Longitudinal Study of the Impact of the Integration of Microfinance and Health Services on Bandhan Clients in India

Amanda Johnson,[1] Chelsey Butchereit,[1] Martha Keyes,[1] David Vance,[1] Kira Anderson,[1] Bobbi Gray,[2] Marcia Metcalfe,[2] Megan Gash,[2] Benjamin Crookston[1]

January 2014

[1] Brigham Young University, Department of Health Science, Provo, UT
[2] Freedom from Hunger, Davis, CA

Executive Summary

In India, millions of people descend into poverty annually as a result of healthcare expenses. Preventable diseases as well as under-nutrition continue to account for the majority of morbidity and mortality in infants and children.

Between 2006 and 2009, Freedom from Hunger worked with Bandhan, one of the largest microfinance institutions (MFIs) in India, to pilot new health products and services for its clients as part of Freedom from Hunger's global *Microfinance and Health Protection* (*MAHP*) initiative. Funded by the Bill & Melinda Gates Foundation, health innovations such as health education, financing, products, and linkages to health providers were developed and piloted with Bandhan and four other microfinance organizations around the world with the dual goal of improvement of client health and financial protection and the financial performance of the MFIs.

Through *MAHP*, Bandhan identified pressing health needs and concerns of its clients and designed a responsive and cohesive health package: health education forums for clients and community members that deliver behavior change communication on breastfeeding, pre-, post- and neonatal care, infant and child feeding and diarrhea; health loans; health product distributors known as *Swastha Sahayikas* (*SS*) who reinforce health messages during home visits, sell health products, and support referrals to local healthcare services.

Quantitative pre- and post-tests with Bandhan clients participating in the *MAHP* initiative were completed in 2007 and 2009. In 2013, an additional quantitative post-test (post-test 2) was completed with many of the same participants in the prior two surveys as well as a follow-up qualitative interview that followed 36 clients, even though they had dropped out of the program since the initial interview. This report synthesizes the findings from this longitudinal assessment of impact of the *MAHP* project with Bandhan from 2008 through 2013. The results from pre-test to post-test 1 and post-test 2 demonstrate that among clients participating in the program, significant improvements were detected and sustained regarding the following knowledge and behavior indicators:

- Percentage who knew a child should be breastfed immediately or within one hour after birth
- Percentage who knew a child should be exclusively breastfed for six months
- Percentage who knew they should add oil, protein or vegetables to the first foods given to their babies to make the foods more nutritious
- Percentage who knew women should take 90-100 IFA tablets during pregnancy
- Percentage who reported breastfeeding infants within one hour of birth
- Percentage who reported introducing complementary foods into a child's diet at age six months or older
- Percentage who treated child in their household or under their care who had diarrhea with Oral Rehydration Salts (ORS)
- Percentage who treated a child in their household or under their care who had diarrhea with appropriate special liquids at home, such as coconut water, lentil water or rice water
- Percentage who gave advice to others on breastfeeding and malnutrition

Although improvements were also observed for drying and wrapping infants immediately after birth and seeking advice or medical treatment for ill children who were having trouble breathing, sample sizes of women with infants were low especially in the last survey, and these results were not statistically significant. In the case of giving children with diarrhea more than usual to drink, results are unclear and given the importance of this intervention, warrant further investigation. The qualitative results indicated satisfaction with Bandhan microfinance services including interest rates, the ease and availability of loans and support from other group members. The majority of respondents reported improvements in business and/or their families' standard of living over time. Most clients said they would recommend Bandhan to others.

Bandhan's health program contributes to satisfaction of clients, who valued the health education forums as well as the *SS*'s services, knowledge and low-cost medicines. Most participants had attended at least one health forum. Many participants indicated an awareness of and willingness to take out a Bandhan health loan if necessary, and most were strongly in favor of Bandhan developing a medical facility where they could receive lower cost care. They also expressed a need for clean water and a proper toilet, but expressed hesitancy about Bandhan's sanitation loan and concerns about repayment of this loan in addition to their business loans.

Evidence of positive changes in important maternal and child health knowledge and behaviors as well as high levels of client satisfaction sustained over a period of five years following the implementation of the program, is very promising. This study is an important contribution to a growing body of evidence for cross-sectoral interventions that address poverty and poor health. Bandhan and other organizations, including microfinance, self-help groups, and savings-led groups that convene women to access financial services, represent a large and mostly untapped resource for creating durable and sustainable channels to reach millions of poor families, and for making important contributions towards the achievement of national and global health improvement targets, especially in the area of maternal and child health and nutrition.

Introduction

Freedom from Hunger, a recognized expert in integrated financial and nonfinancial services for the poor, launched the *Microfinance and Health Protection* (*MAHP*) initiative in January 2006, with funding from the Bill & Melinda Gates Foundation. This initiative supports Freedom from Hunger's efforts to add and integrate health-protection programs into existing financial services programs such as microfinance institutions (MFIs), self-help groups (SHGs) and savings groups to address persistent barriers that poor women face in protecting and improving the health of themselves and their families. Program components include combinations of health education, linkages to healthcare services and products, and healthcare financing such as health savings, loans, and health risk protection. The Foundation-supported pilot was implemented and evaluated from 2006 through June 2010 in Bénin with PADME, in Bolivia with CRECER, in Burkina Faso with RCPB, in the Philippines with CARD, and in India with Bandhan. Subsequently, Freedom from Hunger has supported the replication and scale of similar programs with over 30 organizations in ten countries that collectively reach 2.7 million poor families.

Research and evaluation of the *MAHP* program has supported numerous studies of impact on clients and the financial-service providers. During the pilot phase multiple studies conducted at Bandhan and the other partners centered on addressing the following:

- Whether the provision of the health products improved client well-being
- Whether the provision of the health products improved institutional performance

This paper provides an overview of the client research findings from the *MAHP* innovations implemented by Bandhan and its affiliated foundation in India. The paper is organized by first providing general background information on Bandhan, the prominent health issues that the products were designed to address and a general description of the products and their outreach. Next, the paper outlines the research goals, activities, timeline and key results. Lastly follows a section interpreting the key results with a short conclusion.

Bandhan

Bandhan opened its first microfinance branch in July 2002 in the Howrah district of West Bengal. By 2007, Bandhan had received numerous industry awards, was ranked second in *Forbes* magazine's list of the World's Top 50 Microfinance Institutions (*Forbes*, 2007), and in 2013 received the Skoch Financial Inclusion award. Bandhan provides a range of financial services that includes loans for microenterprise and for other purposes such as health and education, a pension system, life insurance and remittance support services. Bandhan engages in other development work including health, education and support for the ultra-poor through its non-profit foundation partner Bandhan Konnagar.

All of Bandhan's services and products focus on reaching "socioeconomically disadvantaged" people, especially urban and rural women who are poor, landless and lacking in assets. Bandhan started with the goal of impacting women's empowerment, believing that enhancing the status of the woman in the family and society through her ability to generate income would reduce poverty.

Recognizing that financial services alone cannot alleviate poverty, Bandhan began the developing health-protection services beginning in 2006.

Table 1. Institutional Data on Bandhan, June 2013

Year MFI established	2002
Number of active borrowers	4,647,177
Outstanding gross portfolio	$727,710,365
PAR 30	0.23%
Operational self-sufficiency (OSS)*	151.02%
Year Bandhan Health Program implemented	2007
Number of families (credit clients and others) receiving services from Bandhan Health Program	412,500

*Most data as of June 30, 2013, except for OSS, which is as of March 30, 2013. Data provided from routinely collected *MAHP* Indicators.

Health Concerns in India

Health outcomes in India have improved nationally as a result of public health interventions, infectious disease prevention and control, and greater use of modern medical practices; yet substantial discrepancies persist across regions, incomes, castes, geography and gender. In India, 39 million new people descend into poverty annually as a result of healthcare expenses (Balarajan, 2011; Subramanian, 2008, 2006). During market research conducted in 2006, Bandhan clients reported that they spent up to 20 percent of their monthly income on health-related expenses. This is high even for India, where as much as 60 percent of all health care is financed from out-of-pocket expenditures (World Bank, 2011). Data from the National Sample Survey on Household Consumer Expenditures (2009–2010) indicated that 13.9 percent of households had healthcare expenditures that were greater than 10 percent of income (Ministry of Statistics and Programme Implementation, Government of India 2009–2010). Infectious diseases such as malaria and tuberculosis continue to account for high levels of morbidity and preventable death, and non-communicable diseases such as diabetes and cardio-vascular diseases are a growing problem, placing additional stress on under-resourced health systems and presenting a serious risk for poor families (Balarajan, 2011; NACO, 2009; UNAIDS, 2007; Patel et al., 2011).

Diarrhea is the second leading cause of death among children, and knowledge of appropriate treatment remains low (WHO, 2013). Likewise, child under-nutrition is a significant health burden to the country, with India ranking 117 out of 119 countries (Braun, Ruel & Gulati, 2008). India also has the highest number of neonatal deaths in the world, with more than 900,000 neonatal deaths per year, or 28 percent of the global total (WHO, 2011). Exclusive breastfeeding rates are also low, with only 46.8 percent of infants less than six months being exclusively breastfed (National Institute of Public Cooperation and Child Development, 2013). Exclusive breastfeeding during infancy is known to be a protective health practice for both mothers and infants, leading to healthier birth spacing and

child growth as well as protection against common childhood illnesses such as pneumonia and diarrhea (Feachem & Koblinsky 1984; Jason et al., 1984; Habicht et al*.,* 1986; WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality 2000; Arifeen et al., 2001).

Access to Health Care

During market research implemented prior to the development of Bandhan's health services, Bandhan clients indicated that their most pressing concern was their inability to pay for specialty and inpatient hospital care when needed to treat serious illnesses and accidents. They also voiced concern over the quality and availability of public health services and tended to prefer private health care, which was not as widely available and more costly (Metcalfe & Reinsch, 2008). During emergencies and serious illnesses, people tend to rely on relatives, friends and neighbors for financial assistance (Metcalfe & Reinsch, 2008). When support from these sources fails, they turn to moneylenders to whom they pay exorbitant rates of interest of anywhere between 60 and 200 percent (WHO, 2010; Sinha, 2005). While clients indicate a preference for private providers, citing better reliability and quality, there is little access to private health care in rural areas, as it is primarily found in larger towns and cities and is beyond the means of most Bandhan clients. In order to reduce health expenses, most clients try to treat common diseases themselves with home remedies and herbal medicines or consult local drug sellers or quacks (Chatterjee, 2007; Metcalfe & Reinsch, 2008).

Bandhan Health Program

Market research findings indicated client need for improved health knowledge to prevent and manage common diseases, healthcare financing, especially for higher-cost events, and better access to reliable and affordable health services and products. In response, Bandhan developed a combination of health services that include the following:

- Health education provided in local community forums (open to clients and all community members)
- Health loans available to clients with two years of loan experience
- Health product distributors from trained local community volunteers, called *Swasthya Sahayikas* (*SS*)
- Linkages to health care through referrals from the *SS*

Outreach for both the Bandhan credit products and the health program have grown considerably over the past six years as outlined in Table 2.

Table 2: Bandhan's Health Program Product Outreach

Monetary figures=USD	December 2007	December 2008	December 2009	June 2013
Number of total active borrowers (all of Bandhan)	761,565	1,228,698	1,924,016	4,647,177
People receiving full health package	11,758	14,459	51,900	412,500
Percentage of active borrowers receiving full health package	1.5%	1.2%	2.7%	8.9%
Number of members receiving education during forums (during past 6 months)	8,299	14,459	51,900	84,737
Outstanding health loan portfolio balance	$6,110	$57,848*	$34,409**	$1,704,541***
Number of outstanding health loans*	117	1,051	826	10,282**
Average outstanding health loan balance*	$52	$55	$42	$165.78**
Number of health product distributors/SS	26	150	298	1650
Products being sold at time of reporting date	Antacid, ORS, paracetamol	Antacid, ORS, analgesics, oral contraceptive pills, cotton, pregnancy tests, adhesive bandages, de-worming pills, antiseptic lotion, sanitary napkins	Antacid, ORS, analgesics, oral contraceptive pills, cotton, pregnancy tests, adhesive bandages, de-worming pills, antiseptic lotion, sanitary napkins	Antacid, ORS, analgesics, oral contraceptive pills, cotton, pregnancy tests, adhesive bandages, de-worming pills, antiseptic lotion, sanitary napkins, metrodinazole, seeds

Notes:
* Data reported to Freedom from Hunger by Bandhan for all branches offering health loans, which extends beyond branches where health program is operational.
**As reported to Microfinance Transparancy by Bandhan.

Bandhan hired and trained Health Community Organizers (HCOs) to provide behavior-change health education developed by Freedom from Hunger to Bandhan clients and community members aimed at increasing knowledge and influencing maternal and child health practices that are known to reduce mortality and improve the health of pregnant women, infants and children. The health education initially covered topics such as 1) diarrhea, sanitation, and safe water, 2) acute respiratory illnesses, 3) breastfeeding and malnutrition, 4) antenatal care, and 5) neonatal care, and has grown to include other topics such as safe childbirth, planning ahead for health services, and prevention of non-communicable diseases.

SS reinforce health education messages and further support behavior change by providing access to affordable high-quality health products such as oral rehydration salts, paracetamol, de-worming medications, antacids, pregnancy tests and oral contraceptives. Bandhan has also built collaborative partnerships with local public health professionals to improve the quality, effectiveness and use of local services by allowing the *SS* to refer community members for medical assistance.

Bandhan created health loans to enable members who encounter major medical problems to pay for the needed care and to repay slowly over time while protecting their business assets. Bandhan also lends at a lower interest rate than the business loan. At the time of the pilot program, the interest rate on the business loan was an annual flat rate of 12.5 percent and for the health loan, an annual flat rate of 10 percent. Health loans are typically held for up to one year with flexibility on frequency of repayments, whereas business loan terms are fixed.

All four *MAHP* innovations were initially piloted in the administrative branch areas of Bagnan, Birshibpur and Shyampur of the Howrah district, and later expanded to branches in the district of Murshidabad during the 2006–2009 pilot. As of June 2013, Bandhan's health program is provided in 55 of its branches, and Bandhan is planning to continue to scale the program to new branches annually.

Research and Evaluation Goals

For Bandhan, as with all five *MAHP* partners, Freedom from Hunger worked with local research teams to conduct mixed-method research that included qualitative and quantitative data from in-depth client, staff and provider interviews, focus-group discussions, client surveys and the regular reporting of financial and other performance indicators by the partner MFIs. The purpose of the research was to examine two primary questions:

- Does the provision of integrated microfinance and health-protection products by an MFI have a positive impact on client-health knowledge and behaviors?
- Does this provision of health-protection products result in stronger institutional performance as measured by growth rate, client loyalty and retention, repayment rates, demand for and effective use of MFI, and an overall competitive position?

Detailed findings from a range of studies on the impact on clients and a cost-benefit analysis of the pilot program during the pilot phase have been previously documented (Gash & Chanani, 2010; Metcalfe, Chanani, Reinsch & Dutta, 2010).

This report focuses on research completed in 2013, when an additional follow-up study was completed with many of the same clients who participated in the prior two client studies to explore the extent to which improvements identified one year after program implementation could be detected five years later.

Methodology

Quantitative Study

Freedom from Hunger conducted three surveys (a pre-test, post-test 1 and post-test 2) with clients from the three *MAHP*-pilot branch areas of Birshibpur, Bagnan and Shyampur to assess changes in knowledge, attitudes and behavior regarding several health topics delivered in community health education forums listed earlier. Programmatic efforts to promote dissemination of health messages and products and referrals by *SS* program staff were also examined. The survey also included basic demographic information and poverty indicators such as the Progress out of Poverty Index (PPI) and food security. The pre-test was conducted in May 2008 and post-test 1 in June 2009; post-test 2 was conducted in June and July 2013. The first survey was conducted by AC Nielsen, and the final two surveys were conducted by GfKMode using trained surveyors fluent in the local language.

The pre-test was administered in 2008 after the introduction of the health program in the three branches. The sample consisted of 240 clients who were randomly selected from 57 Bandhan microlending groups across 27 villages. Post-test 1, conducted in 2009 and following one full year after full program implementation, collected data from a new cross-section of 180 clients across 90 Bandhan credit groups selected from the same geographic area. Women with children under the age of one year were deliberately oversampled during the pre-test and post-test 1. All women selected were interviewed with the same core survey, with slight changes to the post-test 1 and post-test 2 surveys. Women who had children under the age of one year were asked additional questions related to childcare and prenatal behaviors. Each survey took 45–60 minutes to complete.

Post-test 2 was conducted in 2013, five years after full program rollout. The main purpose of this survey was to assess whether the positive changes clients reported in health knowledge and behaviors in 2009 would be evident five years after the program was implemented. Participants for post-test 2 were selected using the same sampling frame with the 180 clients who participated in post-test 1 survey among the original *MAHP* pilot branches of Birshibpur, Bagnan and Shyampur. If clients who were in post-test 1 could not be located or if they had dropped out, efforts were made by GfKMode to contact clients who participated in the pre-test or who, at minimum, were participating in the program at the end of 2009 and who were current members of Bandhan.

Analysis

Descriptive statistics were calculated for all relevant indicators for each round of data-collection. Basic frequencies of the post-test 2 survey were run, in addition to questions on the five health topics. Statistical tests were run to compare outcomes at post-test 1 and post-test 2 to determine whether changes were statistically significant at $p<0.05$, $p<0.01$ and $p<0.001$ levels of significance. Statistical analysis was also conducted to compare outcomes at pre-test and post-test 2.

Qualitative Study

In-depth interviews were conducted with current and new clients in the three pilot branch areas to create client impact stories to provide a more comprehensive picture of the life of a Bandhan client participating in the *MAHP* program. The impact stories follow a small randomly selected group of women over time using a qualitative life-story methodology (Jarrell, Gray, Gash, & Dunford, 2011) to provide insights into the hopes and aspirations of clients, their major challenges, their general health and business practices, their decision-making power, and how Bandhan has played a role in their lives. Interviews were recorded and summarized. Examples of three of these stories are included in the Annex to this report.

The individual interviews were analyzed to determine the most common responses for each topic raised by the interviewer. Fourteen clients were interviewed in each of the three pilot areas in 2009. Half were new clients (clients for six months or less or in their first loan cycle) and half were mature clients (clients for six months or more; or at least in their second loan cycle). In June and July 2013, the research firm was able to find and interview 36 of the 42 women originally interviewed in 2009.

Results

Quantitative Results from Pre-test, Post-test 1, and Post-test 2

Demographics and Food Security

Demographic data across all three surveys found that a majority (95%–99%) of participants were married women. Clients experienced improvements in food security, with the percentage of food-secure households rising from 51 percent at pre-test to 80 percent at post-test 1, followed by 90 percent at post-test 2, with the increase between pre-test and post-test 2 being significant at $p < 0.001$. In terms of economic well-being, poverty as measured by the PPI, decreased slightly but at a non-significant level, from 35 percent at post-test 1 to 34 percent at post-test 2.

Table 3: Demographics

Characteristic	Pre-test %	N=	Post-Test 1* %	N=	Post-Test 2** %	N=
Marital Status						
Single	3	6	0	0	1	1
Married	95	228	99	179	98	178
Separated/Divorced	0.4	1	0	0	0	0
Widow	2	5	0	0	1	2
Food Security						
Food-secure households	51	122	80^{+++}	144	90$^{\wedge\wedge\wedge,\diamond\diamond}$	163
Percent below national poverty line (PPI)	NA		35	144	34	163

*Significant difference between pre-test and post-test 1: $^{+}p \leq 0.05$, $^{++}p \leq 0.01$, $^{+++}p \leq 0.001$

**Significant difference between pre-test and post-test 2: $^{\wedge}p \leq 0.05$, $^{\wedge\wedge}p \leq 0.01$, $^{\wedge\wedge\wedge}p \leq 0.001$; and significant difference between post-test 1 and post-test 2: $^{\diamond}p \leq 0.05$, $^{\diamond\diamond}p \leq 0.01$, $^{\diamond\diamond\diamond}p \leq 0.001$

Health Knowledge

Participants' knowledge of important health behaviors known to increase the survival of infants improved significantly after one full year of participation, and these improvements were sustained over the five-year period (Table 4). The percentage of participants who knew of three key nutrition-related behaviors (an infant should be breastfed within one hour of birth, an infant should be exclusively breastfed for six months, and a child's first foods should include oil, protein or vegetables) increased between pre-test and post-test 1, with the increases in the first two variables being significant at $p < 0.001$ (Table 4). The same level of improvement was also observed at post-test 2. In regards to antenatal and neonatal care, knowledge of key behaviors (knowing women should take 90-100 IFA tablets during pregnancy, knowing a new baby should be dried and wrapped) increased from pre-test to post-test 1, with $p < 0.001$ for the former and $p < 0.0001$ for the latter. At post-test 2, while there was some decrease in knowledge reported on knowing a new baby should be dried and wrapped, there was no related decrease in the related behavior.

Health Behaviors

Participants also reported improved behaviors in areas related to child nutrition (improved immediate breastfeeding and complementary feeding at six months), seeking care for respiratory illness and treatment of diarrhea (Table 4). Women who reported introducing complementary foods into a child's diet at six months or older increased from pre-test to post-test 1, with $p < 0.01$ and continued to improve at post-test 2. Women who reported breastfeeding within one hour of birth increased from pre-test to post-test 1, with $p < 0.001$. The total percentage reporting early breastfeeding decreased somewhat from post-test 1 to post-test 2 (from 93% to 75%). This was not statistically significant, however, the sample size also decreased due to a smaller number of women in the group with children under 12 months of age (n=20) at post-test 2. Treatment of children with diarrhea with ORS increased significantly between pre-test and post-test 1 ($p < 0.05$), as did treatment with special liquids such as coconut water or rice water ($p < 0.05$), and these improvements were sustained and even improved somewhat at post-test 2. The percentage who reported giving a child less to drink (inappropriate practice) went up at post-test 1 and then went back to pre-test levels at post-test 2. The inconsistency of this result may be due to the wording of the question and requires additional inquiry; however, it also suggests the importance of following up with additional education and discussions with clients and community members regarding this practice.

Participants showed marked improvements in their access and use of three *SS* services over the five years: purchasing ORS from *SS* ($p < 0.001$), receiving pregnancy-related *SS* referral ($p < 0.001$) and receiving an *SS* visit within 48 hours of birth of a child ($p < 0.01$) (Table 5).

Notably, Bandhan clients reported improved levels of contributing to health knowledge in their own social circles and communities. Between pre-test and post-test 1, the percentage of participants giving advice to friends and family increased in five separate health topics, all at a value of $p < 0.001$ and these levels were also reported at post-test 2, indicating that women are continuing to share health knowledge and advice with others (Table 4).

The percentages of participants receiving advice from the *SS* regarding five different health topics (breastfeeding and malnutrition, antenatal care, neonatal care, treatment of common illnesses, and sanitation and treatment of diarrhea) all increased significantly ($p < 0.001$) between pre-test and post-test 1. These increases were sustained when comparing post-test 2 to the pre-test, although there were decreases from post-test 1 to post-test 2 for advice on respiratory illness and diarrhea that are worthy of feedback and follow-up with program management and the *SS* (Table 5).

Table 4: Bandhan Health Education Outcomes

Characteristic	Pre-Test %	N=	Post-Test 1* %	N=	Post-Test 2** %	N=
Breastfeeding and Addressing Malnutrition						
Knowledge						
Percentage who knew how soon after birth a child should be breastfed (answered "immediately" or "within 1 hour")	71	240	97^{+++}	180	92$^{\wedge\wedge\wedge,\diamond}$	181
Percentage who knew a child should be exclusively breastfed for 6 months	75	240	92^{+++}	180	97$^{\wedge\wedge\wedge,\diamond}$	181
Percentage who knew one should add oil, protein or vegetables to first foods for baby in order to make them more nutritious	93	240	96	180	98$^{\wedge\wedge}$	181
Behavior						
Among women who have or care for child 12 months of age or younger, percentage whose child or child in their care was breastfed immediately or within 1 hour of birth	61	98	93^{+++}	74	75	20
Percentage who reported introducing complementary foods into a child's diet at age 6 months or older	60	67	88^{++}	48	100$^{\wedge}$	8
Antenatal and Neonatal Care						
Knowledge						
Percentage who knew a woman should visit a medical professional at least 3 times during pregnancy	96	240	97	180	97	181
Percentage who knew that women should take 90–100 IFA tablets during pregnancy	65	240	77^{++}	180	83$^{\wedge\wedge\wedge}$	181
Percentage who knew immediately after a baby is born, the baby should be dried and wrapped	58	240	77^{+++}	180	67$^{\diamond}$	181
Behavior						
Percentage who were pregnant or had been pregnant in prior 18 months who visited a medical professional at least 3 times	87	98	86	120	95	21
Percentage who were pregnant or had been pregnant in the prior 18 months who received 2 or more tetanus shots during current or last pregnancy	96	101	95	118	100	20
Percentage who delivered a child at home in the past 12 months and reported drying and wrapping the baby immediately after birth	89	103	94	35	100	4

*Significant difference between pre-test and post-test 1: $^{+}p \leq 0.05$, $^{++}p \leq 0.01$, $^{+++}p \leq 0.001$

**Significant difference between pre-test and post-test 2: $^{\wedge}p \leq 0.05$, $^{\wedge\wedge}p \leq 0.01$, $^{\wedge\wedge\wedge}p \leq 0.00$; and significant difference between post-test 1 and post-test 2: $^{\diamond}p \leq 0.05$, $^{\diamond\diamond}p \leq 0.01$, $^{\diamond\diamond\diamond}p \leq 0.001$

Table 4: Bandhan Health Education Outcomes (continued)

Characteristic	Pre-Test %	N=	Post-Test 1* %	N=	Post-Test 2** %	N=
Acute Respiratory Illnesses						
Knowledge						
Percentage who could name at least 1 danger sign if the child has a cough that tells you that you should take your child for medical care	89	240	79††	180	62^^^, ◊◊◊	181
Behavior						
Percentage who had an ill child with a cough in prior 2 weeks who sought advice or medical treatment when child had trouble breathing or was breathing fast	88	57	96	24	100	9
Diarrhea, Sanitation and Safe Water						
Behavior						
Percentage with a child in their household or care who had diarrhea in the last 3 months who treated that child with ORS	60	10	88+	42	100^	10
Percentage who treated child in their household or care with special liquids at home (such as coconut water, lentil water or rice water)	30	10	69+	42	80^	10
Percentage who gave their child with diarrhea less than usual to drink	40	10	60	42	40	10
Dissemination of Advice in Past 3 Months						
Percentage who gave advice on breastfeeding and malnutrition	13	240	39+++	179	35^^^	181
Percentage who gave advice on antenatal care	13	240	27+++	176	33^^^	181
Percentage who gave advice on neonatal care	10	240	26+++	179	26^^^	181
Percentage who gave advice on how to treat coughs, colds or other respiratory illnesses of a young child	13	240	32+++	179	31^^^	181
Percentage who gave advice on how to treat diarrhea	10	240	41+++	180	38^^^	181

*Significant difference between pre-test and post-test 1: $^{+}p \leq 0.05$, $^{++}p \leq 0.01$, $^{+++}p \leq 0.001$

**Significant difference between pre-test and post-test 2: $^{\wedge}p \leq 0.05$, $^{\wedge\wedge}p \leq 0.01$, $^{\wedge\wedge\wedge}p \leq 0.00$; and significant difference between post-test 1 and post-test 2: $^{\diamond}p \leq 0.05$, $^{\diamond\diamond}p \leq 0.01$, $^{\diamond\diamond\diamond}p \leq 0.001$

Table 5: *SS* Referrals, Purchases and Visits—Advice on Key Topics

Characteristic	Pre-Test %	N=	Post-Test 1* %	N=	Post-Test 2** %	N=
Referrals, Purchases and Visits from *SS*						
Respondents claiming to have a child in their household or care with diarrhea sometime in the past 3 months who received a referral	9	106	24++	176	16	63
Respondents who purchased ORS from *SS* to treat diarrhea for themselves or someone in their household	9	105	42+++	178	39^^^	181
Respondents who were pregnant or pregnant within the prior 18 months who received a referral for themselves or someone in their household for issues related to pregnancy	31	106	38	177	64^^^,◊◊◊	181
Respondents who gave birth during the past 12 months and were visited by an *SS* within 48 hours of birth	16	106	36+++	176	54^^	13

*Significant difference between pre-test and post-test 1: $^{+}p \leq 0.05$, $^{++}p \leq 0.01$, $^{+++}p \leq 0.001$

**Significant difference between pre-test and post-test 2: $^{\wedge}p \leq 0.05$, $^{\wedge\wedge}p \leq 0.01$, $^{\wedge\wedge\wedge}p \leq 0.00$; and significant difference between post-test 1 and post-test 2: $^{\diamond}p \leq 0.05$, $^{\diamond\diamond}p \leq 0.01$, $^{\diamond\diamond\diamond}p \leq 0.001$

Table 5: *SS* Referrals, Purchases, and Visits; Advice on Key Topics (continued)

Characteristic	Pre-Test %	N=	Post-Test 1* %	N=	Post-Test 2* %	N=
Advice from *SS*						
Respondents with a child or cares for a child 12 months or younger who received advice on breastfeeding or malnutrition	41	106	76^{+++}	163	77$^{\wedge\wedge\wedge}$	181
Respondents who were pregnant or pregnant in the prior 18 months who received advice on antenatal care	37	106	85^{+++}	177	82$^{\wedge\wedge\wedge}$	22
Respondents who received advice on neonatal care	33	106	78^{+++}	80	85$^{\wedge\wedge\wedge}$	13
Respondents who received advice on coughs, colds and other respiratory illnesses	48	106	80^{+++}	179	68$^{\wedge\wedge\wedge,\diamond\diamond}$	181
Respondents who received advice on diarrhea or hand-washing	57	106	90^{+++}	179	82$^{\wedge\wedge\wedge,\diamond}$	181

*Significant difference between pre-test and post-test 1: $^{+}p \leq 0.05$, $^{++}p \leq 0.01$, $^{+++}p \leq 0.001$
*Significant difference between pre-test and post-test 2: $^{\wedge}p \leq 0.05$, $^{\wedge\wedge}p \leq 0.01$, $^{\wedge\wedge\wedge}p \leq 0.001$
*Significant difference between post-test 1 and post-test 2: $^{\diamond}p \leq 0.05$, $^{\diamond\diamond}p \leq 0.01$, $^{\diamond\diamond\diamond}p \leq 0.001$

Qualitative Interview Results from Post-test 2 (June–July 2013)

Client Satisfaction

> *I heard Bandhan is more organized. It has lower interest rates than the competition. I joined for Bandhan's healthcare meetings and its business loans.*
>
> —Bandhan client

To evaluate overall client satisfaction with the program, participants were asked about a number of qualitative factors related to satisfaction with Bandhan, including whether they were pleased with Bandhan's services; whether they attributed positive changes in their life to participation in Bandhan; and whether they would recommend Bandhan to family or friends. Participant comments regarding general well-being were not considered. A majority (77%) of the 36 participants at post-test 2 felt positively about their involvement with Bandhan. Reasons for satisfaction included Bandhan's low interest rate, the ease of obtaining and the availability of loans, and support from other group members. Additionally, the health aspects of the program were highly valued by participants. Of the remaining participants, 20 percent reported personnel challenges with the credit program for one reason or another. Most of these had an event that negatively affected their ability to repay their loans, with some mentioning a fear of not being able to repay a loan as the reason they left the program. Several participants did have a desire to return to the program but were unable to do so because of personal circumstances. Only one participant reported she would not recommend Bandhan to others.

> *They regularly ask about our health. They guide childcare and pregnancy, conduct health meetings to improve the health of our family, provide us with medicines for minor illnesses and tell us how to maintain health and hygiene and to opt for using tap water.*
>
> —Bandhan client

Overall satisfaction with the health-related elements of the health program appeared to be high. Clients repeatedly expressed that they felt as though Bandhan cared about their health. Regarding specific elements of the health programming, some expressed the feeling that the health education forums were the most valuable part of the program, while others highly valued

the services and knowledge of the *SS*. A majority of participants reported attending the health forums and utilizing the services of the *SS*. Most also felt that the medicines provided by the *SS* were a good value for the money.

Economic Well-being

Participation in Bandhan has been economically beneficial for a majority of participants: 58 percent of those interviewed specifically stated that they had seen improvement in their family business, and/or that they had experienced an improved standard of living as a family. Several clients expressed appreciation for the easy financial setup of Bandhan.

> *My standard of living has increased. We bought land, constructed our own house, and got access to tap water. Joining Bandhan has increased my awareness towards my and my family's health. It is the great change that has happened.*
>
> —Bandhan client

However, economic concerns remain relevant to client perceptions about their capacity to manage illness. While approximately 72 percent of participants expressed that they felt themselves economically capable of dealing with a minor illness, only 36 percent believed that they were capable of addressing a major illness with their current finances. Use of Bandhan's health loan was reported by 17 percent of the respondents. Many who had not used a health loan expressed concern that the health loan would be too difficult to repay given their modest circumstances. Most (81%) participants reported having children who were unmarried and living at home. Of these participants, 22 percent reported educating their children.

Food Security

A majority of the women who were interviewed had not experienced hunger in the last year, though 31 percent mentioned having experienced food insecurity and hunger at some point in the past few years.

Most participants who experienced hunger believed it was due to of a lack of money or a deficiency in household income Family health shocks were mentioned as a cause of past food insecurity by 8.3 percent of the those interviewed.

Health

In terms of overall health, most participants reported that they were in good health or that for the most part, their health and the health of their family members were relatively good. Only a few had faced major challenges to health (generally the results of accidents or injuries), though a few had struggled with typhoid and malaria.

Most participants (94%) felt that they had a healthy diet. When asked more specifically about the substance of their diets, participants' answers generally reflected an understanding of what a healthy diet was.

> *At present our diet is quite healthy. Our diet consists of vegetables, fish, meats and fruits."*
>
> —Bandhan client

As noted previously, most participants felt that they lacked sufficient funds to treat major illnesses, and would need to borrow to cover the expenses from a major medical illness. Many indicated an awareness of and willingness to use a Bandhan health loan to meet their needs. Additionally, most of the participants interviewed were very much in favor of a hospital or medical clinic run by Bandhan where they could receive lower cost, quality care.

Sanitation was also a topic that came up repeatedly in the interviews. The desire for a safe and clean water source and the desire for a proper toilet were prevalent among participants. Many participants were aware of the sanitation loans available through Bandhan, with some participants saying they desired to take out this type of loan but that they were not sure they could make the loan payment along with their business loan.

Social Capital

Some Bandhan participants reported benefits from social capital created through their association with Bandhan. Members reported learning from the group, and enjoying the benefits of being part of a group. Others attributed their success and growth to the support from Bandhan.

> *We are part of a great group; we are always helping each other in crisis or in need.*
>
> *The group has taught me how to live a happy and healthy life.*
>
> —Bandhan clients

Analysis

The results of the client surveys and in-depth interviews conducted in 2008, 2009 and 2013 show a positive association between the introduction of Bandhan's health program and improvement in important health knowledge and behaviors among women clients in the Howrah District of West Bengal. Most importantly, the positive changes observed in 2009 immediately after the program was implemented were still detected five years later, providing important information about the capacity of Bandhan's health program to sustain improved health knowledge and behaviors over time. It is important to emphasize that the health program that Bandhan has implemented was designed to be low-cost, scalable, and sustainable over time. Since December 2009, the health program in the branches where the evaluation took place has continued. While community health education is less frequent, the *SS* continue to participate in credit meetings where clients are reminded of health topics. They also continue to visit households in their communities (at the rate of about 20 visits per day), where they reinforce health messaging and behavior change, provide a growing array of health products at the doorstep, and make referrals to local care providers for prenatal care and for illnesses of children that do not resolve within defined timeframes. Since 2009, Bandhan has continued to expand its health program to new branches and geographies. The program is currently operating in 55 branches, and the original cadre of community health workers that are recruited, trained and supervised by Bandhan has grown from 290 to 1,650. New topics have been added to the health education curriculum in response to client needs that address non-communicable diseases and water and sanitation. Bandhan has also opened three small clinics and is working to demonstrate that its successful focus and approach to improving maternal and child health can also be applied

with positive impact on the prevention and management of chronic disease, which is a rapidly growing problem for their population.

During this period, Bandhan has continued to rapidly grow and expand their microfinance operations. It is the fastest-growing MFI in India and highly respected for its efficiency and transparency of lending policies. Bandhan has made an on-going commitment to expanding and sustaining the work done by its associated Foundation (Bandhan Konnager) in health, education and support for the ultra-poor through transfer of a fixed share of annual profits from the MFI to the Foundation.

Including the provision of both financial and health services has been identified as a promising but underutilized strategy for supporting the achievement of the United Nation's Millennial Development Goals (MDGs) and strengthen health system capacity (Sinha, 2010). Bandhan's programs, including the business and health loans, the health education forums and the assistance/advice from the *SS*, address at least four of the MDGs including the eradication of extreme poverty and hunger, reduction of child mortality, improvement of maternal health and the empowerment of women.

The addition and integration of services that improve the capacity of clients (especially women) to access health services also offers benefits to financial-service providers. The rationale for an MFI or other financial-service provider expanding its programming to include health services is "health services are a natural extension of their mission of financial security and social protection of the client, and healthier clients better serve the microfinance institutions' goals of growth and long-term viability (Sinha, 2010)."

At Bandhan the health program appears to have had a positive impact on its relationship with clients. The individual client interviews indicate that most participants are utilizing one or more services provided as part of the health program and that overall satisfaction with the program is high. In fact, what is evident from the individual interviews is that many participants see Bandhan not just as a financier but as a partner with whom they will be able to realize their goal of achieving "the good life."

> *Bandhan plays an important role in achieving my dreams by providing us valuable knowledge regarding health and hygiene and also providing us loans to expand our business.*
>
> —Bandhan client

Combined results from the client survey and the individual interviews indicate that participants are faring better nutritionally and that they have changed and sustained improved health behaviors. The numbers of participants facing food insecurity has diminished, and participants report being able to incorporate more healthy foods into their diets. The statistically significant changes in health knowledge and behavior detected one year after program implementation have been sustained over the past five years. These included increases in knowledge of five important interventions that are known to improve infant and child survival and health—breastfeeding and complementary feeding; antenatal and neonatal care; acute respiratory illnesses; diarrhea treatment; and sanitation and safe water.

The benefits of Bandhan's health program also extend to the broader community. The health forums are open to the general community and are attended by clients and non-clients alike, and the *SS* visit homes of community members regardless of their participation in the Bandhan credit programs. Peer-to-peer dissemination of health messages represents an important opportunity for program improvement as the numbers of clients disseminating advice has remained at similar levels (about 30%) between the most recent two rounds of data-collection.

Conclusion

Bandhan's Health Program developed in collaboration and with the support of Freedom from Hunger has a positive association with significantly improved reports of health knowledge and behaviors related to the survival, health and nutrition of infants and children. This study over five years is particularly important because it strongly suggested that the changes detected one year after implementation are being sustained over time, strengthening the case for linking two development approaches–financial services for the poor and health–as a durable intervention to improve the health of poor families. Bandhan and other financial service organizations represent a large and mostly untapped, resource for creating effective and sustainable channels to reach millions of poor families, and to make important contributions towards achieving national and global health improvement targets especially in the area of maternal and child health and nutrition.

References

Agarwal, S., Sethi, V., Srivastava, K., Jha, P. K., & Baqui, A. H. (2010). Birth preparedness and complication readiness among slum women in Indore city, India. *Journal of health, population, and nutrition*, *28*(4), 383.

Arifeen, S., Black, R.E., Antelman, G., Baqui, A., Caulfield, L. & Becker, S. (2001) Exclusive breastfeeding reduces acute respiratory infection and diarrhea deaths among infants in Dhaka slums. *Pediatrics* 108, E67.

Balarajan, Y., Selvaraj, S., & Subramanian, S. V. (2011). Healthcare and equity in India. *The Lancet*, *377*(9764), 505-515.

California Healthcare Foundation. (2013, September). *Healthcare Costs 101: Slow Growth: A New Trend?* Retrieved from http://www.chcf.org/~/media/MEDIA%20LIBRARY%20Files/PDF/H/PDF%20HealthCareCosts13.pdf.

Chatterjee, P. (2007). India addresses maternal deaths in rural areas. *The Lancet*, *370*(9592), 1023-1024.

Feachem, R.G. & Koblinsky, M.A. (1984). Interventions for the control of diarrheal diseases among young children: promotion of breastfeeding. *Bulletin of the of the World Health Organization* 62, 271–291.

Forbes. (2007). *The Top 50 Microfinance Institutions*. Retrieved from http://www.forbes.com/2007/12/20/microfinance-philanthropy-credit-biz-cz_ms_1220microfinance_table.html.

Gash, M. & Chanani, S. (2010). *MAHP* Research Summary Report: Bandhan. Freedom from Hunger Research Paper No. 9A. Freedom from Hunger: Davis, CA.

Habicht, J.P., DaVanzo, J., & Butz, W.P. (1986). Does breastfeeding really save lives; or are apparent benefits due to biases? *American Journal of Epidemiology* 123,279–290.

Jarrell, L., Gray, B., Gash, M., & Dunford, C. (2011). What We Can Learn from Freedom from Hunger's "Impact Story" Methodology. Retrieved from https://www.freedomfromhunger.org/sites/default/files/ffh_humanfacesimpact_voct2011.pdf.

Jason, J.M., Nieburg, P. & Marks, J.S. (1984). Mortality and infectious disease associated with infant feeding practices in developing countries. *Pediatrics* 74, 702–727.

McIntyre, D., Thiede, M., Dahlgren, G., Whitehead, M. (2006). What are the economic consequences for households of illness and of paying for healthcare in low- and middle-income country contexts? *Social Science & Medicine* 62: 858–865.

Metcalfe M, Chanani S, Reinsch M, Dutta S. (2010). Costs of Health Education and Health Product Distribution: Bandhan's Experience with Microfinance and Health Protection in India. Freedom from Hunger Research Paper No. 10A. Freedom from Hunger: Davis, CA.

Metcalfe, M. and Reinsch, M. (2008). Enhancing the Impact of Microfinance: Client Demand for Health Services on Three Continents. Freedom from Hunger. Davis, CA.

National AIDS Control Organization. *Annual Report*, 2008-2009. New Delhi: Ministry of Health and Family Welfare, Government of India; 2009.

National Institute of Public Cooperation and Child Development. (2013). *World Breastfeeding Trends Initiative: India Report 2012*. New Delhi: Haus Khasi.

NPPO, Level and pattern of consumer expenditure - NSS 66th round, 2009–10. Ministry of Statistics and Programme Implementation, Government of India (2011).

Patel, V., Chatterji, S., Chisholm, D., Ebrahim, S., Gopalakrishna, G., Mathers, C, & Reddy, K. S. (2011). Chronic diseases and injuries in India. *The Lancet*, *377*(9763), 413-428.

Russell, S. (2004). The Economic Burden of Illness for Households in Developing Countries: A Review of Studies Focusing on Malaria, Tuberculosis, and Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome. *The American Journal of Tropical Medicine and Hygiene* 71 (Suppl 2): 147–155.

Singh, P. N. (2011). Chronic disease burden in rural India attributable to diet, obesity, and tobacco use. *Journal of Postgraduate Medicine*, *57*(1), 1.

Sinha, F. (2005). Access, Use and Contribution of Microfinance in India: Findings from a National Study. *Economic and Political weekly*, 1714-1719.

Sinha, S. & Batjiji, R. (2010). Protecting health: Thinking small. *Bulletin of the World Health Organization,* 88, 713-715.

Subramanian, S. V., Ackerson, L. K., Subramanyam, M., & Sivaramakrishnan, K. (2008). Health inequalities in India: the axes of stratification. *Brown J. World Aff.*, *14*, 127.

Subramanian, S. V., Nandy, S., Irving, M., Gordon, D., Lambert, H., & Smith, G. D. (2006). The mortality divide in India: the differential contributions of gender, caste, and standard of living across the life course. *Journal Information*, *96*(5).

Subramanian, S. V., Smith, G. D., & Subramanyam, M. (2006). Indigenous health and socioeconomic status in India. *PLoS Medicine*, *3*(10), e421.

UNAIDS. (2007). AIDS Epidemic Update: Asia. Geneva: Joint United Nations Programme on HIV/AIDS; 2008.

Von Braun, J., Ruel, M., & Gulati, A. (2008). *Accelerating progress toward reducing child malnutrition in India: A concept for action* (No. 12). International Food Policy Research Institute (IFPRI).

WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality. (2000). Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. *Lancet* 355, 451–455.

World Bank (2011). *World Development Indiators: Health Systems,* retrieved from http://wdi.worldbank.org/table/2.15.

World Health Organization and Save the Children. (2011). *Newborn Deaths Decrease but Account for Higher Share of Global Child Deaths. Joint Press Release 30 August 2011.* Retrieved from: http://www.who.int/mediacentre/news/releases/2011/newborn_deaths_20110830/en/index.html

World Health Organization. (April 2013). *Diarrhoeal Disease*. Retrieved from http://www.who.int/mediacentre/factsheets/fs330/en/index.html.