contacts are designed for pregnant women and mothers and other caretakers of children under 24 months.

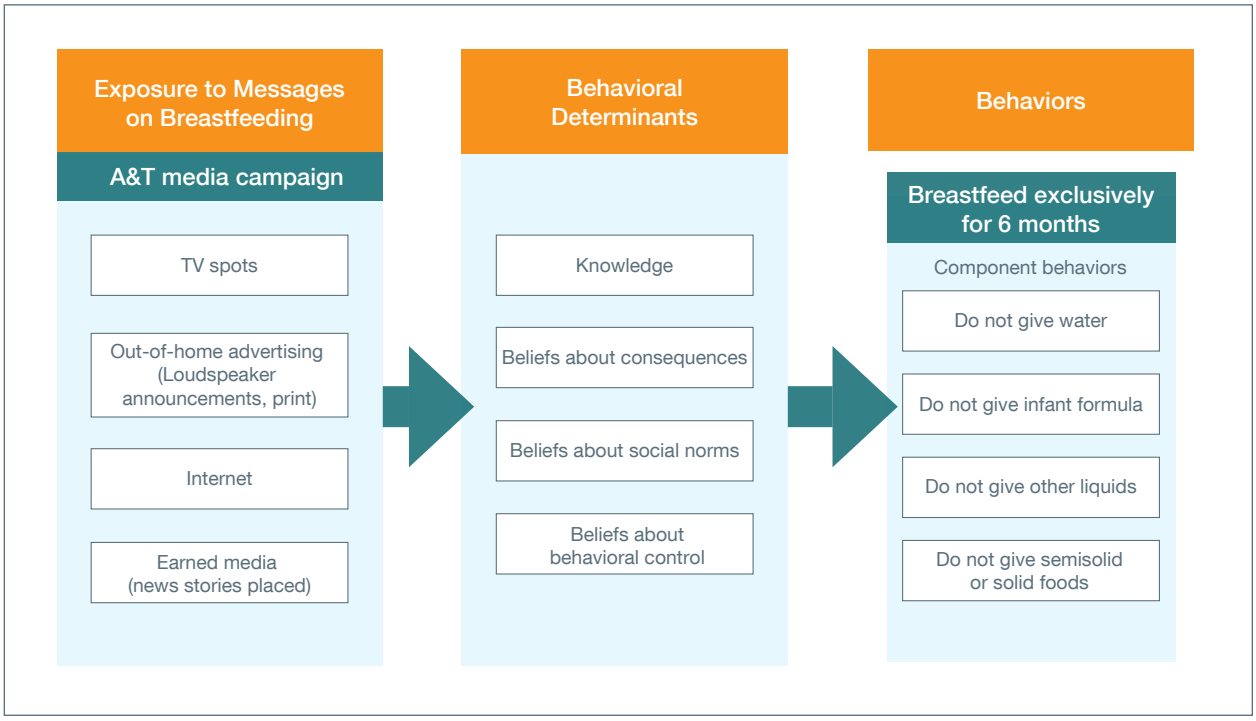
Even with this extensive network to deliver interpersonal communication interventions at scale, A&T aimed to reach an additional 1.5 million mothers through mass media. To achieve this, A&T took advantage of high rates of TV viewership and designed and aired a national campaign that promotes exclusive breastfeeding for 6 months.

From A&T's initial planning stages in Viet Nam, mass media advertising through various channels was viewed as a valuable tool for large-scale promotion of improved feeding practices. Infant formula is heavily advertised in Viet Nam, which is a rapidly urbanizing environment where women work outside the home. It was assumed that investing heavily in breastfeeding promotion through mass media and strengthening regulation and compliance with the International Code of Marketing of Breastmilk Substitutes could shape breastfeeding practices.

A&T Mass media strategy in Viet Nam

The campaign's strategy was based on a simplified behavior change model, which represents a synthesis of behavior change theories (see Figure 1 on the next page). The model proposes that exposure to the campaign's messages leads to a change in behavioral determinants such as knowledge, beliefs about outcomes of the behavior, perceptions of social norms, and self-efficacy. These, in turn, influence breastfeeding behaviors. The model suggests that exclusive breastfeeding is not a single behavior, but a collection of behaviors, referred to hereafter as "component behaviors." Each woman's decision to practice the component behaviors is influenced by the knowledge she possesses, her beliefs about the

FIGURE 1: A&T'S BEHAVIOR CHANGE MODEL FOR MASS MEDIA CAMPAIGN



potential consequences of practicing the behavior, her beliefs about social norms and the value she places on these when making decisions, and her beliefs about her own ability to practice these behaviors (behavioral control). These factors are referred to as "behavioral determinants" and are believed to be precursors to behavior change. The mass media messages in Viet Nam aim to increase exclusive breastfeeding by both promoting the component behaviors and also addressing the behavioral determinants believed to be most strongly associated with exclusive breastfeeding.

A&T formative research informs design of the mass media strategy

In 2009, A&T conducted formative research which helped program staff identify patterns of exclusive breastfeeding and its component behaviors (Hoat, Huong, and Xuan, 2010). Both qualitative and quantitative studies identified current breastfeeding behaviors and the barriers and facilitators of optimal practices. The study confirmed that exclusive breastfeeding falls off dramatically over time. By 5 months of age, very few children are exclusively breastfed.

In Viet Nam, giving infants water after breastfeeding is a common practice, either to quench thirst or to "clean" the infant's mouth after feeding. In the formative research, mothers often stated that they give water because they think the baby will be thirsty, especially in hot weather. They also believe they must rinse their baby's mouth out to avoid oral thrush, a yeast infection in the mouth common among newborns. Giving water was identified as the main barrier to exclusive breastfeeding.

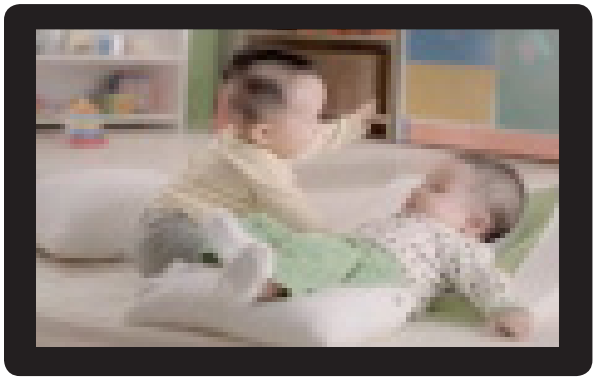
Findings showed that only half of mothers understood what "exclusive breastfeeding" meant (that is, only breastmilk and nothing else), meaning that media messages would need to be explicit about the component behaviors, such as not giving water. Among mothers and those who support and guide them, lack of confidence (or self-efficacy) that their breastmilk is sufficient leads many women to add infant formula as a hedge against their "poor quality" breastmilk (Hoat, Huong, & T, 2010). Many mothers said they believed they lacked sufficient breastmilk (in both quantity and quality) to nourish their children adequately up to 6 months of age, contributing to use of formula and to early introduction of complementary foods. Mothers stated that even health providers doubted the mothers' ability to produce adequate breastmilk. Interviews with health workers revealed that this doubt led them occasionally to advise mothers to take infant formula to the delivery site or to give the baby infant formula beginning around 3 or 4 months of age. Another challenge to 6 months of exclusive breastfeeding identified in the study was the need for employed mothers to return to work, which for those employed in the formal sector, occurred after 4 months of leave.

Mothers revealed that social norms play an important role in their breastfeeding practices, stating that their breastfeeding decisions were influenced by other mothers, parents, other family members, and advertisements. The second phase of the formative study (Alive & Thrive, 2012b) (TIPs, or trials of improved practices) identified the following barriers to exclusive breastfeeding for mothers with babies 2 or 3 months old: family and community pressure, lack of appropriate information, difficulty in changing ingrained practices, and lack of time and convenience. Mothers of children 4 to 5 months old identified similar barriers to exclusive breastfeeding and also listed mothers' return to work and the perception that breastmilk is not sufficient for children at this age. Mothers indicated that factors that could facilitate improved breastfeeding practices included receiving clear explanations as to why infants need exclusive breastfeeding and why they do not need water.

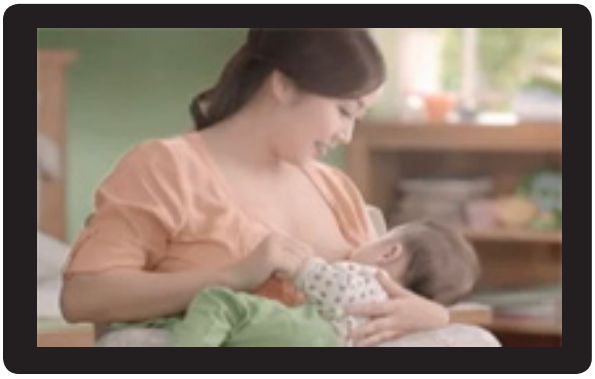
To begin developing a strategic plan for the mass media campaign, A&T partnered with a U.S.-based cross-cultural marketing firm, Huemanitas, to review the formative research findings and to supplement that data with a cultural immersion exercise to capture Vietnamese communication styles, family dynamics, aspirations, cultural narratives, and media engagement. The findings from Huemanitas' study and consultations led to testing of a series of concepts or message platforms. Subsequent testing confirmed that the media campaign should use emotionally appealing messages that emphasize the following:

- Exclusive breastfeeding is associated with the child's intelligence (a highly revered benefit)
- Global, scientific experts recommend exclusive breastfeeding for 6 months
- Other Vietnamese mothers breastfeed exclusively (social norm)
- Mothers can produce milk of high enough quality and quantity to provide all the nutrients and water the baby needs for 6 months (behavioral control)

A&T took these initial concepts to Ogilvy & Mather Viet Nam for them to create and produce mass media products including two TV spots on breastfeeding with accompanying print, bus



advertisements, and neighborhood loudspeaker announcements. An extensive period of concept testing and pretesting of messages and materials, conducted by Indo-China Research Limited, led to selection of the "talking babies" concept.



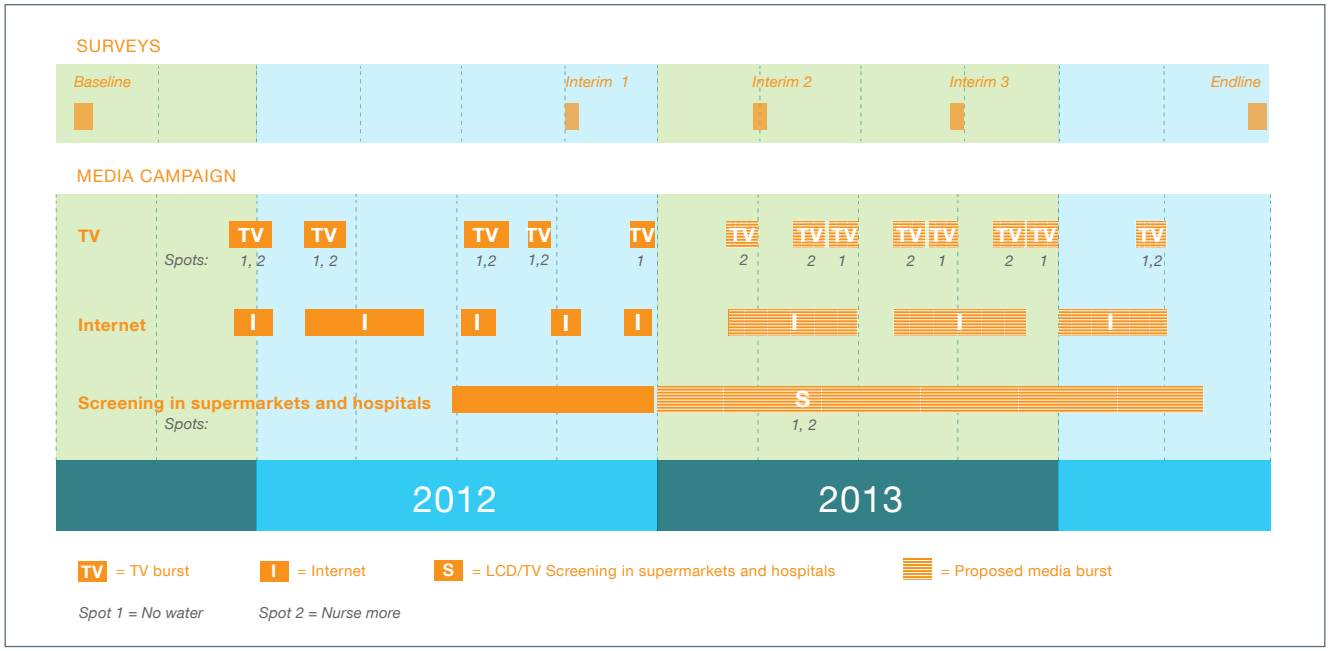
The two breastfeeding TV spots, in 30-second and 45-second versions, focus on the importance of not giving baby water in the first 6 months (Spot #1, "No Water") and on building mothers' confidence that, with frequent feedings, they can produce adequate breastmilk (Spot #2, "Nurse More"). These also emphasize that breastfeeding is recommended by leading global health organizations. The TV campaign was launched in November 2011. The first two TV spots on breastfeeding were shown on two national and 15 provincial TV channels and were broadcast throughout 2012, in three bursts. See Figure 2 on the next page for timing of media bursts.

In addition to TV broadcasts of the spots, the mass media campaign includes digital and out-of-home advertising, such as bus wrap advertising, mobile technologies, and village loudspeaker systems to expose target audiences to key messages. The TV spots are promoted through the Internet on 24 popular websites in Viet Nam.

In August 2011, before the TV campaign was launched, A&T and the National Institute of Nutrition (NIN) launched the *Mat Troi Be Tho* website, a resource featuring educational short films and audio clips about breastfeeding (as well as complementary feeding) and featuring the spots. The website attracted almost 31,500 visits from August 19 to December 1 of 2011.

Through the A&T media fellowship and award program, 96 articles on IYCF were placed in print and electronic newspapers, and 11 TV news stories were broadcast on national and local channels over 6 months in 2011.

FIGURE 2: PLANNED MEDIA BURST TIMELINE



EVALUATION PLAN

The plan for the evaluation of the mass media campaign calls for two intensive measurement waves—the baseline conducted in July 2011 and endline planned for 2014 in 11 A&T provinces. In addition, in October 2012 and April and September 2013, three interim surveys will be conducted in a subset (4) of the 11 baseline and endline provinces. Each survey will collect information about exposure to the campaign (except for the baseline) and other sources of infant feeding information, behavioral determinants, and breastfeeding behaviors. Each of these surveys will be conducted in areas where the only A&T intervention is the mass media campaign and also in areas where A&T also operates a *Mat Troi Be Tho* franchise.

The baseline survey occurred before the launch of the mass media campaign, and the interim measures are planned to coincide with airing of the TV spots. The endline survey will occur as soon as possible after the TV spots go off the air. See figure 2 on previous page for timing and content of the media campaign's activities and the timing of the surveys for this evaluation.

BASELINE SURVEY

Almost all of Viet Nam's 63 provinces are reached by the mass media campaign. In 15 of those, A&T operates the *Mat Troi Be Tho* (MTBT) social franchises for nutrition counseling in select districts. In 2011, a survey collected data from mothers of infants and young children 0-23 months in 11 of the intervention provinces to provide planning data to provincial level governments, while also establishing the baseline for the mass media evaluation. The sample included women from districts with MTBT franchises as well as those without.

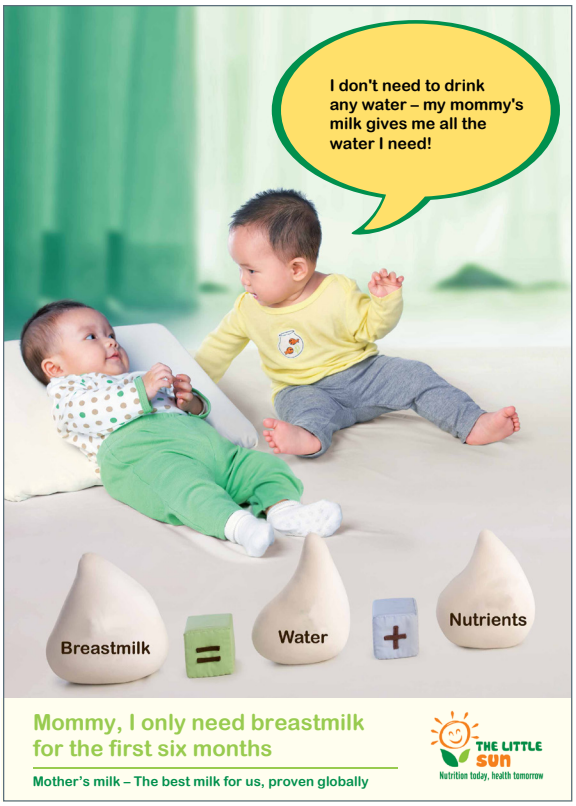
For this report, the data provided by mothers of infants 0-5.9 months in 2011 was extracted from the 2011 data set and reanalyzed. The women in the survey were selected using a systematic random sampling method. Mothers/ children for each primary sampling unit (PSU) were selected to achieve the proposed sample size of children under 6 months for that province; a total of 90 PSUs were included for sampling purposes. The selection procedure listed children in order by date of birth and then selected the index child using a sampling interval number, ensuring an even distribution across the child's age. The sampling methodology is described in more detail in the report for the 11 provinces (Alive & Thrive, 2012a).

The sample size for the 11 province survey was established to be large enough to detect an increase of at least 8 percentage points in exclusive breastfeeding among mothers with children under 6 months of age in each province. The sub sample examined in this report is 6,175 pairs of mothers and their children under the age of 6 months, in 11 provinces.

For mothers of children under 6 months, the questionnaire included the following 12 modules: background and demographic characteristics; breastfeeding practices; complementary feeding practices; feeding during illness; behavioral determinants of IYCF practices; utilization of services; media exposure; awareness, trial, and adoption of IYCF practices; hygiene (washing hands); household economic status; food security; and anthropometric measurements of weight and height.

Although the ultimate goal of the mass media campaign in Viet Nam is to increase rates of exclusive breastfeeding, A&T recognizes that even if the campaign fails to change breastfeeding rates by the time of the post-survey, it may have an effect on some of the predisposing conditions of exclusive breastfeeding described in the behavioral model. Thus, each item in the model (Figure 1) was measured. This will allow A&T to describe not just whether changes in breastfeeding occurred, but also the mechanisms by which the media may have influenced behavior.

At the time of the baseline survey, the TV spots had not been finalized, and it was not known which of the behavioral determinants would be addressed through the mass media campaign. For that reason, A&T developed, tested, and incorporated into the baseline survey a set of new measures of beliefs that were considered likely to be determinants of the breastfeeding behaviors that the A&T campaign would promote. Prior surveys had measured knowledge, but not other theory-based factors like beliefs about consequences, social norms, or behavioral control.



In the sections that follow, baseline levels of key indicators related to the mass media campaign are presented. This report explores the component behaviors of exclusive breastfeeding. It aims to identify which of the determinants measured in the baseline survey are associated with exclusive breastfeeding and the strength of the association. Identifying these behavioral determinants early in the evaluation has helped to determine which ones should continue to be measured in subsequent rounds of data collection.

Baseline Results

SAMPLE DESCRIPTION

Women in the study sample were predominantly from the *Kinh* ethnic group (92 percent), married (97 percent), and not currently working (92 percent) (Table 1). Approximately half of the children 0-5.9 months old were male (52 percent) and the other half female (48 percent). In the large majority of households, the father of the index child resides within the household (89 percent). Similarly, 64 percent of the children reside with a grandmother.

Women in the study sample ranged from 16 to 47 years of age. Two-thirds of participants (66 percent) were 20 to 30 years of age, with an additional quarter (24 percent) of participants between 30 and 40 years of age (Table 1). Most participants (66 percent) had completed high school, while 16 percent completed more than high school and 18 percent completed less than high school. The majority of women (84 percent) lived in rural areas. By design, the age in months of the index child was equally distributed across 0 to 6 months, with between 16 percent and 19 percent of the sample in each one-month period.

TABLE 1: SAMPLE CHARACTERISTICS

Sample Characteristics n = 6,175	Percent
Kinh Ethnicity	92%
Mothers	
15-19 years of age	8%
20-29 years of age	66%
30-39 years of age	24%
40+ years of age	2%
Education	
Primary only	18%
High school only	66%
More than high school	16%
Rural residence	84%
Married	97%
Currently working	8%
Index Children	
0-0.9 months	9%
1.0-1.9 months	17%
2.0-2.9 months	20%
3.0-3.9 months	19%
4.0-4.9 months	19%
5.0-5.9 months	17%
Gender of index child	
Male	52%
Female	48%
Presence in household of index child's father	89%
Presence in household of index child's grandmother	64%

Exposure to mass media and to information about infant feeding

Respondents were asked about their exposure to mass media and the frequency of this exposure. Several questions were developed to characterize individual mothers' current media habits in order to profile different types of viewers. Exposure to advertising for infant formula was also measured. The baseline also included a "foil" question, asking mothers whether they had seen an image that had never been aired in a TV spot on breastfeeding. This would help assess the degree of accuracy of responses to be expected to future questions about specific TV spots. Exposure to all potential sources of information and support for exclusive breastfeeding was measured, including advice received from health workers.

As shown in Table 2, roughly 98 percent of respondents had ever watched TV, and about 94 percent reported watching TV at least weekly. Even before the launch of the A&T mass media campaign, many women (39 percent) reported having seen a message on TV about breastfeeding in the 30 days prior to the survey. Twice as many (80 percent) reported seeing an ad for infant formula on television during the same period. At the time of the survey, MTBT franchises were fairly new. Only 7 percent of respondents reported having attended a nutrition counseling session at a MTBT franchise or an IYCF support group, and 6 percent reported attending a meeting or workshop on breastfeeding. However, 53 percent reported that they were shown how to breastfeed in the first 3 days after the birth of the index child. About one third of the mothers reported that in the 3 months prior to the survey they had received infant feeding advice from a nurse or doctor; and 19 percent had received such advice from a village health worker. Certainly, even before the A&T campaign, women were exposed to messages about feeding their infants.

About 40 percent reported having received feeding advice from either a MTBT franchise, a support group, or a health provider (doctor, nurse, or village doctor) in the 3 months prior to the survey (data not shown).

TABLE 2: EXPOSURE TO MEDIA AND INFORMATION

Exposure n = 6,175	Percent
Ever watched television	98%
Watched TV weekly	94%
Saw a message about breast-feeding on TV in last 30 days	39%
Saw a message about infant formula on TV in last 30 days	80%
Shown how to breastfeed by someone in the first three days after birth	53%
Had a doctor/nurse in health facility give you advice on feeding in past 3 months	33%
Had a village health worker give any advice about feeding in the past 3 months	19%
Attended IYCF franchise or support group	7%
Attended a meeting or workshop on breastfeeding in the past 3 months	6%

EXCLUSIVE BREASTFEEDING

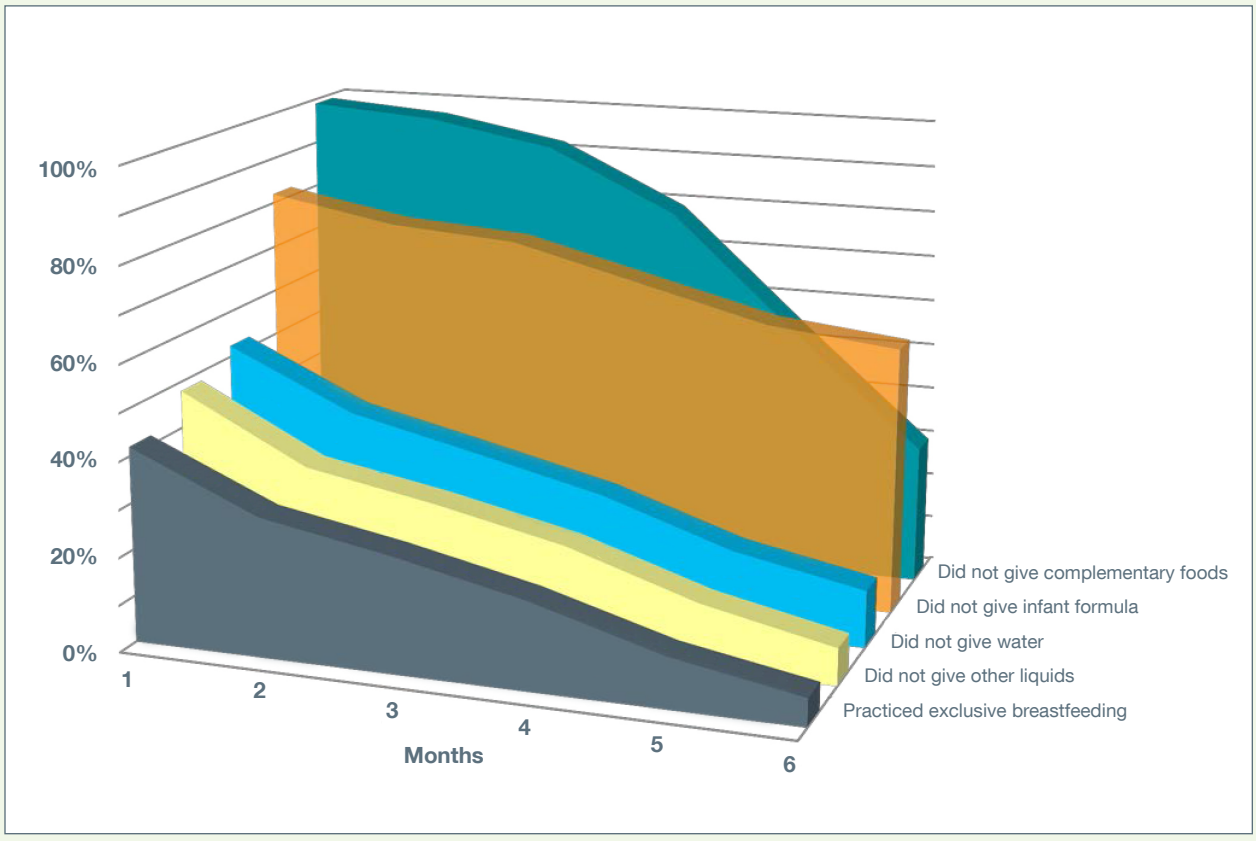
As mentioned earlier, the A&T mass media campaign is treating exclusive breastfeeding as a set of "component behaviors," each of which needs to be practiced if the exclusive breastfeeding goals are to be achieved. During the baseline survey, mothers were asked what they fed their infants in the 24 hours prior to the survey. The prevalence of each of these component behaviors and exclusive breastfeeding, based on this 24 hour recall, is presented on the next page in Table 3.

TABLE 3: MOTHERS PRACTICING EXCLUSIVE BREASTFEEDING AND ITS COMPONENT BEHAVIORS

Component behaviors n = 6,175	Percent of mothers who reported practicing the behavior
Breastfed exclusively	20%
Breastfed exclusively, but rinsed mouth with water	23%
Did not give water	28%
Did not give infant formula	69%
Did not give other liquids	79%
Did not give semi solid or solid foods	73%

WHO recommends calculating exclusive breastfeeding among children 0-5.9 months of age based on what was fed to the infant in the 24 hours prior to the survey. Infants who were not fed anything other than breastmilk the previous day are considered to have been exclusively breastfed. Those who were given other liquids such as water, juice, milk, and infant formula or any soft or semisolid foods are not classified as being exclusively breastfed. In Viet Nam, it is common for women to rinse the baby's mouth with water after breastfeeding. By the strictest standard, this practice would disqualify a child from being considered exclusively breastfed. To be consistent with the way that the National Institute of Nutrition has chosen to address the

FIGURE 3: EXCLUSIVE BREASTFEEDING AND COMPONENT BEHAVIORS, BY AGE OF CHILD (MONTHS)



issue of rinsing, in this report, an infant who was not given water, infant formula, other fluids, or soft or semisolid foods was not considered exclusively breastfed, if the mother reported rinsing the mouth with water. Using this standard, the exclusive breastfeeding rate in our sample is 20 percent. Even under a less-strict standard that "allows in" babies whose mothers rinse their mouths with water, the rate of exclusive breastfeeding for the entire sample is low (23 percent).

As shown in Figure 3, exclusive breastfeeding peaks during the first month of life (42 percent) and declines steeply thereafter. By the sixth month of life, only 6 percent of infants continue to be exclusively breastfed. The proportion of infants that have not been given water or other liquids declines among older infants. Beginning at about 4 months, the percentage of infants who have not been given complementary foods declines steeply. Water, other liquids, and infant formula are threats to exclusive breastfeeding early on, but as infants age, early introduction of complementary foods becomes a threat as well.

BEHAVIORAL DETERMINANTS

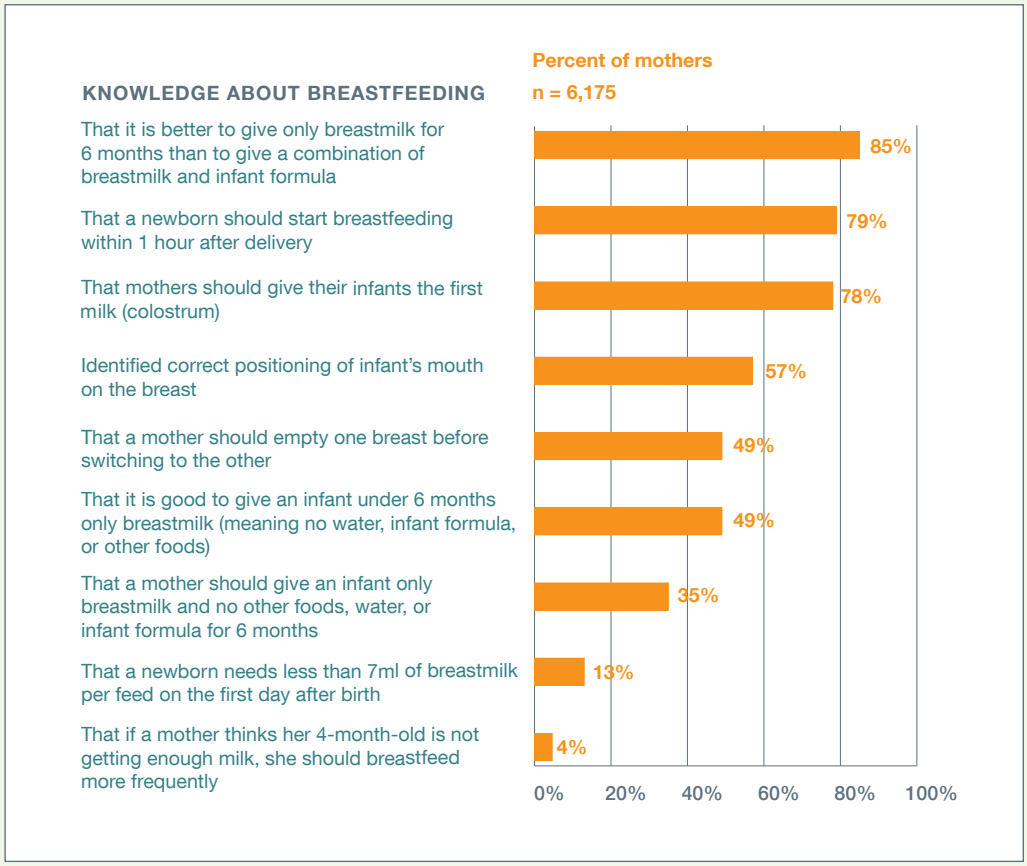
Other than knowledge questions, A&T had not previously measured the behavioral determinants described earlier. The baseline module on behavioral determinants was made up of entirely new questions, requiring careful pretesting.

The determinants questions were derived from theory, ensuring that they included measures of knowledge, beliefs about consequences, social norms, and behavioral control. For each of these categories, questions were created for the main behavior (exclusive breastfeeding) and for the component behaviors (such as *not* giving water). Those behavioral determinants identified in the formative research as particularly important and were expected to be targeted through campaign messages—such as lack of self-efficacy as reflected in the widespread belief of not having enough breastmilk to breastfeed exclusively—received careful attention in measurement. In all, 48 items were measured; however, initial analysis indicated that some of the determinants measured in the baseline survey were not associated with exclusive breastfeeding or any of its component behaviors, or were not associated in expected ways with these behaviors. In the sections that follow, the discussion is limited to those determinants that were associated with behavior outcomes in the Viet Nam survey. The analysis of the baseline findings was undertaken to help sift through the list to identify those questions that a) are reliable measures of the given determinant and b) are strongly associated with the behaviors being promoted.

Knowledge about breastfeeding

In the baseline survey, mothers were asked a series of questions to measure their level of knowledge about optimal breastfeeding practices. The percentage of mothers that had correct know- ledge about these items varied greatly. When asked which feeding method is the best for an infant under 6 months, 85 percent of mothers correctly responded "breastmilk alone." Most mothers, 79 percent, knew that a newborn should start breastfeeding within the first hour, and 78 percent knew to feed colostrum. In contrast, only 4 percent of mothers spontaneously mentioned that more frequent breastfeeding was the appropriate response to insufficient milk (see Figure 4). Although, when prompted, 86 percent were confident or very confident that if they breastfed more, their bodies would produce more milk (See Figure 5). These high levels of knowledge and low corresponding levels of exclusive breastfeeding reinforce the notion that information alone is not sufficient to change behavior. The next section on beliefs explores other factors that may explain this discrepancy.

FIGURE 4: MOTHERS' KNOWLEDGE ABOUT BREASTFEEDING



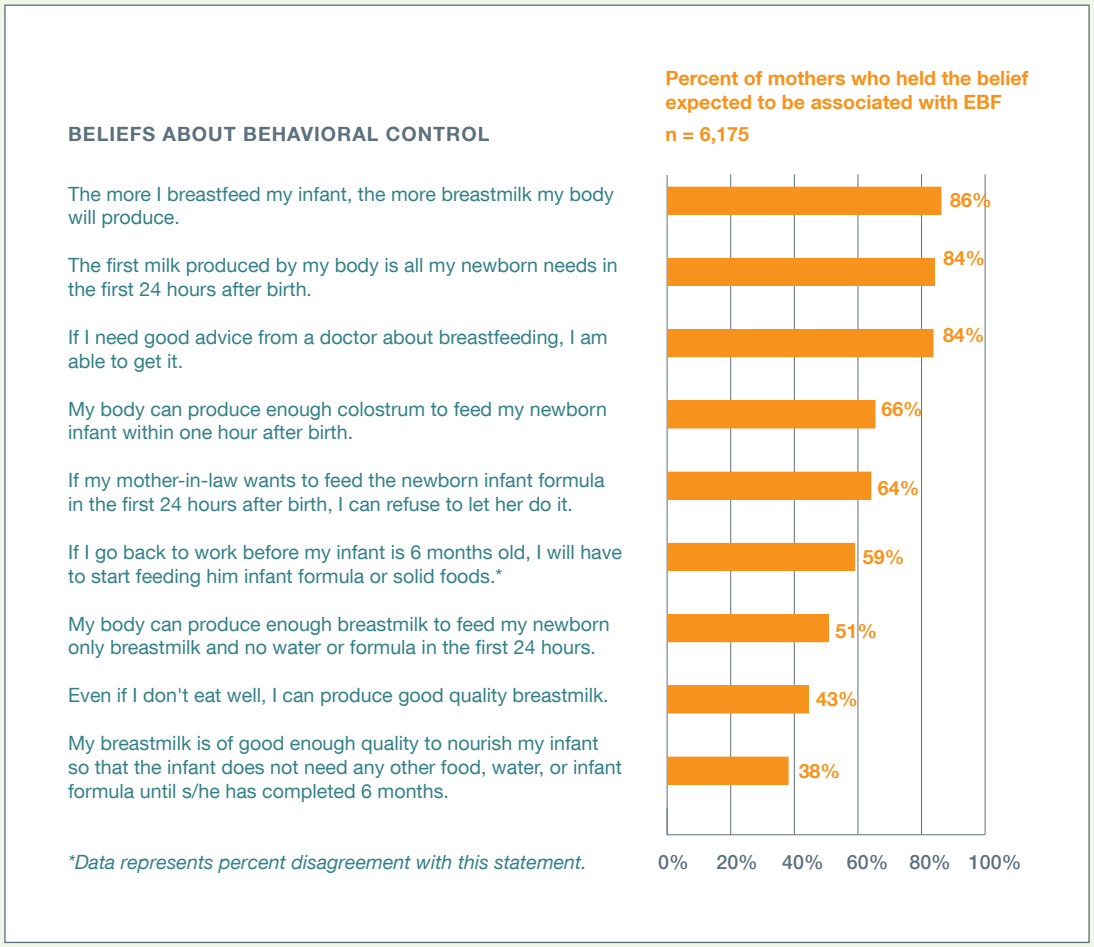
Beliefs

Several categories of beliefs were measured in the baseline survey: perceived benefits of breastfeeding, beliefs about mothers' own control over certain practices and her sense of self-efficacy, and beliefs about social norms. For all belief items measured on a six-point scale, women were read a statement and asked to state the degree to which they agreed or disagreed with the statement. Some of the belief statements were phrased such that mothers' agreement with the belief was expected to be associated with exclusive breastfeeding. Others were phrased in such a way that mothers who *disagreed* would be expected to report higher rates of exclusive breastfeeding. In this section, for each belief statement, the results reflect the two categories of responses that are expected to be associated with higher rates of breastfeeding, that is "strongly agree" or "agree" for some, and "strongly disagree" or "disagree" for others.

Beliefs about behavioral control

In general, women feel confident about early initiation of breastfeeding. Two out of three believe that they can produce enough colostrum to feed their infant within an hour of birth, and 85 percent believed that the first milk is all a newborn needs in the first 24 hours. They are also confident that they can refuse to let their mother-in-law give the baby infant formula in the first 24 hours after birth (64 percent were confident or very confident). However, doubts about milk sufficiency relate even to the first 24 hours of an infant's life. Only half of mothers are confident that their bodies can produce enough breastmilk to feed a newborn for the first 24 hours, and only 38 percent felt confident that their milk was good enough to exclusively breastfeed for 6 months. These items corroborate the findings from the A&T formative research: perceptions of milk insufficiency are a key barrier to exclusive breastfeeding in Viet Nam. See Table 4 below for a complete list of the belief items related to beliefs about behavioral control. For all but one of these statements, agreement was expected to be positively associated with exclusive breastfeeding.

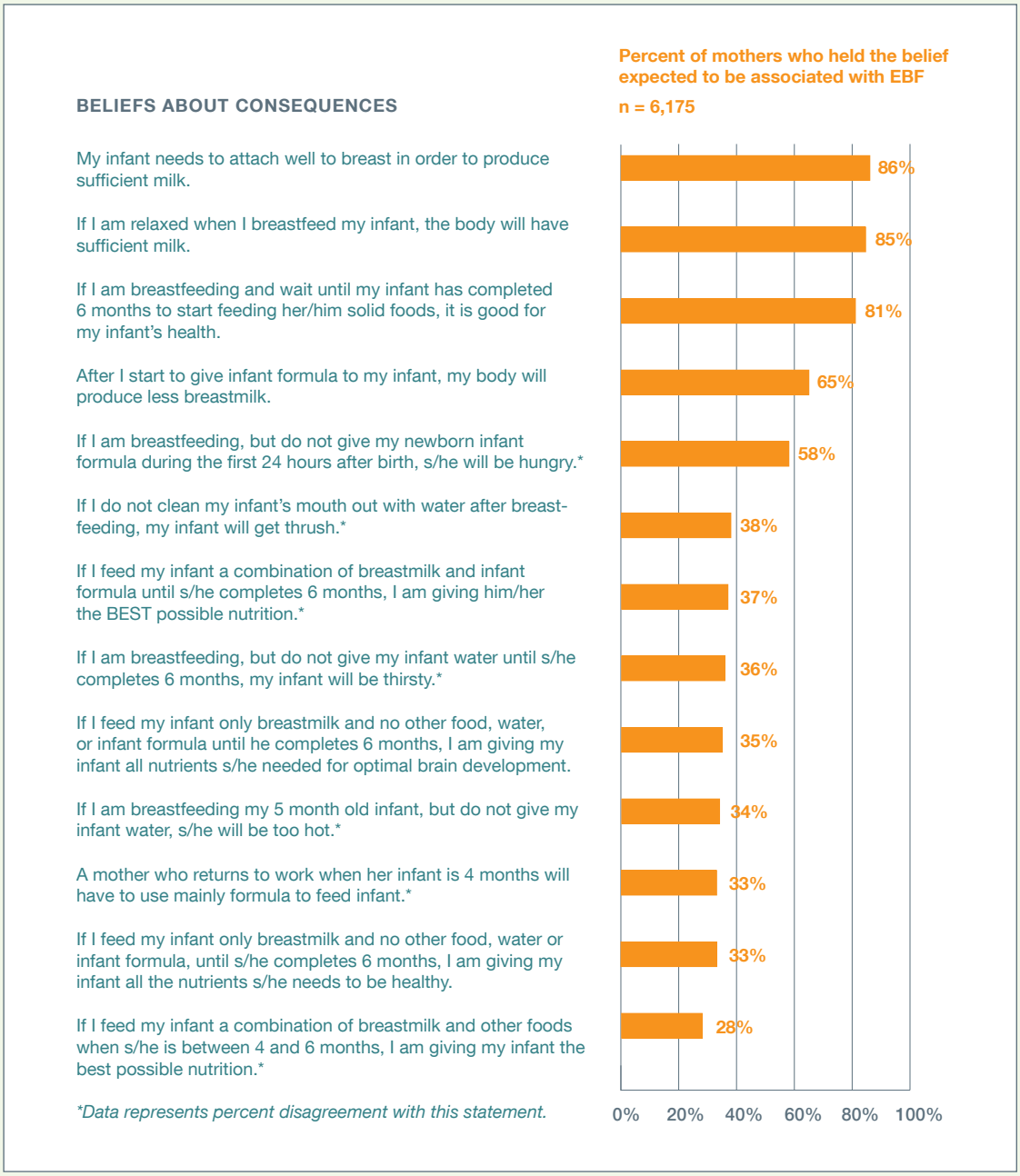
FIGURE 5: MOTHERS' BELIEFS ABOUT BEHAVIORAL CONTROL



Beliefs about consequences

Despite widespread doubts about their own milk sufficiency, many mothers hold correct beliefs about milk production (Figure 6). For example, 86 percent agreed that a proper latch was important for milk production, and 85 percent believed that relaxed feeding is associated with sufficient milk supply. Almost two-thirds, 65 percent, of mothers agreed that giving infant formula will result in lower milk production. Yet, despite these high levels of knowledge of the mechanics of breastfeeding, exclusive breastfeeding rates remain low. Some of the barriers to breastfeeding include beliefs about the value of colostrum and

FIGURE 6: MOTHERS' BELIEFS ABOUT THE CONSEQUENCES OF SELECT BEHAVIORS



breastmilk versus formula and water. Only a third believe that breastmilk has all the nutrients a baby needs in the first 6 months of life, while 58 percent believe that if an infant is not given formula in the first 24 hours, s/he will be hungry. Similarly, more than one-third of the mothers believe that infants will be thirsty if they are not given water to drink. Only 37 percent of women rejected the idea that a combination of breastmilk and infant formula is the optimal feeding option for infants. A similar percentage of mothers rejected the idea that an infant will get thrush if his/her mouth is not rinsed with water. For more details about all of the belief statements related to consequences of breastfeeding behaviors.

Beliefs about social norms

Two social norms questions were asked related to exclusive breastfeeding. Women were asked the degree to which they agreed or disagreed with statements about whether "most people" believe that they should exclusively breastfeed for six months and whether "most women" exclusively breastfeed for six months. For both questions, roughly one in four women believed that the social norms favored six months of exclusive breastfeeding—26 percent and 24 percent for "most people" and "most women," respectively (data not shown).

TABLE 4: EXCLUSIVE BREASTFEEDING BY BACKGROUND CHARACTERISTICS

Background Characteristics n = 6,175	% who exclusively breastfed*	χ^2	p-value
Entire sample	20%	-----	-----
Location			
Rural residence	23%	154.2	<.005
Urban residence	6%		
Married			
Yes	20%	57.9	<.005
No	16%		
Currently working			
Yes	10%	41.2	<.005
No	21%		
Index Child's Age			
0-0.9 months	41%	428.4	<.005
1.0-1.9 months	30%		
2.0-2.9 months	25%		
3.0-3.9 months	19%		
4.0-4.9 months	11%		
5.0-5.9 months	6%		
Has other children between the ages of 0 and 5			
Yes	22%	7.3	0.03
No	19%		

*Exclusive breastfeeding stands for no liquids (including water to wash out the baby's mouth) and no complementary foods reported as given in the past 24 hours.

Variations in breastfeeding by sample characteristics

To examine potential variations in breastfeeding by background and exposure characteristics of the sample, Pearson chi-square statistics were used to assess bivariate associations between exclusive breastfeeding and sample characteristics. Exclusive breastfeeding was significantly higher among mothers who lived in rural areas (χ^2=154.3, p<.001), were married (χ^2=57.9, p<.001), and were not currently working (χ^2=43.1, p<.001) (Table 4). As described earlier, exclusive breastfeeding is most strongly associated with younger age in months of the infant (χ^2=428, p<.001). In addition, exclusive breastfeeding was significantly higher among mothers that were not given formula at the hospital (χ^2=142.5, p<.001), among women who were given advice on breastfeeding by a doctor or nurse in the 3 months prior to giving birth (χ^2=42.0 , p<.001), those given breastfeeding advice by a village health worker (χ^2=59.4, p<.001), and those who attended a workshop on breastfeeding (χ^2=49.4, p<.001) (Table 5). In this sample, exclusive breastfeeding rates did not differ by maternal age, maternal level of education, economic status, or gender of the index child.

TABLE 5: EXCLUSIVE BREASTFEEDING BY EXPOSURE TO OTHER SOURCES OF INFORMATION

Other Characteristics n = 6,175	% who exclusively breastfed*	χ^2	p-value
Received breastfeeding advice while pregnant			
Yes	21%	2.5	0.63
No	19%		
Had access to infant formula at the hospital items (either brought			
Yes	15%	142.5	<0.001
No	28%		
Had a doctor/nurse in health facility give you advice on feeding in past 3 months			
Yes	25%	42.0	<0.001
No	18%		
Had a village health worker give any advice about feeding in the past 3 months			
Yes	28%	59.4	<0.001
No	18%		
Attended a meeting/workshop on a breastfeeding topic in past 3 months			
Yes	34%	49.4	<0.001
No	19%		
Saw any ad about infant formula on TV during past 30 days			
Yes	20%	5.1	0.07
No	23%		

*Exclusive breast feeding stands for no liquids besides breastmilk (including water to rinse the mouth) and no complementary foods reported as given in the past 24 hours.

As mentioned earlier, women in Viet Nam have access to many sources of information about infant feeding. Some reinforce A&T's efforts to promote exclusive breastfeeding, while others undermine it. The data allowed A&T to explore these sources and determine whether access to other sources of information is associated with exclusive breastfeeding. Interpersonal communication is important, particularly after delivery. Women who reported having received breastfeeding advice from a health provider in the 3 months prior to the survey were more likely to breastfeed. This was true regardless of who dispensed the advice—a doctor or nurse, village health worker, or leader of a meeting or workshop. However, having received breastfeeding advice during pregnancy was not associated with exclusive breastfeeding.

Multivariate analysis of beliefs about breastfeeding and breastfeeding behaviors

Logistic regression models were used to assess the association between the 19 belief statements that were identified earlier as associated with exclusive breastfeeding or one of the component behaviors and the primary outcome behavior of exclusive breastfeeding. Models also were run with the component outcome behaviors of not giving water and not giving formula, viewed as the biggest threats to exclusive breastfeeding. Annex C has these 19 belief statements classified by three different question domains: beliefs about consequences, social norms and beliefs about behavioral control. Unadjusted odds ratios representing the bivariate association between the belief statement and exclusive breastfeeding are initially reported for each belief statement.

Next, using logistic regression the odds ratios were adjusted to control for background characteristics and other variables that in the bivariate analysis were associated with exclusive breastfeeding.

The background characteristics selected as controls for the logistic regression models met three criteria. First, the characteristic was associated with exclusive breastfeeding at the $p<.001$ level; second, there was substantial variation in responses to the background characteristic; and third, the characteristic could conceivably have an impact on both mother's belief and exclusive breastfeeding.[3] The three exclusive breastfeeding support characteristics (i.e., breastfeeding advice from doctor/nurse, health worker, and workshop) were consolidated into a single variable to indicate exposure to any one (or more) of these three sources of breastfeeding support. Three formula related variables (i.e., family brought formula to hospital, given free formula at hospital, and purchased formula at hospital) were also consolidated into a single variable to indicate whether the mother had formula at hospital. Control variables for these logistic regression models included: location (rural/urban), index child's age group, whether the mother had access to infant formula in the hospital, and whether the mother had any exclusive breastfeeding support in the past 3 months (from doctor/nurse, health worker, IYCF franchise, or a workshop). Both the unadjusted and adjusted odds ratios are presented in Annex C.

Results from the multivariate analysis were separated into three groups based on the types of belief statements, beliefs about behavioral control, social norms, and beliefs about consequences. These results are presented along with bivariate models to compare significance across the two models. In the behavioral control category, all 10 beliefs were significant at the $p<.001$ level for both the bivariate and multivariate models. Of all the belief statements, the one

3 Maternal/household characteristics that met inclusion criteria for the logistic regression model: location (urban/rural), index child's age group (1-month intervals), mother had formula at hospital (from family, given free, or purchased), mother was given any EBF support in past 3 months (from doctor/nurse, health worker, IYCF franchise, or workshop).

most likely to be associated with exclusive breast feeding was: "If I feed my infant ONLY breast milk and no other food, water, or infant formula, until s/he completes 6 months, I am giving my infant all the nutrients s/he needs to be healthy." Women who held this belief statement were almost twice as likely to exclusively breastfeed, and this association persisted even after controlling for the variables mentioned above (OR=1.813 unadjusted and 1.811 adjusted). Similarly, women who agreed with the statement, "If I feed my infant only breastmilk and no other food, water, or infant formula until s/he completes 6 months, I am giving my infant all the nutrients s/he needs for optimal brain development," were almost twice as likely to exclusively breastfeed (OR=1.801 unadjusted and 1.808 adjusted). These relationships persist even after controlling for maternal and other control characteristics.

Only two social norms belief statements were tested, but both were significant at the $p<.001$ level for the bivariate and multivariate models. The first statement, "Most people think that I should feed my infant only breastmilk and no other food for the first 6 months," had the higher odds ratios, with 1.778 unadjusted and 1.779 adjusted. "Most women feed their infant only breastmilk and no other food for the first 6 months" had an unadjusted odds ratio of 1.769, and 1.766 adjusted. Mothers who believe that social norms favor exclusive breastfeeding for 6 months are more likely themselves to breastfeed exclusively.

In the outcome expectancies category, the statement "My breastmilk is good enough quality to nourish my infant until s/he has completed 6 months" had the highest odds ratios, with 1.734 unadjusted and 1.779 adjusted. Six of the seven statements remained highly significant in the multivariate models. Two statements—"My body can produce enough colostrum to feed my newborn infant within 1 hour after birth" and "If my mother-in-law wants to feed the newborn infant formula in the first 24 hours after birth, I can refuse to let her do it" —went from significance at the $p<.001$ level in the bivariate model to $p<.01$ in the multivariate model. Though statistically significant, the odds ratios for both of these were less than 1.1, suggesting a weak association, at best. The statement "Even if I don't eat well, I can produce good quality breastmilk" was significant in the bivariate model, but no longer significant in the multivariate model. For these three beliefs, the weaker association after adjusting for control variables suggests that the associations seen initially were likely due to confounding.

Applications

The baseline findings reported here will, of course, be most useful for evaluating the mass media campaign when they are compared with findings from the subsequent interim and endline surveys. In the meantime, findings have been applied to reconsider the determinants addressed by the campaign and to adjust the questionnaire for the first interim survey.

Addressing determinants of exclusive breastfeeding in the mass media campaign

The analysis above allowed A&T to further explore whether the potential determinants that were identified during the formative research were associated with exclusive breastfeeding when measured using quantitative methods. The multivariate analysis identified the 16 belief statements that are moderately or strongly associated with exclusive breastfeeding and persist even when controlling for important variables such as exposure to other sources of information. All of the statements that were determined to be associated with exclusive breastfeeding will be measured in subsequent rounds of data collection. Many of these determinants are being addressed by the mass media campaign, either explicitly in the script or implicitly through the choice of actors and

TABLE 6: MAPPING DETERMINANTS OF EXCLUSIVE BREASTFEEDING TO THE MASS MEDIA MESSAGES

Message	Spot #1: "No water"	Spot #2: "Nurse more"	Loudspeaker
Even without being given water, the exclusively breastfed baby will NOT be thirsty	✓		✓
Even without having his/her mouth cleaned out with water after breastfeeding, the exclusively breastfed baby will NOT get thrush	○		✓
Even without being given water, the exclusively breastfed baby will NOT be too hot	✓		
A combination of breastmilk and infant formula until s/he completes 6 months does NOT provide the best possible nutrition	○	○	
Waiting until the infant has completed 6 months of age before starting to feed him/her semi-solid or solid foods, is good for the infant's health	○	○	✓
A combination of breastmilk and other foods, when s/he is between 4 and 6 months of age, does NOT offer the baby the best possible nutrition	○	○	
Exclusive breastfeeding for 6 months gives the infant all the nutrients s/he needs to be healthy	✓	✓	✓
Exclusive breastfeeding for 6 months gives the infant all the nutrients s/he needs for optimal brain development	✓	✓	✓
Most people whose opinions are important to the mother think that she should breastfeed exclusively for 6 months	✓ [experts]	✓ [experts]	✓
Most other women who are like the mother breastfeed exclusively for the first 6 months	○	○	
Breastmilk is of good enough quality to nourish an infant so that the infant does not need any other food, water, or infant formula until s/he has completed 6 months	✓	✓	✓

Topic covered in media materials ✓ = Explicit in script ○ = Implied through visuals or other elements

imagery used in the photos and videos. The table below presents the statements that are significantly associated with exclusive breastfeeding and also addressed by the campaign.

In addition to the items listed above, there were other items that are associated with exclusive breastfeeding, but are not addressed in the campaign. These include:

- If I do not give infant formula during the first 24 hours after birth, my infant will be hungry
- My body can produce enough colostrum to feed my newborn within 1 hour after birth
- My body can produce enough breastmilk to feed my newborn only breastmilk in the first 24 hours
- The first milk produced by my body is all my newborn needs in the first 24 hours
- If my mother-in-law wants to feed the newborn infant formula in the first 24 hours after birth, I can refuse to let her do it
- Even if I don't eat well, I can produce good quality breastmilk

The analyses reveal that one message that is promoted in the media campaign is not significantly associated with exclusive breastfeeding or with the component behaviors. A high percentage of mothers correctly believe that the more they suckle, the more milk they will produce. This belief does not differ between mothers who breastfeed exclusively and those who do not.

These items will continue to be tracked in subsequent surveys. At the end of the mass media campaign, if the campaign was successful, there should be measurable differences in exclusive breastfeeding rates along with shifts in only the beliefs addressed in the campaign. Those behavioral determinants not addressed by the mass media campaign are not expected to change significantly between data collection rounds.

Next steps for campaign evaluation

The analysis of this baseline data does begin to clarify the design of the mass media evaluation plan itself. Already, data analysis has allowed for refinement and reduction of the questions that will be included in subsequent rounds of data collection and it has allowed A&T to determine associations between those determinants and the behaviors promoted by the mass media campaign.

In the baseline, the questionnaire included 48 questions on behavioral determinants related to breastfeeding. For the first interim survey in September 2012, 15 of these were dropped, leaving 32 of the original questions that will continue to be measured. The decision about which items to continue to measure was based on whether the knowledge or belief was significantly associated with exclusive breastfeeding or any of the component behaviors and whether it was a key message of the mass media campaign. Two additional interim rounds of data collection are planned in 2013, one in April/May and one in October/November. All three interim rounds will collect data in four of the 11 provinces included in this report. The endline survey is planned in all 11 provinces for April/May 2014, after mass media activities have been completed. After each round of data collection, the data will be compared to. As data allow, analyses needed to implement each of the four approaches described in Annex A will be conducted after each survey.

The authors hope that this report on the baseline findings offers ideas to others who might be considering how mass media can be used to improve infant and young child feeding. Furthermore, it can demonstrate alternative ways to plan and conduct evaluations in circumstances where the reach of a mass media campaign does not allow evaluators to identify an appropriate control or comparison group.

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ANNEXES

ANNEX A

EVALUATION APPROACHES

Approach 1: Changes over time

The first approach looks at change over an extended time period, and includes multiple measures before, during, and after the campaign. The National Institute of Nutrition conducts annual sentinel surveillance surveys, which since 2007 have included standard measures of exclusive breastfeeding according to WHO definitions. These data will allow us to determine the trend of change in exclusive breastfeeding and related behaviors before the campaign. Because NIN's surveillance surveys are conducted annually, breastfeeding behavior will continue to be tracked beyond the life of the program. A change in slope that corresponds to the airing of the mass media campaign would support inferences of effect. The primary limitation of this approach is that other components of the overall program to increase rates of exclusive breastfeeding (including policy changes in general and within the medical system in particular and other changes at the societal level) will make it difficult to attribute an increase in exclusive breastfeeding directly to the mass media campaign.

Approach 2: Exposure-behavior relationship

The second evaluation approach is to provide evidence for a cross-sectional association between self-reported exposure to campaign messages and exclusive breastfeeding behavior with extensive efforts to control for all potential confounders. Evidence that the exposure-behavior relationship is mediated by the specific beliefs addressed by the mass media campaign (and not mediated by the beliefs not addressed by the campaign) strengthens claims that the observed changes in behavior are related to the campaign. Potential challenges to this evaluation approach include ambiguous causal order. For example, women who exclusively breastfeed may be more likely to pay attention to and recall messages related to exclusive breastfeeding than women who do not. Another challenge is the possibility that there are unmeasured confounders that account for the association between exposure and exclusive breastfeeding (an unmeasured third variable that makes it both more likely that a woman will be exposed to campaign messages and more likely that the woman will exclusively breastfeed). The first and second evaluation approaches will be most convincing if they go hand-in-hand.

Approach 3: Low and high exposure, individuals

A third evaluation approach addresses the problem of ambiguous causal order through a constructed cohort design which consists of measuring a set of variables that are likely to predict an individual woman's exposure to the mass media campaign both before the campaign airs and at the peak of the campaign. This approach is helpful only if the variables expected to predict exposure to campaign messages at Time 1 are, in fact, found to be strong predictors of exposure at Time 2 after the campaign is on the air. If the set of measures predicts exposure at Time 2, it can be used retroactively to divide the sample at Time 1 into low and high exposure groups. In this way, it can be shown that low and high exposure groups were similar with respect to exclusive breastfeeding and other primary outcomes at Time 1, before the campaign aired. To strengthen claims that the mass media campaign was successful in changing behavior, the high exposure group should demonstrate higher rates of exclusive breastfeeding than the low exposure group. This design, when successful, can help to approximate a cohort design and refute claims that low and high exposure groups were different with respect to exclusive breastfeeding before the campaign began and that it was not the campaign that caused the observed differences in behavior. Challenges to this evaluation approach include the difficulty of developing

a set of measures that will predict exposure to mass media messages and the possibility that a third variable that is highly correlated with the set of measures predicting exposure is, in fact, responsible for the association between the set of measures predicting exposure and the behavior of exclusive breastfeeding.

Approach 4: Low and high exposure, geographic area

The fourth evaluation approach consists of a cohort design at the aggregate level in which geographic units are divided into low and high exposure groups based on natural variation in exposure levels. If rates of exclusive breastfeeding increase more sharply in areas with high campaign exposure than in areas with low campaign exposure, the case can be made that underlying differences other than exposure to the mass media campaign could not account for the difference in exclusive breastfeeding slopes. The geographic units can be divided based on gross rating points or by aggregating self-reported exposure within the geographic area. One of the strengths of this approach is that, if gross rating points are available, it uses a direct aggregated measure of exposure rather than a surrogate such as the set of measures predicting exposure. The approach can be implemented only if there are large samples drawn from distinct locales; it cannot be implemented if there is too little variation in campaign exposure levels across geographic units to expect differences in exclusive breastfeeding slopes. A challenge to this approach is that there may still be credible alternative hypotheses that explain the correlation between exposure and rates of change in exclusive breastfeeding behavior.

ANNEX B

SCRIPTS FROM ALIVE & THRIVE'S TWO TV SPOTS ON BREASTFEEDING, VIET NAM MASS MEDIA CAMPAIGN

Viet Nam Campaign, the 2011 TV Spots

Spot #1. No Water

I just finished breastfeeding. So yummy!

Did you drink some water to rinse your mouth?

Oh, no. I don't drink even a little bit of water.

Just a few drops of water can make us sick.

Really?

Breastmilk has enough water and all the nutrients you need.

Mom, I don't need water.

Don't worry that I'm thirsty or need to rinse mouth.

Leading health organizations recommend that you feed me only breastmilk for the first 6 months.

Breastmilk has enough water and nutrients for me to grow up healthy and smart.

Breastmilk—the best for us, proven globally.

Spot #2. Nurse more

Breastmilk tastes so good!

Yes, but my mom's afraid she doesn't have enough breastmilk for me.

Don't worry. Breastmilk is produced like magic.

When you suckle, your mom's body receives signals to produce more milk.

The more you suckle, the more breastmilk will be produced.

Great!

Mom, don't be afraid that you will run out of breastmilk.

You just need to keep breastfeeding me.

Leading health organizations recommend that you feed me only breastmilk for the first 6 months.

Breastmilk has enough water and nutrients for me to grow up healthy and smart.

Breastmilk—the best for us, proven globally.

ASSOCIATIONS BETWEEN

ANNEX C

ASSOCIATIONS BETWEEN BEHAVIORAL DETERMINANTS AND BEHAVIORS: ODDS RATIOS

	True EBF				No Water to drink				No Formula			
	Unadj	n	Adj	n	Unadj	n	Adj	n	Unadj	n	Adj	n
BELIEFS ABOUT CONSEQUENCES												
If I feed my infant only breastmilk and no other food, water or infant formula, until s/he completes 6 months, I am giving my infant all the nutrients s/he needs to be healthy.	1.813 ***	6104	1.811 ***	5914	1.754 ***	6122	1.737 ***	5929	1.239 ***	6125	1.162 ***	5934
If I feed my infant only breast-milk and no other food, water, or infant formula until he completes 6 months, I am giving my infant all the nutrients s/he needs for optimal brain development.	1.801 ***	6072	1.808 ***	5886	1.739 ***	6090	1.732 ***	5901	1.215 ***	6093	1.139 ***	5906
If I do not clean my infant's mouth out with water after breastfeeding, my infant will get thrush.	1.584 ***	5981	1.618 ***	5797	1.524 ***	5998	1.480 ***	5811	1.147 ***	6002	1.098 ***	5817
If I am breastfeeding my 5-month -old infant, but do not give my infant water, s/he will be too hot.	1.557 ***	6062	1.585 ***	5872	1.532 ***	6080	1.514 ***	5887	1.087 ***	6083	1.043 *	5892
If I am breastfeeding, but do not give my infant water until s/he completes 6 months, my infant will be thirsty.	1.512 ***	6131	1.546 ***	5939	1.483 ***	6149	1.458 ***	5954	1.053 **	6152	1.018	5959
If I feed my infant a combination of breastmilk and infant formula when s/he is between 4 and 6 months of age, I am giving my infant the best possible nutrition.	1.340 ***	6094	1.280 ***	5905	1.24 ***	6112	1.164 ***	5920	1.498 ***	6115	1.422 ***	5925
If I feed my infant a combination of breastmilk and other foods when s/he is between 4 and 6 months of age, I am giving my infant the best possible nutrition.	1.315 ***	6107	1.293 ***	5914	1.272 ***	6125	1.224 ***	5929	1.269 ***	6128	1.215 ***	5934
If I am breastfeeding and I wait until my infant has completed 6 months old to start feeding her/him semi-solid or solid foods, it is good for my infant's health.	1.256 ***	6121	1.216 ***	5926	1.247 ***	6139	1.135 ***	5941	1.151 ***	6142	1.117 ***	5946
If I am breastfeeding, but do not give my newborn infant formula during the first 24 hours after birth, s/he will be hungry.	1.187 ***	6129	1.149 ***	5935	1.131 ***	6147	1.102 ***	5950	1.133 ***	6150	1.050 **	5955
A mother who returns to work when her infant is 4 months old will have to use mainly formula to feed her infant.	1.180 ***	6095	1.148 ***	5905	1.148 ***	6112	1.105 ***	5920	1.180 ***	6115	1.130 ***	5925

Odds ratios; p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ANNEX C (continued)

ASSOCIATIONS BETWEEN BEHAVIORAL DETERMINANTS AND BEHAVIORS: ODDS RATIOS

	True EBF				No Water to drink				No Formula			
	Unadj	n	Adj	n	Unadj	n	Adj	n	Unadj	n	Adj	n
SOCIAL NORMS												
Most people whose opinions are important to me think that I should feed my infant only breastmilk, and no other food or water, for the first 6 months.	1.778 ***	6103	1.779 ***	5913	1.767 ***	6121	1.744 ***	5928	1.196 ***	6124	1.118 ***	5933
Most women who have infants like me feed their infant only breastmilk, and no other food, water, or infant formula for the first 6 months.	1.769 ***	6018	1.766 ***	5839	1.741 ***	6036	1.707 ***	5854	1.247 ***	6039	1.164 ***	5859
BELIEFS ABOUT BEHAVIORAL CONTROL												
My breastmilk is good enough quality to nourish my infant so that the s/he does not need any other food, water, or infant formula until s/he has completed 6 months.	1.734 ***	6125	1.779 ***	5935	1.635 ***	6143	1.639 ***	5950	1.311 ***	6146	1.257 ***	5955
My body can produce enough breastmilk to feed my newborn only breastmilk and no water or infant formula in the first 24 hours.	1.388 ***	6134	1.332 ***	5939	1.332 ***	6152	1.279 ***	5954	1.236 ***	6155	1.125 ***	5959
If I go back to work before my infant is 6 months, I will have to start feeding him infant formula or semi-solid/solid foods.	1.250 ***	6115	1.209 ***	5923	1.204 ***	6133	1.158 ***	5938	1.259 ***	6136	1.179 ***	5943
The first milk produced by my body is all my newborn needs in the first 24 hours after birth.	1.234 ***	6090	1.199 ***	5902	1.164 ***	6108	1.128 ***	5917	1.172 ***	6111	1.100 ***	5922
My body can produce enough colostrum to feed my newborn within one hour after birth.	1.106 ***	6128	1.067 **	5932	1.054 **	6146	1.01	5947	1.143 ***	6149	1.065 **	5952
If my mother-in-law wants to feed the newborn infant formula in the first 24 hours after birth, I can refuse let her do it.	1.083 ***	6111	1.063 **	5919	1.059 **	6129	1.01	5934	1.068 ***	6132	1.038 *	5939
Even if I don't eat well, I can produce good quality breastmilk.	1.066 **	6128	1.033	5935	1.057 **	6146	1.017	5950	1.104 ***	6149	1.061 **	5955

Odds ratios; p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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