PREVENT ANEMIA FOR BETTER HEALTH:
Research Brief

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Aikyatan Development Society (ADS)

Aikyatan Development Society is a non-profit development organization engaged in the self-help group (SHG) movement, health care and livelihoods to address the poverty of poor families in the district of Burdwan in West Bengal, India. ADS's sanitation program with the state government is the largest program of ADS and it is well known for effective linkages with the public health system and SHG strengthening. It was conceived in 1999 with active support of CARE India and became a partner of Freedom from Hunger and Freedom from Hunger India Trust in 2014. Through this partnership, ADS has reached 2,000 SHGs (women's savings and credit groups) with health education in WASH, Nutrition and Anemia prevention.

Bandhan Konnagar (Bandhan)

Bandhan Konnagar (BK) is a not-for-profit entity registered under the West Bengal Societies Registration Act 1961. Its main thrust is to alleviate poverty and help bring about women's empowerment. It was founded in 2001 as a pro-poor organization, catering to more than 1 million households across 11 states. Bandhan Konnagar offers an entire suite of development programs in the areas of education, health, securing of livelihood, market linkage, skill development and financial literacy – all focused on turning the lives of the underprivileged around. In 2007, BK started its health initiatives in collaboration with Freedom from Hunger and at present its operation spreads to 7 states. It has reached out to more than 1 million households mainly with mother and child health care issues besides water and sanitation. At present, in partnership with Freedom from Hunger India Trust, Bandhan Konnagar is implementing a project called 'Safe Motherhood Initiative through Linkages and Education (SMILE)' where the study on `Prevent anemia for better health' was conducted.

Grameen Foundation

Grameen Foundation is a global nonprofit organization that helps the world's poorest people achieve their full potential by providing access to essential financial services and information on health and agriculture that can transform their lives. In 2016, Grameen Foundation and the global nonprofit Freedom from Hunger decided to join forces under the banner of Grameen Foundation. The integration of the two organizations brings together Grameen Foundation's expertise in digital innovation to end poverty and Freedom from Hunger's focus on providing the world's poorest women with self-help tools to reduce hunger and poverty. Grameen Foundation is headquartered in Washington, D.C., with offices in the U.S., Asia, Africa, and Latin America. For more information, please visit www.grameenfoundation.org or follow us on Twitter: @GrameenFdn.

Freedom from Hunger India Trust

Established in 2012, Freedom from Hunger India Trust (FFHIT) is an independent Indian non-profit organization based in New Delhi with an office in West Bengal. The technical staff of FFHIT oversee health, nutrition, financial inclusion, vulnerable youth and savings group methodologies, and provide expert advice on leamer-centered curriculum design. FFHIT's goal is to achieve nutrition and food security, reduce poverty and improve economic and social status of poor and marginalized women and their families through increased integration of financial services with other essential services such as health, nutrition and livelihood opportunities. FFHIT is also an active member of National Coalition of Food and Nutrition Security.

RESULTS Educational Fund

RESULTS Educational Fund (a US-based nonprofit 501(c)(3)) is an advocacy organization working in the United States and around the world on projects focused on three key pillars in the fight to end poverty: 1) health, 2) education, and 3) economic opportunity. RESULTS Educational Fund performs cutting-edge research and oversight in these three areas; educates and mobilizes the public, policymakers, and the media; and supports powerful citizenship by training volunteers in public speaking, generating media, and educating their communities and elected officials on issues of poverty. In May 2016, the Microcredit

Summit Campaign merged its structure and operations with those of its parent organization, RESULTS Educational Fund. For more information, please see www.results.org.

Community of Practice for Health and Microfinance

The Community of Practice for Health and Microfinance (COPHAM) in India is an experiment to bring together stakeholders in the health and microfinance sectors to promote universal healthcare coverage. COPHAM members learn from each others' experience and create strategic partnerships to leverage their complementary strengths. The COPHAM is facilitated in collaboration by RESULTS Educational Fund, the ACTION global health advocacy partnership, Freedom from Hunger India Trust, and Grameen Foundation. Aikyatan Development Society (ADS) and Bandhan, whose data is presented in this report, are both active members of the COPHAM. For more information, please see https://sites.google.com/view/cop-india/home.

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Introduction

Anemia Prevalence in West Bengal and Jharkhand

Anemia prevalence in West Bengal and Jharkhand, two eastern states in India, has not improved over the last 10 years despite economic growth across India. This marks a disconnect between economic growth and nutrition. In West Bengal, for example, 2005–2006 anemia rates for all women estimated for the 2005–06 National Family Health Survey (NFHS) remained constant through the 2015–2016 NFHS, particularly for rural areas. The same dynamic describes the state of anemia in Jharkhand. Men in both states have almost half the anemia rate compared to women of the same age range, with children experiencing anemia at rates similar to their mothers. Table 1 outlines the anemia rates for children, women, and men for the 2015–2016 and 2005–2006 reporting periods.

TABLE 1: ANEMIA AMONG CHILDREN AND ADULTS IN WEST BENGAL AND JHARKHAND

	West Bengal						Jharkhand				
	NFHS-4 (2015–16)					NFHS-3 (2005–06)	NFHS-4 (2015–16)				NFHS-3 (2005–06)
	West Bengal State			N. 24 Pargan-as Dist.	Bardd-haman Dist.	West Bengal State	Jharkhand State			Pakur Dist.	Jharkhand State
	Urban	Rural	Total	Total	Total	Total	Urban	Rural	Total	Total	Total
Children age 6–59 mos. who are anemic	55.6	53.7	54.2	53.5	44.2	61.0	63.2	71.5	69.9	74.3	70.3
Non-pregnant women age 15–49 yrs. who are anemic	58.4	64.8	62.8	62.6	63.8	63.2	59.7	67.5	65.3	71.6	69.4
Pregnant women age 15–49 yrs. who are anemic	54.2	53.3	53.6	__	51.8	62.6	57.3	63.7	62.6	63.4	68.5
All women age 15–49 yrs. who are anemic	58.2	64.4	62.5	62.7	63.3	63.2	59.6	67.3	65.2	71.1	69.5
Men age 15–49 yrs. who are anemic	26.9	31.9	30.3	30.3	24.0	32.3	22.5	33.0	29.9	28.3	36.5

Source: "Key Findings from HFHS-4, 2015–2016," *National Family Health Survey, India*. http://rchiips.org/nfhs/factsheet_NFHS-4.shtml. West Bengal and Jharkhand state reports; N. 24 Parganas, Barddhaman, Pakur District reports.

Maa aur Shishu Swasthya Program

In 2015, the *Maa aur Shishu Swasthya* (Mother and Child Health) Program, implemented across West Bengal and Jharkhand with two key financial service partners, Aikyatan Development Society (ADS) and Bandhan, focused on improving anemia knowledge and behaviors. As of December 2016, 178,309 women had participated in anemia Pictorial Learning Conversations (PLCs).

The "Prevent Anemia for Better Health" PLC consists of seven 15-20 minute sessions. Sessions are delivered consecutively, typically one per week, during the women's self-help groups' regularly planned meetings and engage women and community members in participatory dialogue. The PLC methodology is designed for trained facilitators with high to very low literacy. Each session focuses on a key concept and consists of 4 steps to engage the learners in the session topic: 1) participants are encouraged to share what they know about the session topic; 2) participants receive new information; 3) participants ask questions about the new information; 4) participants apply the new information. The Anemia PLC was designed after extensive desk research which complemented experience and understanding of the disease within the local context. This draft then went through a field-testing process which included feedback from facilitators and the target population. A Trainer's Guide and Facilitator's Guide enable cascade training which encourages replication, quality of delivery, and scale of the PLC.

ADS SHG participating in education session.
Photo: Bobbi Gray, Grameen Foundation 2017

The following points are covered in the "Prevent Anemia for Better Health" PLC:

- People most vulnerable to anemia
- Causes and symptoms of anemia
- Foods high in iron and vitamin C
- Knowledge of blood tests to diagnose anemia and whether they or their children have had a blood test
- Knowledge of where one can receive a blood test
- Whether they or their children have ever been diagnosed with anemia
- Consumption of iron and vitamin C foods in last 24 hours
- Knowledge of treatments for anemia
- Whether they or anyone in their family have ever been prescribed or given iron/folic acid supplements in the form of tablets or syrup
- Knowledge of good hygiene practices that can prevent diarrhea and anemia from occurring

This research brief will outline the key findings from a pre- and post-test assessment that was conducted with Bandhan and ADS clients to determine the effectiveness of the PLCs in improving knowledge and behaviors related to anemia.

Methods

Freedom from Hunger (now Grameen Foundation) and Freedom from Hunger India Trust (FFHIT) designed a mini-survey that ADS and Bandhan staff members implemented for the pre- and post-test. This survey instrument touched on each of the key messages previously outlined. The research team utilized Lot Quality Assurance Sampling (LQAS) to establish the random sampling strategy, interviewing 19 women across five to six branches representing four key implementation areas.

Approximately 228 women participated among Bandhan's clients: 114 from Pakur (Joykistopur and Prithibinagar Branch) in Jharkhand and 114 from North 24 Parganas (Hadipur and Kolsur Branch) in West Bengal. Similarly, at ADS operating in Barddhaman district, approximately 266 women participated in the survey: 133 in Ausgram I (a community development block) and 133 in Ausgram II. The baseline was completed between June and July of 2016 and the end line was completed in September for all ADS clients and by December for Bandhan clients.

Staff from FFHIT, ADS, and Bandhan participated in data entry. Grameen Foundation and FFHIT collaborated on the data analysis and reporting. The research team compared basic averages for each question posed to ascertain the pre- and post-test averages.

Results

For all the specific results summarized in this section, please see the table in the annex at the end of this report.

Anemia Knowledge

People most vulnerable to anemia: Clients were asked to name the people most vulnerable to anemia. Correct answers included children, adolescent girls, pregnant women, and lactating women. At baseline, fewer than half of the clients, and in most cases fewer than a quarter, could list any of the vulnerable groups. Overall knowledge of pregnant women being vulnerable to anemia was greater than knowledge of the other vulnerable groups at baseline. At the end line, there was a substantial increase of knowledge of all vulnerable groups. There was a swing in knowledge between 27 and 88 percentage points regarding the vulnerable groups. For example, in ADS Ausgram II, at baseline, 11 percent of women knew children were vulnerable to anemia; at end line, 99 percent could answer this correctly, representing an 88-percentage point improvement in knowledge.

Most common cause of anemia: At baseline, fewer than a quarter of clients could report that iron deficiency was the most common cause of anemia. At end line, between 74 and 99 percent of the clients could indicate that iron deficiency was the most common cause; for example, there was an 86-percentage point improvement in ADS' Ausgram II district and a 60-percentage point improvement in Bandhan's Pakur district.

Symptoms of anemia: The education taught that tiredness and fatigue, rapid and quick heartbeat, shortness of breath, difficulty concentrating, and pale skin were symptoms of anemia. Overall, "tiredness and fatigue" was the most commonly recognized symptom of anemia. In Bandhan's North 24 Parganas District, 32 percent of clients mentioned fatigue as a symptom; at end line, 89 percent could do so, representing a 57-percentage point improvement of awareness of fatigue as a symptom. The greatest increases in knowledge were seen among the lesser known symptoms such as difficulty concentrating, shortness of breath, pale skin, and rapid/quick heartbeat. In some locations, improvement in knowledge of a symptom increased as much as 77 percentage points, such as with ADS' Ausgram I where 96 percent of clients could name "rapid/quick heartbeat" as a symptom.

How anemia is diagnosed: Blood tests are used to diagnose anemia. Approximately half of clients at baseline knew this; Bandhan's Pakur district had the lowest knowledge at baseline (32 percent) and Bandhan's North 24 Parganas district had the highest knowledge (68 percent). At end line, except for Pakur, 100 percent of clients could identify blood tests as the means to diagnosing anemia in all studied districts. In Pakur, 89 percent of clients correctly answered this question, yet Pakur experienced the greatest increase with a 57-percentage point improvement.

Antenatal clinic. Photo: Bobbi Gray, Grameen Foundation 2017

Knows where to receive a blood test: There was relatively high knowledge of where to receive a blood test at baseline. Pakur had the lowest average (60 percent) and Ausgram II had the highest (92 percent). At end line, 100 percent of clients responded they knew where to receive a blood test in all studied districts except for Pakur again. There, 86 percent knew where they could receive a blood test, and Pakur experienced the greatest increase with a 26-percentage point improvement.

If clients answered yes, they were also asked to indicate where. During the education, the animators were equipped to share with the women the locally-relevant location where a blood test could be provided. The results from the pre- and post-test reflect the differences in the most prominent health facilities used for each location. For example, Pakur showed an increased knowledge of private doctors providing blood tests (a 15-percentage point increase in knowledge of "private doctors" providing this test); there were decreases in knowledge in other branches (an 11-percentage point decrease in listing "health centers" in Ausgram I). Interestingly, unqualified medical providers, or "quacks" as they are called in India, were identified only in Pakur as a provider that could provide a blood test. While there was a 12-percentage point decrease in reporting, 3 percent of clients still listed them as providers of blood tests for anemia.

Foods high in iron: The education taught that meat, organ meats, pulses (ex. lentils, chickpeas), brown rice, *rajmas* (red kidney beans), dates, and green leafy vegetables were all locally available sources of iron. At baseline, meat and green leafy vegetables were the most named as foods high in iron, with 60 percent of clients in Ausgram I listing green leafy vegetables and 54 percent of clients in Pakur mentioning meat. There were increases in knowledge across all the foods. At end line, meat, organ meats, green leafy vegetables, and pulses were the most mentioned foods with averages ranging from 50 to 92 percent, depending on the food. The least mentioned were dates, *rajmas*, and brown rice, but even these saw up to a 65-percentage point increase (i.e., improvement of knowledge of dates in Ausgram II).

Foods one should consume with iron to improve absorption: Vitamin C foods should be consumed with iron foods to improve the absorption of iron. At baseline, between 6 percent at the low end (Ausgram II) and 49 percent at the high end (N. 24 Parganas) could name vitamin C as needed to improve absorption of iron. At end line, between 78 percent at the low end (Pakur) and 100 percent at the high end (N. 24 Parganas) could name vitamin C. The greatest increase was seen in Ausgram II with an 86-percentage point increase (from 6 percent at baseline to 92 percent at end line).

ADS SHG Group's demonstration of food items discussed during anemia education.
Photo: Aloke Chakraborty, Freedom from Hunger India Trust 2017

How severe anemia is treated: Three locally available treatments for severe anemia were shared with the clients: doctors prescribe iron and folic acid tablets (particularly to pregnant or lactating women), iron injections, and blood transfusions. At baseline, knowledge was lowest of iron injections with none of the clients mentioning these in N. 24 Parganas, for example. At end line, between 15 and 48 percent of clients mentioning iron injections. In Ausgram II, only 1 percent mentioned iron injections; at end line, 48 percent could. Ausgram II also saw the greatest knowledge at end line of prescribed iron and folic acid tablets or syrup, with 96 percent of clients reporting this. There was very little change in knowledge of this in N. 24 Parganas, where only 28 percent could name iron/folic acid tablets or syrup. Overall, it is generally expected that, at end line, 80 percent of people will

"know" what is being taught if it is a knowledge indicator. Despite all treatments seeing some level of improvement, this indicator is the one that saw the least improvement in knowledge compared to other knowledge indicators.

It should also be noted that some locations had higher knowledge of blood transfusions (which are more costly and invasive forms of treatment) compared to iron/folic acid and iron injections. For example, in N. 24 Parganas, only 28 percent at end line could name iron/folic acid tablets compared to 73 percent who could name blood transfusions as treatment.

Good hygiene practices that can prevent diarrhea and anemia: Treating drinking water, washing hands, using a latrine (discouraging open defecation), covering stored water and food to protect from flies and other hazards, and taking de-worming pills were all taught as practices that could prevent diarrhea and, therefore, anemia. At end line, knowledge of these practices improved between 13- and 68-percentage points, with knowledge of de-worming pills having the smallest improvement and knowledge of washing hands having the greatest improvements. For example, in Ausgram I, 98 percent of clients could name washing hands as a practice, representing a 68-percentage point increase from the baseline. While Pakur saw the lowest increase in knowledge regarding use of de-worming pills (still representing a 13-percentage point increase with 24 percent at end line reporting de-worming pills as a practice), Ausgram II saw the greatest increase from 2 percent at baseline to 46 percent at end line, representing a 44-percentage point improvement.

Anemia Behaviors

Those who have ever had a blood test to detect anemia: There were small increases between baseline and end line for those who reported they had ever had a blood test to detect anemia. The lowest increase was in N. 24 Parganas where 14 percent of respondents at end line had ever had a blood test, representing a 3-percentage point increase from the baseline. The greatest increase was seen in Ausgram II where 28 percent of clients had ever had a blood test, representing an 18-percentage point increase.

Those who have ever been told they had anemia: The data provided in Table 1 suggests anemia is highly prevalent among women in West Bengal and Jharkhand. At a minimum, approximately 60 percent of women have anemia in these two states. Among the women interviewed for this assessment, 26 percent of them at end line in Pakur, for example, had ever had a blood test which was up from 15 percent at baseline. Only 5 percent of them (whether they indicated they were tested or not) had ever been told they had anemia (6 percent said they did not know). Among ADS clients in West Bengal, a slightly different picture is painted. In Ausgram II, 28 percent of them had had a blood test by end line, and 27 percent of them had been told they had anemia. This raises questions as to whether patients are told of their anemia status at or after the time of the test in Pakur.

Those whose children have ever had a blood test for anemia: Between 1 and 20 percent of clients' children had ever had a blood test for anemia by the end line. Pakur and Ausgram II saw the only noticeable increases with 15 percent in Pakur and 20 percent in Ausgram II, representing 4-percentage point and 14-percentage point increases, respectively, from the baseline. This is aligned with the similar increases among clients themselves from these two branches, suggesting that some mothers sought out tests for themselves and for their children as well.

Those whose children have ever been told they had anemia: Zero percent of clients' children had ever been told they had anemia in Ausgram I and N. 24 Parganas, which were also the locations of the lowest diagnoses for the adult clients. In Ausgram II, there was a similar increase in the report of clients whose children were told they had anemia. At baseline, 1 percent were told their children had anemia; at end line 20 percent were told, representing a 19-percentage point increase. This suggests that clients whose children were tested were also found to have anemia. There was a decrease in clients in Pakur reporting their children were told they had anemia. The reason behind this increase is not clear. This was similar among adults in Pakur where fewer clients indicated they had ever been told they had anemia at the end line compared to the baseline.

Bandhan Community Health Meeting. Photo: Bobbi Gray, Grameen Foundation 2017

Foods eaten in the last 24 hours: Related to the foods that were taught to be both high in iron and vitamin C, clients were asked if they consumed any of these foods in the 24 hours prior to the survey. The three most commonly consumed foods were meat, pulses, and green leafy vegetables and with responses ranging from 50 percent to 98 percent of clients consuming them at the end line, representing up to a 35 percentage-point improvement in consumption for some food items. In N. 24 Parganas, there was a 35 percent increase in consumption of pulses from the baseline to end line; this similarly increased in Ausgram I. There was a 19- to 33-percentage point increase in the consumption of tomatoes and a 0- to 30-percentage point increase in consumption of lemons, oranges, or papaya. There was between a 33- and 37-percentage point increase in those who consumed both an iron and vitamin C food in the prior 24 hours. At the end line, 57 percent of Ausgram I clients and 64 percent of Ausgram II clients reported to have consumed both an iron and vitamin C food in the prior 24 hours. A little fewer than half of Bandhan's N. 24 Parganas clients and Pakur clients consumed both at end line.

While some of this might be explained through seasonal improvements, the baseline was conducted towards the end of "household gardening" season (June-July) and the end line was conducted towards the end of the harvest season (September-December). At both points of time, household gardens and easily accessible vegetables and fruits may have been less readily available than at other times of the year, suggesting an intentional purchase and/or consumption of these foods. Based on qualitative interviews with staff, many of the vegetables promoted by the education are available year-round in West Bengal, in particular, which suggests a prioritization of consumption of these iron-rich garden vegetables.

Those who have ever been prescribed or given iron/folic acid tablets: Between 29 and 86 percent of clients at the end line had ever been prescribed iron/folic acid tablets. Overall, this represents a 10- to 31-percentage point increase across three of the survey areas. Pakur experienced a decrease in the number of clients who indicated they'd ever been prescribed iron/folic acid tablets. At baseline, 46 percent of clients reported being prescribed iron tablets; at end line, 29 percent reported the same, representing a 17-percentage point decrease. Ausgram II increased from 55 to 86 percent, representing a 31-percentage point increase in those who reported to have ever been prescribed iron/folic acid.

Food security Status

While a change in food security status was not an expected outcome of this assessment, a food security measure was included to establish vulnerability levels of the clients and was used as an indicator of the likely nutrition status of clients and their children. Clients were asked to describe the food consumed by the client's household in the last year using one of four statements presented below in Table 2. Only the reply to the first statement was classified as being "food secure."

TABLE 2: FOOD SECURITY CLASSIFICATIONS

Statement	Classification
1. We had enough and the kinds of nutritious food we want to eat	Food secure
2. We had enough but not always nutritious food	Food insecure without hunger
3. We sometimes did not have enough food to eat and were sometimes hungry	Food insecure with moderate hunger
4. We often didn't have enough to eat and were often hungry	Food insecure with severe hunger

Overall there were very few changes in food security, as might be expected due to the short 4-6 month time period between the baselines and end lines. Only Ausgram II saw an increase in food security: 23 percent were food secure at baseline and 45 percent were food secure at end line, representing a 22-percentage point increase in food security.

N. 24 Parganas clients were the most food secure with 67 percent of their clients scoring (classified) as food secure at the end line. Ausgram I and Pakur were the most food insecure, with only 12 percent of Ausgram I classified as food secure and 19 percent of Pakur's clients classified as food secure.

Discussion and Conclusion

Overall, the results showed impressive improvements in anemia knowledge and some noticeable changes in behaviors. The behaviors where clients have the most agency—their ability to change their food consumption patterns—were the most improved. For example, there were noticeable increases in reported consumption of foods high in both iron and vitamin C which should result in greater absorption of iron.

In all locations but Ausgram II, food security levels stayed the same, yet consumption of vegetables, fruit, and meat increased—suggesting that clients more proactively prioritized and consumed these foods despite not having more food to eat overall. The expected improvement in food security levels would have suggested a stronger link between seasonality changes and the improvements and consumption. However, given food security classifications did not improve despite improvements in types of foods consumed indicates the quantity of those foods was not sufficient to avoid hunger in some cases.

While changes around anemia testing and having ever been given an anemia diagnosis remained relatively low, the results, particularly in Ausgram II, suggest either clients sought out an anemia test or they were more aware of what test was being administered to them if and when they visited a medical professional. Interviews with medical staff and Bandhan and ADS health community organizers suggest that rarely will a woman or child seek health services to address anemia and will present with other symptoms. A diagnosis for anemia is therefore often associated with other diagnoses and the woman might not be told she or her child has anemia but simply told to take iron tablets or syrup. It was expected that there would high reports of the client ever having been prescribed iron and folic acid tablets because most of these clients likely have given birth and so would have received these as protocols for pre-natal care. The medical staff shared that one reason why those prescribed iron tablets and folic acid do not consume their full prescription is because women do not like the side effects of these tablets, such as constipation and nausea. Therefore, it is paramount that women are able to prevent and reduce the impact of anemia through dietary practices. Medical staff also noted the important relationship between hygiene and anemia and the importance of using de-worming pills to reduce the effects of infestations on nutritional absorption of women and children.

It is interesting to note the relatively high knowledge (at the pre-test and post-test) about the use of blood transfusions for treating anemia. Is this due to a high utilization of this treatment by medical professionals (which seems doubtful given most of these women would utilize local health clinics that would not likely have blood transfusion capabilities), or is this knowledge driven by a perceived “fear” of this more invasive treatment and so it is more easily recalled? Interviews with community health workers and medical personnel suggest that fear tactics are often used to encourage women to consume the prescribed iron and folic acid tablets to avoid the use of an emergency blood transfusion while giving birth. Medical personnel also shared that the likely explanation for the low knowledge about iron injections can also be reflected in treatments that are promoted by medical personnel. It was noted by a local doctor working for the public health system that iron injections are prioritized for patients who have to undergo dialysis and while iron injections are treatments available at the public health center, they would not be commonly used with pregnant women or for someone diagnosed with severe anemia.

Finally, the improvements seen between baseline and end line were quite impressive, and they actually created a concern that there were mistakes in the way the data were collected. Staff from both institutions obviously participated in the data collection, so this alone is a limitation and risks increased bias. However, further discussions with staff and experiences in working with these two partners suggest that, at a minimum, the quality of the implementation was high and the simplicity of the messages and a clients’ ability to put knowledge into practice resulted in some likely improvements in consumption of foods that would improve absorption of iron, and hopefully, a long-term reduction in anemia among women and their children.

At a policy level, given persistent high anemia rates relative to economic growth that is expected to improve overall outcomes of poor households, there is an important opportunity to strengthen the collaboration between health and financial services sectors. Organizations such as ADS and Bandhan, together with local health providers, could work to improve the prevention, diagnosis, treatment, and overall prevalence of anemia. It is promising to see that providing women with concrete steps they can take to improve consumption of specific foods results in them putting this knowledge into practice.

Additional questions to explore are whether and/or how are medical providers talking to women and their children regarding anemia? And, given the high rates experienced by children, adolescent girls, and women—particularly in relation to men's anemia rates—is there an opportunity to treat all vulnerable groups prophylactically for anemia?

In conclusion, Bandhan and ADS have effectively leveraged a simple pictorial-based education intervention on anemia to equip mothers and other care-takers with information that is not only going to help them improve their anemia status and that of their children, but overall improve the quality of their life.

Annex: Data Table for Bandhan and ADS Client Responses

	Bandhan									ADS								
	Pakur (Joykistopur and Prithibinagar Branch)			North 24 Parganas (Hadipur and Kolsur Branch)			Total			Barddhaman (Ausgram I)			Barddhaman (Ausgram II)			Total		
	Base-line	End Line	Diff.	Base-line	End Line	Diff.	Total Baseline Average	Total End Line Average	Diff.	Base-line	End Line	Diff.	Base-line	End Line	Diff.	Total Base-line Average	Total End Line Average	Diff.
N	114	114	0	114	114	0	228	228	0	133	130	-3	133	132	-1	266	262	-4
Average age	32			27			30			38			39			39		
People most vulnerable to anemia																		
Children	17%	57%	40%	5%	64%	59%	11%	61%	50%	16%	73%	57%	11%	99%	88%	13%	86%	73%
Adolescent girls	22%	80%	58%	3%	60%	57%	12%	70%	58%	10%	95%	86%	8%	87%	80%	9%	91%	83%
Pregnant women	45%	83%	38%	19%	95%	76%	32%	89%	57%	32%	98%	66%	30%	100%	70%	31%	99%	68%
Lactating women	13%	40%	27%	4%	57%	53%	9%	49%	40%	16%	96%	80%	21%	96%	75%	18%	96%	78%
Other	28%	2%	-26%	4%	0%	-4%	16%	1%	-15%	3%	2%	-1%	8%	0%	-8%	6%	1%	-4%
Don't know	26%	2%	-24%	67%	0%	-67%	46%	1%	-45%	44%	1%	-44%	53%	0%	-53%	49%	0%	-48%
What is most common cause of anemia?																		
Iron deficiency	14%	74%	60%	21%	85%	64%	18%	80%	62%	24%	99%	75%	14%	99%	86%	19%	99%	80%
Other	42%	9%	-33%	13%	15%	2%	28%	12%	-16%	14%	0%	-14%	9%	0%	-9%	12%	0%	-12%
Don't know	52%	19%	-33%	65%	0%	-65%	58%	10%	-49%	62%	1%	-61%	77%	0%	-77%	70%	0%	-69%
What are signs/symptoms/characteristics of a person with anemia?																		
Tiredness and fatigue	50%	81%	31%	32%	89%	57%	41%	85%	44%	73%	92%	19%	58%	96%	38%	65%	94%	29%
Rapid/quick heartbeat	30%	77%	47%	8%	73%	65%	19%	75%	56%	19%	96%	77%	29%	88%	59%	24%	92%	68%
Shortness of breath	9%	41%	32%	4%	42%	38%	7%	42%	35%	8%	73%	65%	8%	58%	51%	8%	66%	58%
Difficulty concentrating	21%	49%	28%	2%	54%	41%	17%	52%	34%	28%	95%	67%	20%	78%	58%	24%	86%	63%
Pale skin	34%	47%	13%	13%	68%	66%	18%	58%	40%	31%	84%	53%	19%	76%	57%	25%	80%	55%

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Other	36%	1%	-35%	2%	1%	-1%	19%	1%	-18%	6%	2%	-4%	4%	2%	-1%	5%	2%	-3%
Don't know	20%	2%	-18%	47%	0%	-47%	34%	1%	-33%	16%	1%	-15%	28%	0%	-28%	22%	0%	-21%
How can a person be sure they have or don't have anemia?																		
Blood test	32%	89%	57%	68%	100%	32%	50%	95%	44%	51%	100%	49%	44%	100%	56%	48%	100%	52%
Other	26%	7%	-19%	10%	0%	-10%	18%	4%	-14%	12%	0%	-12%	10%	0%	-10%	11%	0%	-11%
Don't know	42%	5%	-37%	22%	0%	-22%	32%	3%	-30%	0%	0%	0%	46%	0%	-46%	23%	0%	-23%
Do you know where you can go to get a blood test?																		
Yes	60%	86%	26%	89%	100%	11%	74%	93%	19%	89%	100%	11%	92%	100%	8%	91%	100%	9%
No	39%	14%	-25%	6%	0%	-6%	23%	7%	-16%	11%	0	-11%	8%	0	-8%	9%	0%	-9%
Where?																		
Hospital	21%	36%	15%	52%	69%	17%	37%	53%	16%	53%	65%	11%	60%	51%	-9%	57%	58%	1%
Health center	5%	3%	-2%	32%	19%	-13%	3%	11%	8%	15%	34%	19%	12%	18%	6%	14%	26%	12%
Private doctor	21%	36%	15%	52%	69%	17%	37%	53%	16%	11%	0%	-11%	6%	0%	-6%	9%	0%	-9%
Laboratory	0%	3%	3%	4%	9%	5%	4%	6%	2%	9%	1%	-8%	5%	2%	-3%	7%	1%	-6%
ICDS*	3%	0%	-3%	0%	0%	0%	2%	0%	-2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Quack	15%	3%	-12%	0%	0%	0%	3%	0%	-3%	0%	0%	0%	0%	0%	0%	0%	0%	0%
No response	0%	7%	7%	3%	0%	3%	15%	2%	-13%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Have you ever taken a blood test to test for anemia?																		
Yes	15%	26%	11%	11%	14%	3%	13%	20%	7%	10%	18%	9%	11%	28%	18%	10%	23%	13%
No	82%	69%	-13%	85%	86%	1%	83%	78%	-6%	86%	81%	-6%	80%	72%	-8%	83%	76%	-7%
Don't know	4%	6%	2%	4%	0%	-4%	4%	3%	-1%	4%	1%	-3%	10%	0%	-10%	7%	0%	-6%
Have you ever been told you have anemia?																		
Yes	18%	5%	-13%	5%	6%	1%	11%	6%	-6%	3%	5%	2%	9%	27%	17%	6%	16%	10%
No	78%	89%	11%	90%	94%	4%	84%	92%	7%	94%	93%	-1%	85%	73%	-11%	89%	83%	-6%
Don't know	4%	6%	2%	4%	0%	-4%	4%	3%	-1%	3%	2%	-1%	6%	0%	-6%	5%	1%	-3%
Have any of your children been tested for anemia?																		

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Yes	11%	15%	4%	2%	1%	-1%	7%	8%	1%	2%	1%	-1%	7%	20%	14%	5%	11%	6%
No	75%	66%	-9%	94%	92%	-2%	84%	79%	-5%	94%	98%	4%	90%	80%	-11%	92%	89%	-3%
Don't know	16%	20%	4%	4%	0%	-4%	10%	10%	0%	4%	2%	-2%	3%	0%	-3%	3%	1%	-3%
Have any of your children been told they have anemia?																		
Yes	25%	14%	-11%	0%	0%	0%	25%	7%	-18%	0%	0%	0%	1%	20%	19%	0%	10%	9%
No	72%	73%	1%	96%	93%	-3%	84%	83%	-1%	94%	98%	4%	92%	80%	-11%	93%	89%	-4%
Don't know	17%	17%	0%	4%	0%	-4%	10%	9%	-2%	6%	2%	-4%	8%	0%	-8%	7%	1%	-6%
What are foods high in iron?																		
Meat	54%	78%	24%	18%	77%	59%	36%	78%	42%	40%	84%	44%	31%	92%	62%	35%	88%	53%
Organ meats	2%	50%	48%	4%	68%	64%	3%	59%	56%	5%	85%	80%	3%	83%	80%	4%	84%	80%
Pulses (lentils)	26%	60%	34%	11%	61%	50%	19%	61%	42%	23%	96%	74%	30%	95%	65%	26%	95%	69%
Brown rice	9%	30%	21%	2%	39%	37%	5%	35%	29%	2%	59%	57%	2%	45%	43%	2%	52%	50%
Rajmas (kidney beans)	0%	10%	10%	0%	34%	34%	0%	22%	22%	3%	27%	24%	1%	45%	44%	2%	36%	34%
Dates	21%	25%	4%	1%	50%	49%	11%	38%	27%	2%	50%	48%	5%	70%	65%	3%	60%	56%
Green leafy veggies	43%	45%	2%	37%	91%	54%	40%	68%	28%	60%	92%	32%	44%	92%	48%	52%	92%	40%
Other	28%	4%	-24%	1%	1%	0%	14%	3%	-12%	3%	5%	2%	3%	2%	-1%	3%	4%	1%
Don't know	21%	1%	-20%	25%	0%	-25%	23%	1%	-23%	24%	1%	-23%	45%	0%	-45%	35%	0%	-34%
What types of foods/vitamins should be consumed along with iron, to make sure iron is better absorbed?																		
Vitamin C	25%	78%	53%	49%	100%	51%	37%	89%	52%	16%	89%	73%	6%	92%	86%	11%	91%	80%
Other	39%	11%	-28%	20%	0%	-20%	29%	6%	-24%	9%	0%	-9%	13%	1%	-12%	11%	0%	-11%
Don't know	51%	20%	-31%	31%	0%	-31%	41%	10%	-31%	76%	10%	-66%	80%	7%	-74%	78%	8%	-70%
Have you eaten any of the following foods in the last 24 hours																		
Meat	60%	60%	0%	60%	70%	10%	60%	65%	5%	63%	85%	21%	57%	73%	16%	60%	79%	19%
Organ meats	4%	25%	21%	0%	16%	16%	2%	21%	19%	2%	14%	12%	8%	14%	6%	5%	14%	9%
Pulses	42%	59%	17%	19%	54%	35%	31%	57%	26%	60%	95%	35%	69%	85%	16%	65%	90%	25%
Brown rice	0%	22%	22%	0%	2%	2%	0%	12%	12%	1%	20%	19%	6%	11%	5%	3%	16%	12%
Rajmas (kidney beans)	1%	5%	4%	0%	2%	2%	0%	4%	3%	2%	4%	2%	2%	5%	3%	2%	4%	3%
Dates	18%	25%	7%	8%	3%	-5%	13%	14%	1%	11%	6%	-4%	10%	26%	16%	10%	16%	6%

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Green leafy veggies	54%	50%	-4%	50%	78%	28%	52%	64%	12%	78%	93%	15%	88%	98%	10%	83%	95%	12%
Lemons, oranges, papaya	23%	18%	-5%	11%	27%	16%	17%	23%	6%	12%	42%	30%	13%	41%	28%	12%	42%	29%
Tomatoes	13%	32%	19%	2%	31%	29%	7%	32%	24%	14%	32%	17%	20%	54%	33%	17%	43%	25%
Ate both iron and vitamin C in last 24 hours	n/a	41%	n/a	9%	42%	33%	n/a	42%	n/a	23%	57%	34%	27%	64%	37%	25%	61%	36%
In case of severe anemia, what might doctors prescribe or do to treat anemia?																		
Prescribe iron/folic acid tablets/syrup	15%	54%	39%	27%	28%	1%	21%	41%	20%	42%	72%	30%	24%	96%	72%	33%	84%	51%
Iron injections	4%	33%	29%	0%	13%	13%	2%	23%	21%	3%	15%	12%	1%	48%	48%	2%	32%	30%
Blood transfusions	31%	68%	37%	22%	73%	51%	26%	71%	44%	12%	45%	33%	3%	42%	39%	8%	44%	36%
Other (specify)	41%	4%	-37%	12%	0%	-12%	27%	2%	-25%	11%	0%	-11%	5%	0%	-5%	8%	0%	-8%
Don't know	0%	4%	4%	39%	0%	-39%	19%	2%	-17%	35%	0%	-35%	68%	0%	-68%	52%	0%	-52%
Have you or anyone in your family ever been prescribed or given iron/folic acid supplements in the form of tablets or syrup?																		
Yes	46%	29%	-17%	68%	78%	10%	57%	54%	-4%	41%	63%	22%	55%	86%	31%	48%	75%	27%
No	51%	63%	12%	26%	22%	-4%	39%	43%	4%	39%	35%	-4%	29%	14%	-16%	34%	25%	-10%
Don't know	13%	13%	0%	5%	0%	-5%	9%	7%	-3%	20%	2%	-18%	14%	0%	-14%	17%	1%	-16%
What good hygiene practices can prevent diarrhea and anemia from occurring?																		
Treat drinking water	18%	54%	36%	20%	73%	53%	19%	64%	44%	47%	85%	38%	28%	77%	49%	38%	81%	44%
Wash hands	38%	77%	39%	32%	77%	45%	35%	77%	42%	30%	98%	68%	54%	92%	38%	42%	95%	53%
Use latrine/toilet (no open defecation)	23%	54%	31%	33%	95%	62%	28%	75%	46%	38%	97%	59%	65%	88%	22%	52%	92%	41%
Cover stored water and food/protect from flies	32%	53%	21%	50%	68%	18%	41%	61%	19%	55%	95%	40%	29%	92%	63%	42%	94%	51%
Take de-worming tablets	11%	24%	13%	3%	28%	25%	7%	26%	19%	11%	54%	43%	2%	46%	44%	6%	50%	44%
Other (specify)	39%	3%	-36%	3%	0%	-3%	21%	2%	-19%	5%	2%	-4%	5%	0%	-5%	5%	1%	-4%

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Don't know	8%	1%	-7%	10%	0%	-10%	9%	1%	-8%	15%	1%	-14%	15%	0%	-15%	15%	0%	-15%
Food security level																		
Food secure	17%	19%	3%	60%	67%	7%	38%	43%	5%	12%	12%	0%	23%	45%	22%	18%	28%	11%
Food insecure w/o hunger	56%	52%	-4%	30%	26%	-4%	43%	39%	-4%	71%	76%	5%	63%	50%	-13%	67%	63%	-4%
Food insecure w/moderate hunger	25%	29%	4%	8%	5%	-3%	17%	17%	0%	12%	6%	-6%	11%	5%	-7%	12%	5%	-6%
Food insecure w/severe hunger	2%	0%	-2%	3%	2%	-1%	2%	1%	-1%	5%	6%	2%	2%	0%	-2%	3%	3%	0%

*Integrated Child Development Services