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**Timeline**

November 2017 – September 2019

**Sample Size**

120 Participants

**Research Implemented by IPA**

Yes

# Piloting strategies to reduce anemia among women in the fishing industry in Ghana

## Abstract

More than a third of all women of reproductive age in sub-Saharan Africa are anemic. Women from low-income communities involved in fish-smoking may be at increased risk because of inadequate diets, exposure to infectious pathogens, as well as particulate matter and other pollutants through smoke. Researchers are piloting three strategies to reduce anemia in fish-processing communities in Ghana: promoting anemia reducing lifestyle changes, improving market competitiveness and incomes, and introducing enhanced fish smoking technology and practices. This project aims to evaluate the feasibility and scalability of the programs, and to inform the design of a full randomized evaluation in the future.

## Policy Issue

Anemia among women and adolescent girls is a public health concern in many low- and middle-income countries, especially in sub-Saharan Africa, where more than one-third of women of reproductive age (15-49 years) are anemic. Anemia is associated with a higher risk of maternal mortality, in particular iron-deficiency anemia among pregnant women is associated with low birth weight, preterm delivery, and places children at risk of iron deficiency early in life. Anemia has negative economic impacts as well--those affected often suffer from chronic fatigue and lethargy, which can make it difficult to earn a living. Iron deficiency is one major cause of anemia, but it is not the only cause. Micronutrient deficiencies and acute and chronic conditions unique to certain local environments can also cause anemia. As a result, the proportion of the population suffering from iron-deficiency anemia varies among population groups, and any treatment must be tailored to the local population.

One strategy to address the nutritional, economic, and occupational causes of anemia is by focusing on female-dominated workplaces where women are likely to suffer from anemia, such as the fishing industry in Ghana, where women are often called the “invisible fishers”. Though women are rarely involved in capture fishing, women dominate many other aspects of the industry, including fish processing and trading.

## Context of the Evaluation

The prevalence of anemia in women aged 15-49 years in Ghana has remained persistently high during the past decade, affecting 45 percent of women in 2003 and 42 percent in 2014.<sup>1</sup> Paradoxically, Ghana has made tremendous progress at increasing coverage of iron-folic acid supplementation and in malaria prevention treatment for pregnant women, two major contributors of anemia. Reasons for this paradox could be a combination of a programming gap for non-pregnant women and adolescent girls, and environmental factors such as unsanitary water sources and toilet facilities that can transfer parasites like hookworm, aggravating anemia that is already present.<sup>2</sup>

In many coastal and lake communities, fishing is the main economic activity of women who live there. Indeed, in the two regions surveyed by researchers, 70 percent of the households interviewed engaged in fish processing activities, and nearly two-thirds of these households processed fish predominantly or exclusively through smoking. Although smoking fish can be a valuable way to earn a living, fish smokers are subject to near-constant exposure to airborne toxins. Chronic inhalation of smoke from fuels derived from organic material is associated with increased risk of anemia, upper respiratory infection, and lung cancer. Despite the health risks associated with exposure to fish smoking ovens, there is little research evaluating the health impacts of interventions designed to reduce exposure to smoke from the ovens.

## Details of the Intervention

*[Note: This is a pilot scale randomized controlled trial]*

Researchers from University of Michigan and University of Ghana are partnering with SNV (Netherlands Development Organization), VotoMobile and Innovations for Poverty Action to develop, adapt, and pilot a set of interventions in fisheries in Ghana aimed at reducing anemia among women fish smokers.

The pilot is evaluating three mitigation strategies: social behavior change communication, increasing market competitiveness, and introducing enhanced fish smoking technology and practices. Six fish smoking and processing communities from both the Volta and Central regions were randomly assigned to one of three groups. In each community 10 women (120 total) who smoke fish as their primary livelihood were selected to participate in pilot.

### **Strategy 1: Behavior Change**

This program is teaching participants about the causes of anemia as well as strategies that they can use to reduce their risk. Topics of learning are sent via mobile phone audio messages to participants twice weekly. Afterward the topics of learning are reinforced through a twice-monthly guided group discussion with the project officer. Learning topics cover four behavior areas: how to mitigate anemia through nutrition and diet; improving sanitation and hygiene; preventing and treating conditions known to exacerbate anemia such as malaria and hookworm; and women's autonomy in decision-making and control of the use of earned income. Three additional discussions include household members such as husbands, mothers, or grandmothers, covering topics in gender dynamics and equitable decision making within the household.

### **Strategy 2: Increasing Market Competitiveness**

Inadequate storage facilities, physical distance from markets, and an inability to access credit are a few of the barriers to growth for fish processors in rural Ghana. This program addresses these barriers in three ways: providing interest-free loans to individual women over two 16 week loan cycles; entrepreneurship training; and daily access to market price information. Participants meet twice a month to conduct loan payments and receive business skills training. Topics include how to use loans in your business, customer care, and accounting practices. In addition, average market prices for fresh and processed fish are sent via mobile phone audio messages twice weekly.

### **Strategy 3: Enhancing Technology and Practices**

The third program introduces and promotes an improved fish-smoking oven designed to reduce women fish processors' exposure to airborne pollutants. The improved oven design, known as the 'Ahotor', has demonstrated significantly reduced pollutant emissions and greater fish smoking capacity when compared to the traditionally used oven, while significantly reducing the amount of woodfuel required. Promotional workshops advertising

the Ahotor are publicly held in participating communities and program participants are given three one-on-one training sessions on the proper use of the smoke oven and optimal fish handling and smoking practices to enhance product quality. Participants are also offered the Ahotor at a subsidized price, with the option of an incremental payment plan.

Researchers will compare several indicators before and after the program including rates of anemia, knowledge of risk factors and enhanced fish smoking practices, and perception of the program. Additionally, participants will also be asked to record business related production and expenditure data, such as sales and expenses, in a diary. Time spent at work, and depth of exposure to risk factors such as smoke will be monitored through wearable measurement devices.

The goal of this pilot-scale randomized trial is to evaluate the feasibility and scalability of the programs, and to inform the design of a larger-scale randomized evaluation in the future.

## Results and Policy Lessons

Research is ongoing; results forthcoming.

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## Sources

[1] Ghana Statistical Service - GSS, Ghana Health Service - GHS, and ICF International.

[2] Ghana Health Service, "Ghana: Landscape Analysis of Anemia and Anemia Programming.," 2016, 64.

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