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Sarah June Novick Dupuis Date

Exploring a Pathway to Women's Empowerment Through a Homestead Agriculture Program in Rural Bangladesh

By

Sarah June Novick Dupuis

Master of Public Health

Hubert Department of Global Health

_____

Monique Hennink

Committee Chair

_____

Sheela Sinharoy

Committee Member

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By

Sarah J. Dupuis

Bachelor of Science

Western Washington University

2013

Thesis Committee Chair: Monique Hennink, PhD

An abstract of

A thesis submitted to the Faculty of the

Rollins School of Public Health of Emory University in partial fulfillment of the

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Abstract

Women in rural Bangladesh commonly face multiple, interrelated problems, including food insecurity, malnutrition, and low levels of empowerment (Sinharoy, 2017). This thesis identifies a pathway to empowerment among female participants in a four-year nutrition-agriculture program aimed at married women in rural Bangladesh. 40 in-depth interviews and 12 focus groups discussions with men and women were conducted in both intervention and comparison communities exploring aspects of empowerment and lifestyle changes over the course of the intervention. The results of these interviews were analyzed and used to identify a new pathway to women's empowerment through the intervention. The stages of the pathway occur in the following order: 1) Participants receive training and materials, 2) Home garden and poultry rearing initiation, 3) The initial harvest, 4) Social or monetary resources generated through the leveraging of garden surplus, 5) Increased respect in household decision making, 6) Renewable, sustainable resource generation, and 7) sustained empowerment.

The most meaningful improvements in empowerments occurred among participants who were able to produce foods beyond their household consumption and were able to successfully leverage surplus resources and gain higher utility and therefore bargaining power in their household. Additionally, they leveraged negotiation skills with their husbands, fostered social support networks with other women, and developed agency through increased self-efficacy and motivation. Meanwhile, the least successful participants lacked in critical areas, such as spousal support, social support

networks, or the space or time to produce enough food to leverage for additional resources and increase their utility within their household.

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CHAPTER 1. INTRODUCTION

Agriculture-nutrition programs in low- and middle-income countries often aim to improve child nutritional status. Within these programs, it has been noted that the impact on child nutritional status may depend, at least in part, on the level of empowerment in mothers (Ruel, 2013, Kumar, 2018). As a result, these programs have evolved over time to incorporate components aimed at empowering participating mothers, with the end goal of using this pathway to improve child nutrition. These agriculture-based interventions seek to empower participating mothers through knowledge, skills, assets, or a combination of these (Johnson, 2018). Women are of special interest for these agriculture-nutrition programs because while they are often the primary preparers of meals within their households, they and their children commonly do not receive the same amount and diversity of food as male family members due to patriarchal gender norms (Doss, 2013). Through empowerment, interventions seek to increase food security and equalize nutrient distribution within households.

Studies have shown that the inclusion of nutrition-sensitive program components is key to the overall success of agriculture-nutrition interventions (Ruel, 2013, Johnson 2018). Nutrition-sensitive interventions can be described as those that draw on complementary sectors such as agriculture, health, social protection, early child development, education, and water and sanitation programs to improve nutrition outcomes. The objective of these interventions is to improve the underlying determinants of malnutrition (e.g. poverty; food insecurity; and scarcity of access to adequate care resources as well as health, water, and sanitation services) (Black, 2013). Nutrition-specific approaches, on the other hand, target the direct determinants

of malnutrition (e.g. dietary intake and infection) (Black, 2013). Utilizing a gendered approach focused on directly involving and empowering women, interventions that incorporate nutrition-sensitive and nutrition-specific components have been shown to be effective at improving nutritional diversity. However, the effect on overall food security remains unclear (Ruel, 2013).

While interventions aimed at women in agriculture are diverse and many, they have insofar been unable to establish a consistent relationship between the interventions and impacts on women's empowerment, and overall don't explore the nutritional outcomes of the mothers (Cunningham, 2015, Bird, 2019, Ruel, 2018). Therefore, additional research using rigorous methods is needed to establish the efficacy of these agriculture interventions on affecting women's empowerment and nutritional outcomes. The aims of this study are to identify a pathway to women's empowerment through a homestead food production intervention aimed at married women in rural Bangladesh based on a collection of qualitative in-depth interviews and focus group discussions. This would consequently improve the overall body of knowledge of how women in these rural, patriarchic areas can achieve higher levels of agency, decision-making power, and self-efficacy through the acquisition of farming skillsets and nutritional knowledge, thereby improving their quality of life and increasing control over their life paths.

CHAPTER 2. LITERATURE REVIEW

The aims of this review are to address the literature related to each of the following topics and to identify gaps in the evidence base related to each topic: 1) general women's empowerment, 2) empowerment through agriculture, including as measured through the Women's Empowerment in Agriculture Index (WEAI), 3) empowerment through nutrition 4) empowerment in Bangladesh, and 5) homestead food production.

Defining Women's Empowerment

Women's empowerment is defined as a process of change by which the disempowered experience an "expansion in… ability to make strategic life choices in a context where this ability was previously denied to them." (Kabeer, 1999, P. 437). Women's empowerment, as described by Kabeer, consists of three dimensions, which interact to improve the ability of individuals to make strategic life choices to benefit themselves (Kabeer, 1999). The three dimensions can be described as follows:

1) Resources, which refers to access to human and material assets, physical health and safety, and intangible sources of power that allow women to exercise agency (Kabeer, 1999). In the realm of women's empowerment, the support of men and boys is also considered a human resource (Eerdewijk, 2017).

2) Agency, which is described as the ability to define one's goals and act upon them free from the threat of violence or retribution (Kabeer, 1999). Agency can encompass decision-making, negotiation, deception, leadership, and manipulation power (Eerdewijk, 2017).

3) Achievements, which are the outcomes of access to necessary resources and the resulting agency (Kabeer, 1999).

These three dimensions can be understood to build on each other such that resources are the pre-conditions, agency is the process, and achievements are the outcomes of empowerment (Kabeer, 1999).

The challenge of using Kabeer's domains is in distinguishing between informed choices producing different life circumstances and true inequality (Kabeer, 1999). What may be viewed as strategic life choices may vary between cultures and between individuals or subgroups within that culture. An observed inequality in resources may be the result of different choices exercised by distinct groups of people with different values, rather than a true difference in access. This is not an example of disempowerment (Kabeer, 1999). The inequality must stem from a true restriction on one's ability to choose their life circumstances in order to constitute disempowerment. Additionally, it is also possible for a disempowered individual to make choices that ultimately work to serve an existing group in power, (Kabeer, 1999) due to cultural norms and systematic injustices which have become normalized (Kabeer, 2011).

Kabeer asserts that the challenge of defining root causes of inequalities can be addressed by measuring outcomes that are universally identified as significant for survival or basic comfort, regardless of context (Kabeer, 1999). These outcomes could include proper nutrition, good health, adequate shelter, and other universally valued assets. For example, people generally will not choose to live in a state of malnutrition, so a society where most members of one subgroup are malnourished demonstrates limited access to nutrition. Accordingly, a difference in these standards of living most

likely indicates a difference in empowerment rather than a difference in preference. Consequently, a change over time in these systematic gendered inequalities is likely to be attributable to the effects of an intervention, or some other condition in flux (Kabeer, 1999).

The basic standards of comfort, dignity and health have historically been used in studies as proxies for empowerment when more detailed or nuanced information is lacking (Sen, 1990). However, measuring strictly by the most basic metrics of human health and comfort risks missing the types of gendered inequalities that may affect less poverty-stricken areas. This excludes the inequalities that are not related to wealth, or inequalities that are more prevalent in wealthy communities. For example, in Bangladeshi families, unequal food distribution between sexes is most prevalent in wealthy or high caste families (Harris-Fry, 2017).

The advantage of using qualitative research for studying how people define their own life course lies in its ability to capture the emic perspective (Hennink, 2010), or the specific views and perspectives of the participant. Examining the emic perspective allows researchers to better understand the interrelated factors that contribute to their choices and life circumstances. Qualitative research can describe elements and perspectives that may not be anticipated using traditional quantitative methods and bring light to pathways and connections that would otherwise remain obscured. Therefore, it has value when examining mechanisms and pathways that are not yet fully understood (Hennink, 2010). For this reason, increasing qualitative research on women's empowerment might lead to a more complete understanding of these

pathways in the context of South Asian families, where quantitative measures sometimes fall short.

Empowerment Through Agriculture

As described above, agriculture-nutrition interventions have become an increasingly common approach to improving nutritional outcomes in women and children. Nutritional outcomes have been measured through indicators such as dietary assessments, anthropometric measures such as BMI or stunting, biochemical measures such as hemoglobin concentration, or nutritional awareness with behavior change (Bird, 2019). These same agriculture-nutrition interventions sometimes include a gender component aimed at increasing women's empowerment, with the hypothesis that empowerment acts as a mediator between the intervention and improved nutrition and health outcomes (Heckert, 2019). This gender component often involves educating women about homestead gardening and nutrition, while sometimes providing productive assets to support a home garden such as seeds, fertilizer, or fencing materials. The intervention may also incorporate livestock or poultry rearing, a marketing component to sell excess produce, behavior change communication training to encourage improved healthy habits and/or the use of women's groups to raise community awareness around gendered issues (Johnson, 2018, Sraboni, 2014). These types of interventions have been implemented throughout Asia and Africa (Johnson, 2018).

Depending on the intervention components, these agriculture-nutrition interventions may reach (directly engage), benefit (increase well-being), and/or empower women (Johnson, 2018). Examples of each reach and benefit could respectively include an agriculture intervention selecting exclusively women to participate (Johnson, 2018), and

an income transfer program that exclusively reaches women and benefits them directly with income (Johnson, 2018) without increasing agency. Programs that seek to empower women must incorporate both reach and benefit, while including additional components that lead to long-term decision-making power over their lives (Johnson, 2018).

The combined strategies of these empowerment-based agriculture-nutrition interventions include provision of goods and assets, provision of services, formation of groups and networks, agriculture training, business training, nutrition education, and awareness raising about gender issues (Johnson, 2018). However, it is unclear if such interventions succeed in empowering women by improving their ability to make strategic life choices, or simply benefit women by improving their overall well-being. Even more basically, they may only succeed in reaching women through eligibility requirements of being female, but without any benefit or empowerment achieved (Johnson, 2018).

While these interventions seek to benefit women through provision of training and food resources from the home gardens, research in South Asia shows that this benefit is inconsistent. For instance, adolescent girls are least likely to experience a proportionate improvement in their dietary intake as a function of the empowerment of their mothers, whereas boys, adult women and girls under 5 years old achieve more nutritional benefit as their mothers demonstrate increased empowerment scores (Sraboni, 2018). However, adult women participating in agriculture-nutrition interventions are shown to benefit by other empowerment indicators, especially participation in women's groups, purchasing power, and control over health care decisions (Olney, 2016).

The pathways through which agriculture-based interventions can effectively achieve both the desired food related and empowerment outcomes remain inconsistent, understudied, and differ by region (Kjeldsberg, 2018, Yosef, 2015). For example, qualitative research in Nepal indicated that improvements in self-efficacy, freedom of self-expression, and respect from spouses among married women differed by region. In addition, the same study found that context and socio-cultural dynamics such as gender norms, proximity to markets, and issues surrounding caste and ethnicity all affect the efficacy of gendered interventions. Because of the variety of barriers affecting the social outcomes of gendered interventions in South Asia, improvements in women's empowerment as a whole remain unclear (Kjeldsberg, 2018). Supporting Kjeldsberg's findings, Yosef, 2015, found in a pathway analysis of agriculture and nutrition interventions in Bangladesh that the pathways between interventions and desired nutritional outcomes remained unclear, especially in agricultural regions. However, these studies lacked the use of in-depth interviews (although Kjeldsherg's used focus group discussions), comparison groups, and interviews with men, which adds an understanding of how cross gendered relationships develop over the course of the interventions and affect the outcomes.

The role of women's groups in agriculture-nutrition interventions are of particular interest. Many gender-sensitive (or gender-responsive) interventions include participation in women's groups because of their potentially empowering effect on women, as well as to improve both convenience and reach (Johnson, 2018, Heckert,

2019, Olney, 2016, Bird, 2019, Seymour, 2017). However, the feasibility of forming women's groups is limited in cultures where mobility restrictions impede women's ability to travel outside their homes without the supervision and express permission of their husbands or another escort. This phenomenon can be seen in rural Bangladesh, where married women are unlikely to leave their homes unattended, unless such action is completely unavoidable. In a 2012 study, it was found that only 8% of rural Bangladeshi women report leaving their homes without permission in the previous year due to cultural and religious barriers (Mahmud, 2012). This phenomenon, referred to as *purdah,* adds to the social and physical isolation of women (Kabeer 2011) and makes interventions in these communities contextually distinct from similar interventions held in cultures where women often leave their homes to run errands, socialize, or work.

An additional difficulty in interventions that train women on marketable skills such as gardening and poultry rearing is the possibility that once the industry becomes lucrative, control over those resources will go to the men. A mixed methods study of pastoral communities in Tanzania (Galie 2019) assessed the impact of a dairy farming intervention on the wider community, and found that control over dairy production, a traditionally female role, eventually shifted to the men once it became increasingly marketable and therefore profitable (Galie, 2019). This effectively stripped the women of the secondary benefits of the intervention including control over income generated from dairy sales, and control over their small business.

In short, the results from these nutrition-based interventions may include improved nutritional and empowerment outcomes, but effects are mediated by several contextual factors, which may be better understood depending on the type of data collected. The

research overall lacks the use of qualitative data, and where qualitative data are used, comparison groups are not used to corroborate the effect of the interventions when compared to non-intervention households, and qualitative data from men is almost never collected. Additionally, these interventions focused on agricultural or nutritional benefits normally examine the nutritional status of the youngest children as the outcome of interest rather than the empowerment or nutritional status of the mothers (Cunnginham, 2015, Bird, 2019). When empowerment of the mothers is measured, it's normally as a mediating variable on the pathway to childhood health, rather than its own outcome.

Utilization of the Women's Empowerment through Agriculture Index

The concept of women's empowerment is nuanced and difficult to measure, and not easily quantified. However, to date there have been many attempts to measure women's empowerment in agriculture-based interventions using the project-level Women's Empowerment in Agriculture Index (pro-WEAI) (Hannan, 2019). This survey module utilizes quantitative measurements of input in productive decisions, autonomy in production, ownership of assets, and more (Sraboni, 2014) to assess changes in women's empowerment. The pro-WEAI index uses a survey style questionnaire to assess three domains of empowerment:

- Intrinsic agency, or the values within oneself that give them power, such as self-efficacy, autonomy in income, or respect among household members (IFPRI, pro-WEAI)

- Instrumental agency, or one's own influence over their situation and environment, including decision-making power, ownership of land, mobility, and access to financial services (IFPRI, pro-WEAI)
- Collective agency, or their position within influential groups of individuals with their own power (IFPRI, pro-WEAI)

However, recent assessments have revealed that this tool has several potential flaws. Cognitive interviews using the pro-WEAI survey in Bangladesh revealed that questions are often misinterpreted, the wrong aspects of the question are answered, or the women were too uncomfortable to deliver complete and truthful responses (Hannan, 2019). Furthermore, psychometric analysis by Yount found that revisions to the survey are necessary for designation as a valid measurement tool for empowerment (Yount 2019). Based on this quantitative analysis, Yount recommended that different measures should be identified for more accurate evaluation of project impacts on empowerment (Yount, 2019).

Given the documented problems with the WEAI (Yount, 2019, Hannan, 2019), a need exists for different methods to assess empowerment, especially as an outcome of gender-sensitive agriculture-nutrition interventions. The use of qualitative research methods that include counterfactuals (e.g. comparison households) and male participants can be explored as an option for assessing female empowerment in households participating in the intervention. These studies can be used in validating existing research presented by studies that used the WEAI or similar tools. This would involve both focus group discussions and in-depth interviews to capture the breadth and

depth of empowerment measures. These as well as other techniques such as visual data can be applied to assess nutrition outcomes such as dietary diversity.

The emic perspective captured using qualitative methods is unique and facilitates a deeper and more complete understanding of the mechanisms and experiences that inform the researcher on how interventions and other phenomenon affect people's lives. This is of particular use when studying highly nuanced topics (Hennink, 2010) such as empowerment. While analysis of focus group data demonstrates that empowerment scores are positively associated with some measures of dietary quality such as dietary diversity, quantitative data may show fewer or weaker associations (Galie, 2019). This provides evidence to support further research, and also highlights the potentially conflicting results from quantitative and qualitative data. Therefore, there is a need for a variety of data sources to fully understand the depth of the issues surrounding women's empowerment and nutrition.

Empowerment and Nutrition

Research on the link between women's empowerment and nutritional outcomes suggests a positive relationship between improved measures of women's empowerment and improvements in dietary quality (Galie, 2019, Harris-Fry, 2017, Kumar, 2019, Van Den Bold, 2015) but the results remain unclear. Overall, studies suggest that indicators for women's empowerment in this context are strongly mediated by several other factors. These include age (Sraboni, 2018), involvement in socially driven NGOs (Kabeer, 2011), caste, food security (Harris-Fry, 2017), women's mobility (Kabeer, 2011), household income (Harris-Fry, 2017), participation in women's groups (Kumar, 2018) and the culture surrounding food allocation (DeRose, 2000). So, while the

relationship between empowerment and nutrition outcomes are shown to exist, the pathways are highly nuanced and context specific.

In South Asia, an important contextual factor related to empowerment and nutrition is the patriarchal norms related to intra-household distribution of food, especially in the distribution of nutrition rich foods (DeRose, 2000, Van Den Bold 2015). Specifically, while women may be producing the food, which is often the case even in the absence of a gardening intervention, they may not receive the same nutritional benefits as the men. This is possibly due to the order of food distribution, which most often starts with the husband and ends with the wife, with wives and adolescent girls acting as a 'buffer' between the men and food shortage (Harris-Fry, 2017). Inequalities in nutritional benefit become especially prevalent when you consider the greater nutritional requirements of women who are pregnant or breastfeeding (Harris-Fry, 2017). Within households, the factors most strongly influencing unequal food allocation are the difference in household members' income, bargaining power, women's social status in the household, men's preferences for food allocation, and interpersonal networks (Van Den Bold, 2015). These effects are exacerbated among households experiencing severe or sudden food insecurity (Harris-Fry, 2017). The effects are also most notable among high caste or high-income families, while lower-income families, in the absence of food insecurity, were more equitable (Harris-Fry, 2017). These studies on food allocation present a need for further research on interventions that both increase access to foods, thus reducing food insecurity, and improve women's bargaining power, income, and social status. These analyses would be bolstered by evidence on how the additional food resources are being distributed within the household.

A 2019 literature review on the nutrition pathways mediated by women's empowerment (Kumar, 2019), found that women's group-based programs specifically focused on triggering behavior change were most successful in improving nutrition outcomes in their families. Studies indicate that the most successful interventions were those that focused on Behavior Change Communication (BCC) involving infant and young child feeding practices. These health and nutrition behavior change pathways demonstrated that social support and changes in social norms are crucial components of the process towards successful behavioral changes leading to increased nutritional health and women's empowerment. Kumar identified women's groups as integral to the pathways, particularly for women in rural settings (Kumar, 2019). However, while supporting women's groups is a key aspect of improving women's empowerment, the establishment of such groups is difficult in areas where women struggle with restricted mobility, especially in the absence of a male escort. Considering this cultural factor, further exploration of the effect of women's groups with men in attendance is needed.

Since women's empowerment is often studied as a mediating variable but not an outcome in its own right (Kumar, 2019), it remains unknown if the mother experiences improved nutritional status as a result of nutrition interventions, rather than just the child. Cross-sectional studies in Nepal and Burkina Faso (Cunningham, 2015, Heckert, 2019), found women's empowerment scores in mothers to be a mediating variable between intervention participation and both length-for-age z-scores (Cunningham, 2015) and reduction in wasting (Heckert, 2019) among children. These results provide promising evidence to support empowerment as a mediating variable to increased food access but fail to examine whether the mothers experience the same level of improvement in

nutritional outcomes as their children. Additionally, the use of exclusively quantitative data leaves space for exploration of these phenomenon using qualitative methodologies. Furthermore, the absence of a comparison group with garden access leaves space for exploration of the impact of the interventions beyond that made by the initiation of home gardens.

Overall, the existing evidence suggests that nutrition interventions in traditionally patriarchal communities may be less effective or ineffective at achieving nutritional outcomes in the absence of certain components. These include behavior change communication and/or a gendered component improving women's intra-household bargaining, knowledge on nutrition, and social status. An additional component may incorporate pathways to assist women in maintaining control over any marketable outcomes from the intervention, such as food or material products which can be sold for profit (Van Den Bold, 2015, Harris-Fry 2017, Kumar 2019, Galie 2019). Analysis of the effectiveness of programs that incorporate these necessary components call for further research to be conducted considering the inconsistent results currently available. Future studies could include mixed qualitative methods incorporating focus group discussions, in-depth interviews, and additional visual data to identify changing dietary norms for women in South Asian interventions.

Women's Empowerment in Bangladesh

Women's empowerment in South Asia, and more specifically in Bangladesh, is socially and contextually distinct from other areas of the world, given the highly patriarchal social norms currently in place. These norms highly restrict women's mobility and obligate them to maintain *purdah.* This refers to the religious obligation of women to

remain subservient to their husbands, stay within their homes and often to cover their faces (Kabeer, 2011). *Purdah* largely restricts women from forming social bonds with other women not in their immediate families or direct proximity to their homes (Head, 2013), reduces their social resources, and limits their ability to participate in income generating activities (Kabeer 2011) or may limit their ability to participate in trainings that require even small distances of travel. Additionally, it encourages families to marry their daughters at younger ages (Kabeer, 2011). Early marriage further reduces women's ability to negotiate and bargain with their older husbands, limits their decision-making power in their households, and oftentimes leads to overall lower ability to advocate for themselves (Sraboni, 2018) in the form of equal food allocation.

The pathways to empowerment are further complicated by a variety of inter-related factors, many of which are specific to the female experience in rural Bangladesh. For example, in order to effectively exercise agency, a key cornerstone of empowerment, women need to have conceptualized their lives as having value beyond that which was prescribed to them by their society (Kabeer, 2011). This is a conclusion Bangladeshi women usually reach when working with socially driven regional non-governmental organizations (NGOs) rather than organically through their life experiences (Kabeer, 2011). Additionally, participation in these NGOs, which include BRAC, Nijera Kori, and Somata (Kabeer, 2011) is positively correlated with decision-making power, as is employment status and education (Head, 2013). At this time, it is unclear whether decision-making power directly correlates with nutritional diversity. Existing studies provide evidence to support this relationship (Cunningham, 2015) and also to refute it (Sinharoy, 2017). However, overall, through participation in projects and programs

specifically driven by empowerment related goals, women in rural, patriarchal societies, such as Bangladesh, can still develop the tools needed to access empowerment pathways and improve their control over their life circumstances (Kabeer, 2011).

These pathways to women's empowerment are further affected by the normalization of gendered inequalities in Bangladesh, which affects the types of injustices that women may seek to challenge (Kabeer, 2011). For example, while issues like domestic violence and rape are largely recognized as gendered injustices, systematically propagated inequalities such as child marriage, dowry and polygamy are structurally built into women's lives and largely accepted. Because they are viewed as normal, these systematic injustices are less likely to be viewed as an injustice, and therefore are less likely to face scrutiny (Kabeer, 2011). Similarly, past experiences regarding mobility and employment status affect the value women assign to being denied these rights in married life (Kabeer, 2011).

Remembering that Kabeer's essential domains of women's empowerment are resources, agency, and achievements (Kabeer, 1999), a final difficulty of studying women's empowerment in Bangladesh lies in aiding women in defining goals or achievements in a population with severely limited resources and agency. For example, in a study on dietary diversity among 2,599 married women in Habiganj district of Bangladesh, Sinharoy found the pathways to dietary diversity through women's empowerment to be highly nuanced (Sinharoy, 2017). However, Sinharoy proposes that adequate dietary diversity may not be a potential achievement (an essential domain of empowerment (Kabeer, 1999), that is easily conceptualized by Bangladeshi women. This is due to cultural values favoring the nutritional needs of men and children along

with the limited nutritional resources available nationally (Sinharoy, 2017). If women don't view achieving an improved diet as possible, then it cannot become reality through expression of agency (Kabeer, 1999). Therefore, according to Sinharoy, interventions aiming to improve dietary diversity should use agriculture as a primary tool to improve availability, in order to admit access to the idea of improved diets as an achievement (Sinharoy, 2017).

Women's empowerment in Bangladesh is difficult to affect or to study. This, in short, is due to socially restricting stigmas and cultural norms, lack of identification of their own lives as having inherent value, the normalization of systematic injustice, and a consistent lack of resources limiting agency. The analysis of qualitative data with women as well as men, and impact evaluation using comparison communities will allow for a deeper, more nuanced understanding of the ways in which these interventions affect the participants, their families, their food access and, through these factors, their empowerment.

Homestead Food Production

In 1988, Helen Keller International (HKI) initiated a pilot home gardening project in Bangladesh, which aimed to improve year-round access to vitamin A. This program commenced after a national study revealed that families with home gardens were less likely to have a child under 5 who struggled with night blindness (HKI & Institute for Public Health and Nutrition 1983). Since then, HKI has expanded and fine-tuned an approach to agriculture interventions called the Enhanced Homestead Food Production (EHFP) model. EHFP projects incorporate a multi-sectoral approach including agriculture, nutrition education, health, gender, and income generating strategies.

These promote nutrition, health practices, and establish a system for year-round access to micronutrient-rich foods (Haselow, 2016, Hillenbrand, 2010). They incorporate both plant and animal food sources, along with behavior change communication, highlighting the importance of breastfeeding and complementary feeding to mothers and future mothers of young children. The HKI EHFP model has undergone many iterations to meet the needs of the population served and the context in which the intervention is applied. For example, in response to the avian influenza, aquaculture and livestock rearing was initiated in place of poultry care, and a marketing component was instituted when participants had extra yield and expressed interest in selling the excess (Haselow, 2016).

A systematic review of agriculture interventions in South Asia details the outcomes of household or farm level interventions implemented from 2012-2017 on nutritional outcomes (Bird, 2019). The author notes that on the whole these studies were not able to support these interventions as a method to significantly improve measures of nutritional status, such as child growth, but that there is meaningful evidence to continue conducting research exploring the impact of such interventions on dietary diversity and access to animal food sources (Bird, 2019). Some of the programs produced sufficient evidence to support a minimum level of dietary diversity being achieved during participation (Osei, 2017), especially in the addition of vitamin A rich foods (Hillenbrand, 2010).

These results are supported by findings from Webb-Girard (2012) and Olney (2015). They found that these interventions improve diet patterns in South Asian and African

communities, with increased vitamin A intake, reduction in malnutrition, improvements in anemia status, and decreased mortality. However, results showed non-significant effects on stunting, underweight, and wasting (Ruel, 2018, Girard, 2012, Olney, 2015). They go on to note that the pathway between agriculture interventions and dietary intake is not straightforward. The produce may be sold rather than consumed, income generated may be put towards nutrient-poor substitutes or not used for food or health care, and women and children may not be the recipients of most agriculture yields due to cultural norms favoring men (Girard, 2012). Even if these resources go directly towards women and children, it may not be in sufficient quantities to make a measurable difference in health. However, Girard acknowledges that the quality of these studies is improving, and the most promising results are from interventions which include nutrition education and gender considerations, and which specifically encourage the integrated use of agriculture, supplementation, and fortification strategies to improve overall health outcomes (Girard, 2012, Ruel, 2018).

While interventions, by definition, strive to benefit the participants, the effect on those living near the participants has also been shown to be relevant. For example, Blakstad assessed the effect of a homestead food production intervention on the dietary diversity of the neighbors of the project participants in Tanzania. The results indicated that neighbors of participants in intervention communities were 2.71 times more likely to achieve minimum dietary diversity, and 1.91 times more likely to start a home garden themselves (Blakstad, 2019). This presents promising evidence that the benefits of homestead food production interventions don't stop at the participants but have potential to affect the health of the larger communities.

To date, studies on agriculture-nutrition programs have lacked the analysis of comparison households with home gardens, but without intervention aide. However, this scenario is important to consider. These non-intervention families represent the effect of having home gardens in the absence of training, behavior change communication training, and empowerment-oriented interventions. Furthermore, they provide inference to which benefits from the interventions are a direct result of their gardens, and which stem from the wider intervention. The use of qualitative data from men provides further depth, and insight into the nuances of women's empowerment within a marriage in rural, patriarchal societies. The involvement of men and boys is integral to the empowerment of women (Eerdewijk, 2017), and a complete understanding of their involvement and position on the further empowerment of women will inform further interventions in these areas. This is most important in communities where the restricted mobility and social isolation of women are the norm, and their participation in an intervention may be resisted by husbands or the wider community. While the current assortment of agriculture interventions in South Asia is extensive, the inference of the effects of these interventions has been limited by inconsistent findings, the inadequate presence of qualitative data, and the complete absence of comparison groups with established home gardens.

Conclusion

A body of research supports the importance of gender-sensitive agriculture interventions for increased dietary diversity and micronutrient intake in South Asia, but results remain mixed on the impacts of these interventions on women's empowerment and overall nutritional status (Cunningham, 2015, Johnson, 2018, Sraboni, 2014, Sinharoy, 2017). This disconnect stems from a combination of poor-quality quantitative measures for women's empowerment (Yount, 2019), conflicting results from quantitative versus qualitative data (Galie, 2019), and cultural factors (Kabeer, 20110, Sinharoy, 2017) that have complicated the analysis of the efficacy of the interventions. Additionally, several of these interventions take place throughout Africa, and their results may not be generalizable to South Asian populations due to differences in geography, culture, and food availability.

The existing research calls for increasingly rigorous quantitative and qualitative research to explore the conditions under which these interventions are successful in enriching women's empowerment in South Asia (Johnson, 2018). There should be special attention towards the link between increased food access and women's empowerment. This more comprehensive approach could be undertaken by including qualitative research with comparison groups of women in similar communities that also have the benefit of a home garden, but in the absence of an intervention. This approach is not yet seen in the literature, but it is important. These families provide insight into the benefits of training, nutritional education, and marketing education in enhancing the

women's empowerment outcomes, and increasing the direct benefit to the women who participate.

CHAPTER 3. MANUSCRIPT

Contribution of Student

I worked with the Helen Keller International office in Bangladesh in a collaboration with Heidelberg University on the GAAP2 worked nested within of their on-going cluster randomized-controlled trial, Food and Agriculture Approaches to Reducing Malnutrition (FAARM). I collaborated on the design of the in-depth interview guide, the focus group discussion guide and the activities used in focus groups.

Subsequently, I traveled to Dhaka to take part in training the field data collection team and familiarizing them with the data collection tools. After re-locating to Sylhet province for data collection, I served as the leader of daily debriefings, and iteratively adjusted the guides with assistance from the FAARM team until data saturation had been achieved. After translation of the transcripts was complete, I conducted an analysis of the data under the supervision and guidance of my thesis chair, Dr. Monique Hennink, and committee member, Dr. Sheela Sinharoy.

A Pathway to Women's Empowerment Through Homestead Food Production: A Qualitative Study in Rural Bangladesh

Abstract

Women in rural Bangladesh commonly face multiple, interrelated problems, including food insecurity, malnutrition, and low levels of empowerment (Sinharoy, 2017). This thesis identifies a pathway to empowerment among female participants in a four-year nutrition-agriculture program aimed at married women in rural Bangladesh. 40 in-depth interviews and 12 focus groups discussions with men and women were conducted in both intervention and comparison communities exploring aspects of empowerment and lifestyle changes over the course of the intervention. The results of these interviews were analyzed and used to identify a new pathway to women's empowerment through the intervention. The stages of the pathway occur in the following order: 1) Participants receive training and materials, 2) Home garden and poultry rearing initiation, 3) The initial harvest, 4) Social or monetary resources generated through the leveraging of garden surplus, 5) Increased respect in household decision making, 6) Renewable, sustainable resource generation, and 7) sustained empowerment.

The most meaningful improvements in empowerments occurred among participants who were able to produce foods beyond their household consumption and were able to successfully leverage surplus resources and gain higher utility and therefore bargaining power in their household. Additionally, they leveraged negotiation skills with their husbands, fostered social support networks with other women, and developed agency through increased self-efficacy and motivation. Meanwhile, the least

successful participants lacked in critical areas, such as spousal support, social support networks, or the space or time to produce enough food to leverage for additional resources and increase their utility within their household.

Introduction

Women in rural Bangladesh commonly face multiple, interrelated problems, including food insecurity, malnutrition, and low levels of empowerment (Sinharoy, 2017). Current estimates show that 19% of ever married Bangladeshi women age 15-49 years are underweight (BMI<18.5) with rates of thinness almost twice as high in rural areas as opposed to urban areas, at 21.1% versus 12.2% thin respectively (NIPORT, 2014). Additionally, only 21% of Bangladesh women aged 18 and over were empowered in 2011 based on the Women's Empowerment in Agriculture Index (WEAI) (Sraboni, 2012). Women's empowerment is shown to be associated with nutrition outcomes for both women and children in Bangladesh and South Asia more broadly (Cunningham 2015, Sinharoy 2017, Sraboni 2018).

Homestead food production (HFP) programs aim to address these dietary deficiencies and empowerment inequalities by training women in the production of nutrient-rich foods in home gardens, poultry rearing, dairy production, or other methods. These interventions build knowledge and skills in vegetable gardening and animal husbandry and often incorporate other complementary trainings, such as in marketing of homestead food products (Wendt, 2019, Johnson, 2018). Helen Keller International (HKI) began implementing HFP interventions in Bangladesh in the 1980s after a national survey revealed that Vitamin A deficiency was most common among children of

families without home gardens (Haselow, 2016). This initiated an ongoing process of implementing and refining the HFP model, which is designed to address micronutrient deficiency and to improve the nutritional status of all household members, especially young children (Haselow, 2016, Hillenbrand, 2010). Over time, components aimed at increasing women's empowerment have been included in an enhanced homestead food production (EHFP) model as studies have demonstrated the importance of women's empowerment for nutrition. The EHFP model incorporates agriculture training, health and nutrition education, gender-sensitive approaches, and income generation strategies (Haselow 2016, Hillenbrand 2010). An iteration of the EHFP model is currently being implemented in Bangladesh through the Food and Agriculture Approaches to Reducing Malnutrition (FAARM) study.

The pathways through which EHFP programs may influence women's empowerment have been under-studied. Existing research relies heavily on quantitative measurement of empowerment as an outcome, particularly through the administration of the (WEAI) survey tool. However, questions exist about the validity of the WEAI instrument, with implications for the existing evidence base (Yount, 2019). The WEAI, as it has been used so far, also does not measure the process or steps on the pathway to empowerment. Qualitative data collection has been limited and has been primarily used to complement WEAI surveys if at all (Johnson 2018). Additionally, while the WEAI collects data from women and men, most of the existing qualitative research has only involved women and has not included data collection from men to complement, support, or question their results. The emic perspectives of men are needed, as support from men and boys is a key resource for women's empowerment (Eerdewijk, 2017).

To address these gaps, this study aims to investigate the pathway to women's empowerment through a homestead food production program. We use qualitative research methods, including interviews and focus group discussions with women receiving the FAARM intervention and their husbands, as well as with women and men who did not receive the intervention. By identifying a successful pathway to empowerment and the challenges it may cause, future programs will be better equipped to design interventions that will promote empowerment in their participants and thereby potentially increase their impact on nutrition outcomes for women and children.

Methods

Study Design

This study uses qualitative data to assess the influence of the FAARM trial on women's empowerment through homestead food production for improved nutrition. FAARM was a four-year cluster-randomized control trial conducted in Sylhet, Bangladesh, from 2015-2019. The goal of FAARM was to improve nutritional outcomes of children of women enrolled in FAARM who were born during the intervention period. FAARM provided technical and educational training to groups of women on home gardening, poultry rearing, hygiene, and nutrition. Women enrolled in both the intervention and control arms of the study were monitored over the four-year FAARM trial period and assessed for changes in nutrition status and empowerment outcomes. Details of the FAARM trial design have been described elsewhere (Wendt, 2019).

FAARM included 96 clusters (approximately equivalent to settlements) that were randomly assigned to either the intervention or control arms of the study. All eligible households in each cluster were enumerated prior to cluster generation, and their contact information was collected at the inception of the FAARM trial. Eligible households were those with a woman who met the inclusion criteria for FAARM, which included being married, self-reporting as under 30 years of age, having a husband who spent the night at home at least once per year, and having at least 40 square meters on which to begin a home garden, preferably at least 10 square meters near the home (Wendt, 2019). Of the 96 clusters and 2,700 households participating in FAARM, a subset was selected for inclusion in a qualitative evaluation that is reported here, as described below in *"Participant Recruitment"*.

Study Population and Participant Recruitment

Participants were selected and recruited for the qualitative evaluation as follows. First, women and their husbands were eligible for the qualitative evaluation if the women were enrolled in the FAARM trial but did not live in a cluster where there had been previous qualitative data collection activities. To recruit participants for the qualitative evaluation, clusters where earlier qualitative field work was undertaken during the main FAARM trial were removed from a list of all FAARM clusters, then eight intervention and eight control clusters were randomly selected.

Within the selected clusters, all households that had completed the quantitative pro-WEAI survey in the main trial were listed in a random order as eligible for qualitative in-depth interviews (IDIs). These women and their spouses were then invited to

participate in an individual in-depth interview. Participants were contacted by phone using information collected in the main trial. IDI participants were identified first, and focus group discussion (FGD) participants were selected from the remaining enrolled women and their spouses in that settlement. Participants for FGDs were not limited to the couples that completed the quantitative pro-WEAI survey. Participants for focus group discussions were also recruited by phone via village volunteers whose contact information was collected during the main trial. No participants were included in both IDIs and FGDs. All participants received a small gift from the project of lentils or kitchenware to compensate for the time they spent on the interview or FGD.

Data Collection

Sample Size

The original design of the study included 36 In-Depth Interviews (IDIs), However, a total of 44 interviews were conducted as new themes continued to emerge during data collection, and code saturation (Hennink, 2017) had not yet been reached. IDIs were divided equally between women and men, with participants and their husbands in the intervention arm accounting for 24 of the 44 total interviews. A total of twelve FGDs were conducted, divided equally between women and men in intervention and control arms of the study. The number of FGDs was based on recommendations to conduct at least two focus groups per stratum to identify meaning saturation (Hennink, 2019), with the strata in this study being gender and study arm. Details on the sampling structure are given in Table 1 below.

Table 1: Number of FGDs and IDIs, stratified by gender and study arm.

		Intervention (6 settlements)	Control (5 settlements)	Total transcripts
In depth Interviews (married couples)	**Women**	12	10	44
	Men	12	10	
Focus group discussions (enrolled community members)	**Women's groups**	3	3	12
	Men's groups	3	3	

Field Team Training

The field team consisted of four researchers, proficient in English and fluent in Bangla, who were had advanced degrees in anthropology and were experienced in qualitative interviewing. The team comprised of two men and two women, who were trained over a five day period in qualitative data collection methods, the goals of the study, the IDI and FGD instruments and the purpose of the activities. The field team also collaborated to translate the interview and focus group discussion guides from English into Bangla.

IDI and FGD Guide Development

Both IDIs and FGDs were used in this study. IDIs were used to ask about more personal or sensitive topics such as the effects of the FAARM intervention on

individuals' personal experiences, home lives, and empowerment, along with sensitive information such as interpersonal marriage dynamics, and to collect personal anecdotes. Conversely, FGDs were used to collect information on community perceptions of changes in access to nutritious foods, nutrition knowledge, and changes in aspects of women's empowerment over the previous four years.

Both instruments (IDI and FGD guides) were piloted in an intervention community prior to the start of data collection. Piloting allowed for data collectors to gauge participant comprehension of the questions and assess the logistics of activities within the FGD. One of the activities that involved focus group participants building a plate of food was misunderstood, as each participant wanted their personal food choices represented rather than common foods in the community identified. This activity was redesigned, and the field team retrained on how to lead participants towards describing community norms. Moreover, piloting provided insight into ensuring privacy, as non-participants from the village came to observe, compromising the confidentiality of the group. As a result, the field team later received additional training on how to discourage onlookers from the FGDs.

Focus Group Discussions

FGDs were conducted with participants of both genders and study arms. The aim was to identify any changes in community norms in relation to food security, knowledge about nutrition, and community attitudes towards dimensions of women's empowerment that may have been attributable to the intervention. Dimensions of empowerment of interest included women's mobility, women's input into household decision-making, household food allocation, women's autonomy in production, and finances.

FGDs comprised seven to nine participants and were stratified by gender and intervention status (Table 1). FGDs were conducted by a moderator and notetaker team, who were gender matched to the focus group participants. One data collector led the discussion and activities while the other took notes and managed disturbances. FGDs were conducted in outdoor courtyards within private household compounds, and privacy from other community members was maintained by the notetaker, who requested that visitors and observers return later. Participants' consent was sought before recording the discussion

The FGDs were structured around three participatory activities followed by eight questions and were designed to be completed within one hour. All activities involved sorting and arranging a deck of 34 illustrated food cards displaying common Bangladeshi foods, as described below. The first two activities were designed to explore changes in food availability and diets over the intervention period. The third activity was designed to identify the value assigned to different types of foods. The activities are described as follows:

Activity 1: This activity involved group participants working together to "build a plate of food" using illustrated food cards. Participants were told that the final assortment of cards should represent an average meal for someone in their community four years ago, before the initiation of the FAARM trial.

Activity 2: This activity involved participants using the same cards to collectively build a plate of food that represented an average meal in their community in the present day. Discussion questions involved asking participants about how this plate of food differed from the plate they constructed in Activity 1, and why those changes occurred.

Activity 3: This activity involved ranking the cards from most to least "important". This facilitated discussion around what makes a food important – for example, availability, cost, preference, or nutritional value. The meaning of "important" was intentionally left vague, to allow the participants to discuss the qualities that make certain foods more or less important in their lives. This activity was designed to facilitate discussion around food availability, nutritional knowledge, and food poverty.

The outcomes of all three activities, including two plates of food and one ranked list, were photographed and kept as visual data to be analyzed in a separate content analysis. The discussion around each activity was recorded and these textual data were analyzed for this paper.

In-Depth Interviews

IDIs were used to collect data on personal experiences related to women's empowerment and nutrition, including changes over time in potentially sensitive areas such as marriage and household dynamics and decision making within the household. These questions were too personal to discuss in a focus group; therefore, interviews provided a more private setting for participants to speak candidly.

Each interview was conducted in a private space inside or directly adjacent to the home of the participant. Two team members conducted each interview and were always of the same gender as the participant. Husbands and wives were interviewed simultaneously but in separate locations. This arrangement saved time and helped ensure the privacy of the participant from their spouse. If participants were interrupted mid-interview by a child or other family member, the interruption was noted, and interviewing resumed once the individual left.

The IDI guide had 18 questions and covered interpersonal relationships outside the household; mobility of household members; nutritional knowledge and access to nutritious foods; and decision-making processes within the household. Questions were consistent across genders and study arms. As data collection progressed, the IDI guide underwent a series of iterative changes to incorporate new topics or issues that emerged in earlier interviews and were explored in greater depth. For example, the guide was refined to expand upon the relationship between poverty and food availability, and to ask more about self-efficacy. Additionally, the guide was revised to de-emphasize topics that became repetitive and had reached code saturation early on. For example, interviewers were asked to reduce probing about mobility after minimal differences were seen between study arms, and questions about daily schedules and

responsibilities were removed entirely to preserve time.

Field work

While in the field, daily debriefings were held with the field team after data collection had been completed for the day. Debriefing meetings were used to review topics raised, discuss potential iterative changes to the guides, and review qualitative data collection methods such as how to avoid leading or closed-ended questions, and to assess code saturation. The structures of the daily debriefs were informed by McMahon (2018). Interviews ceased once code saturation (Hennink, 2017) had been reached.

Data Analysis

All data were transcribed verbatim in Bengali, translated into English, and deidentified prior to analysis. All transcripts were uploaded into MAXQDA2020 (VERBI Software, 2019). Data comprised of 44 IDI transcripts and 12 FGD transcripts. While transcripts were being reviewed during analysis, it was noted that some participants within a control cluster reported having participated in another intervention that was similar to FAARM, run by the NGO BRAC. Because these participants received nutrition education and home garden training, any interviews and focus groups they participated in were removed from the data set, resulting in the removal of two FGDs and two IDIs. This resulted in a total of 42 IDIs and 10 FGDs. Due to availability of translated transcripts at the time of analysis, 40 IDIs and 10 FGDs were analyzed.

Transcripts were read in detail and memoed to note recurring themes, interesting statements, and to keep analytic notes on ideas as they emerged. Memos were additionally used to develop inductive codes. Developing codes involved an iterative process of reviewing the memos, data, and literature. Once a preliminary codebook was developed, codes were applied across the data set over multiple readings. On later readings, new codes were added to the codebook as they emerged. The codebook was refined and fully developed, including definitions for each code, inclusion and exclusion criteria, as well as sample quotes from the data that exemplified that code. On a final reading, codes were reviewed and revised, and codes which were developed later in the coding process were applied to earlier interviews and discussions.

Once all data had been coded, a grounded theory approach (Glaser, 2017) was used to analyze data to explain the process by which FAARM may have influenced women's empowerment on nutrition. Codes comprised of a variety of themes, ranging from self-efficacy and purchasing power, to produce sharing with community members, to decision making power and mobility shaming. First, the coded segments of data were compared across variables to identify patterns and commonalities between participants. Data were compared across the following variables: intervention status; gender; years of marriage as a proxy of age; number of children; nuclear vs joined household including in-laws; whether or not they currently have a home garden; and whether or not their household owned livestock. Variations between variables presented in the coded segments were noted and contextual nuances in the data were detailed using thick descriptions. Themes were then categorized into acquisition of resources, expression of agency, and achievement of goals. themes were further sub-categorized

based on the order of events, so themes that occurred simultaneously were grouped. Subsequently, a framework was conceptualized illustrating the relationship between these categorized themes. This iterative process involved a return to both the literature and the data. The meaning or overall story of the data was identified, and then visualized to clarify the pathway to empowerment in food production among FAARM participants.

Using the variations found between variables, a theoretical framework was constructed to explain the pathway to empowerment that successful FAARM participants experienced through having a home garden and raising poultry. The framework was developed through the organization of the stages identified through the grouped and chronologically ordered themes, and incorporates elements of resource acquisition, increased spousal support, increasing agency, and the development and maintenance of new habits. The framework is the result of a comprehensive grounded theory approach and explains how participation in FAARM influences dimensions of women's empowerment through engagement in homestead food production. The framework built on Kabeer's resources-agency-achievements framework to explain more comprehensively the process of empowerment that was reflected in the data from this population. The relevance of Kabeer's framework was noted after the framework had begun developing once the framework was outlined, Kabeer's domains of resources, agency, and achievement became visible within the stages, and fit into the upward spiraling format of the final process of empowerment.

Ethics and Informed Consent

The data analyzed in this study set were collected as part of the FAARM trial (ClinicalTrials.gov: NCT02505711). The study protocol was reviewed and approved by the ethics committees of the Bangladesh Medical Research Council, the James P Grant School of Public Health at BRAC University in Bangladesh, and Heidelberg University in Germany. All study participants gave written consent prior to participation in FAARM, and additionally provided verbal consent for interviews and focus groups. This analysis used deidentified data.

Results

This grounded theory analysis resulted in a framework (Figure 1) which depicts the pathway to empowerment through homestead food production among women who participated in the FAARM intervention. The framework depicts stages in the process of empowerment. Each stage builds upon the previous stage, goes on to inform the subsequent stage, and ultimately leads to a state of improved empowerment for women. The pathway begins with the delivery of training and materials to the participants through the structuring of long-term habits, the building of self-efficacy and spousal support, and ultimately to a state of sustained resource renewal and increased decision-making power in the lives of participants. The following results will describe each stage of the process towards improved empowerment.

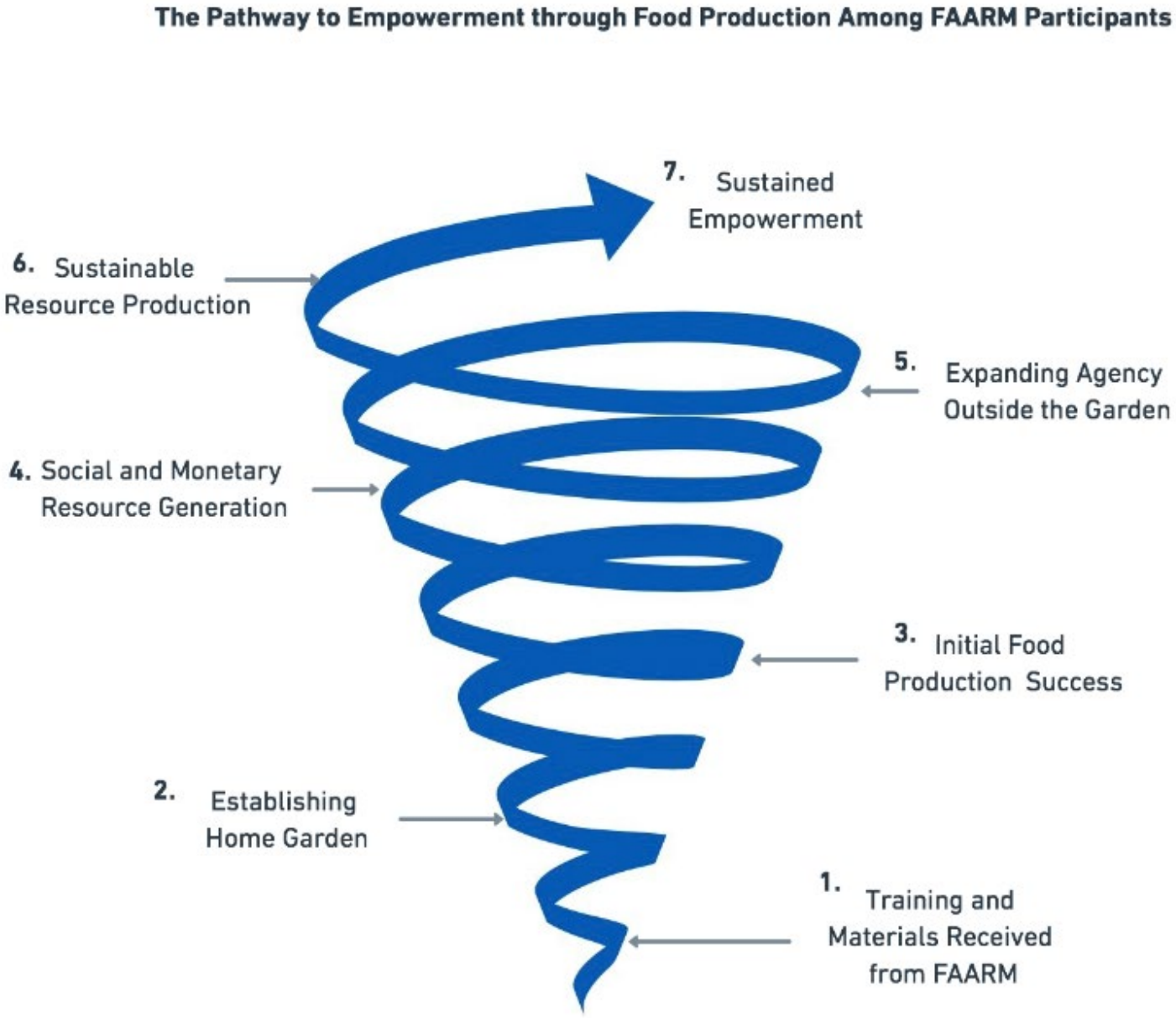

Figure 1: A conceptual framework describing the pathway to empowerment through food production among FAARM participants

Stage 1: Training and Materials Received During FAARM

Stage 1 involves participants receiving materials, technical training, and nutrition education from the FAARM training team (see figure 1). Participants consistently identified the training and material resources provided through the FAARM intervention team as the key component to their later success. This component of the intervention reduced a key barrier to starting a garden by providing seeds and fencing, which reduced barriers to women leaving the home to purchase materials in a culture where the women are not generally mobile and may not have any control over financial expenditures. At this stage, the program also provided training on effective gardening techniques so the materials would be used effectively and result in productive gardens. For example, one female participant highlighted the usefulness of the sack gardening technique taught to help participants preserve their crops during floods, stating "*…we didn't used to grow vegetables in the past. Whatever we used to grow; we did that on open soil. But now we fill sacks with soil and grow vegetables on that. It is very useful for the rainy season. We learnt that from you." - (Female, FGD)*

The importance of the training was described by participants as promoting their gardens to become more productive than in the past. In contrast, households in the control arm consistently complained that their gardens were infertile due to flooding, pests, poor soil quality, or other environmental factors, while no households in the intervention had similar complaints.

The acquisition of these skills and materials also contributed to an increase in motivation among participants. Participants frequently noted their own ‘laziness’ or lack of interest in gardening in the past, compared to their motivation or ‘inspiration’ to contribute a greater effort following their participation in the FAARM intervention. Both men and women noted that their past efforts at gardening were minimal, and often ended in the gardens producing few or no vegetables. Those who had not developed a garden in the past discussed making excuses about the challenges and barriers of garden preparation such as having too little space or infertile soil. However, after receiving training through FAARM they realized they can grow some vegetables in the space they have and overcome these barriers to gardening.

The success of stage 1 was largely dependent on the women gaining permission from their husbands to attend the educational training. Although all participants had previously consented to attend meetings and expressed interest, some women were not permitted by their husbands to leave their homes when the intervention began at this stage, some women were able to negotiate with their husbands, either by convincing them of the merit of the meetings or by allowing their husbands or another male family member to escort them. However, some women were not able to successfully navigate the situation. Instead, either the husband attended the meetings alone, or nobody attended.

Stage 2: Establishing Home Gardens

In stage 2, participants began to establish their own home gardens and poultry rearing (see figure 1). For many women, establishing their own home gardens represented their first expression of agency related to intervention initiation. As discussed above, many women reported low levels of early support from their husbands, who were not interested in assisting with the garden or in some cases were reluctant to allow their wives to attend trainings due to cultural norms around women's mobility. However, after receiving initial training from FAARM, most women were able to return home, negotiate the potential advantages of gardening, and convince their husbands to allow them to begin gardening at home, at the expense of their time normally used for other household duties. One participant describes the process of negotiating with her husband, outlining how started small and eventually reached her goal of a full-sized home garden: "...*one day suddenly I said to [my husband] that, how can we do this? What will be beneficial for us? How can we make income for our family? I said to him there is an NGO called FAARM, and they will give seeds. We have lots of space. Let's do this. I said to him that if you will help me then it will be good for us. In this way while talking to him I have started doing it. At first, I have planted 2-3 plants and then I said to him that there are good vegetables that I get from our plants. Then I said that the way we are growing two plants, in the same way we can grow four plants. That way I made it big… That's way I have done it.* - (Female, IDI). This type of negotiation became an early example of women strategically applying agency to manifest a situation that they believed to be beneficial to themselves and their families.

Among participants with a supportive husband, this second stage was still important. This stage represents the application of motivation and is represented here by the women who, with or without the support of their spouses, were able to apply the trainings, use materials, and initiate their gardens. Motivation was especially important to those working in a space they had previously deemed unsuitable for agriculture due to size, location, or soil quality. These previous barriers to success had discouraged these women from making sincere efforts at gardening in the past, and women had to attempt gardening in new ways and with greater effort than before in order to overcome the barriers they previously experienced.

Stage 3: Initial Food Production Success

This stage is marked by the production of the first harvest from the home garden, or the point at which the chickens begin laying enough eggs to sell or consume. For participants, this stage marked a very important stage in their process. It was the point at which they began to receive material outputs from their efforts, leading to an increase in motivation. One woman spoke about this motivation gained through harvesting, saying "*It feels good to grow vegetables and it feels the same when we get a harvest. When I get a harvest, it feels great to grow them. I don't sell them; it meets our own needs. I grew okra, we are eating them, I planted a ridged gourd, we are eating them, we planted a winter melon, we will get winter melon from that"- (Female, IDI).* Many participants reinforced this view, speaking on the confidence, motivation, and self-efficacy earned when they see their gardens becoming productive. This was particularly apparent when speaking on their ability to provide nutritious foods to their families

during times of economic hardship, when many reported being completely confident despite monetary shortfall. One participant describes the change in food availability and the affect it has on her and her children's diet *"We don't have to buy most of the foods nowadays. We eat those foods (grown in the garden) and serve those to our children. We don't have to serve a small amount of food to our children thinking of the money we have spent for that food. When we used to buy all those foods, we gave the food to our children at first and ate the remaining after that. But now we grow all those foods and we all can eat the amount of foods we need."* (Female, FGD).

Most importantly, it was the point at which for many participants, their husbands became supportive and some contributed to the garden. This most often was a result of husbands recognizing the benefits of having a successful garden, both for household consumption and monetary profit. A female participant stated that "*When I plant a particular vegetable and get a good yield, my husband becomes interested in growing vegetables. He starts thinking that he should also help me so that we can get even better yield together." (Female, FGD).* The husband's support proved very important as the fences and chicken coops began to require repairs, and wives relied on their husbands to fix them. If the fences or coops were not fixed, the project was likely to become less successful in subsequent harvests.

Stage 4: Social and Monetary Resource Generation

This stage occurs nearly simultaneously with stage three and represents the acquisition of additional resources that are gained from the production of surplus produce from the garden. After the gardens and poultry became productive, there were three ways the products could be used: 1. they could be consumed by the members of the household, 2. they could be sold for profit, and 3. they could be given away to other community members. While all households reported consuming produce from their own gardens, they were also likely to either sell or give away their surplus to their neighbors, if they produced more than they consumed.

Selling the surplus produce comes with the obvious benefit of participating in an income generating activity. Many of the women who chose to sell their surplus produce reported retaining personal ownership over the income generated by the sales, and for most this was their only source of purchasing power. This strategy directly allowed these women to spend the income on personal needs, family needs, additional food, on their children's education, or to save it. Generating an income was reported by men to increase their wives' ability to express opinions on other household matters including purchases and food allocation by making them 'braver'. Women reported receiving greater respect from their husbands, and therefore elevated purchasing power within the household.

Giving the surplus produce away to neighbors was an indirect form of resource generation. Women who chose to give produce away to neighbors initially reported

altruism as their motive. However, when probed, women reported that giving away produce also generated social capital. A family who was given produce for free was more likely to give produce back later when they had extra to give, share from their garden if they had one, or could be asked for other favors. One successful participant outlined this relationship dynamic as follows: "*I give [my neighbor] vegetables. They used to say that how can I grow these vegetables and please give them some. It is good to eat. “How can I grow these?” they want to know, so I told them how. They (FAARM) taught us the way to plant a tree, so I just told them about that, and they did it in the same way. They told me to come and (take some pumpkin) just because I taught them how to do it. Pumpkin they grew on their plant, they said I can have it and can eat it" (Female, IDI).* Communities who worked together in this way often in this way reported frequently trading or borrowing seeds from each other in a way that supported and benefited everyone who participated.

The ability to sell or gift produce and reap the monetary and social resources was a function of how much produce was grown and the size of the household. A household with many individuals was unlikely to have surplus to utilize, as was a household with a small garden that was unsuccessful or lacking. Households with family in a home nearby often felt compelled to give extra produce for free to family members only, so this also became a barrier to reaping other benefits from surplus production.

Stage 5: Expanding Agency in Life Circumstances

During this stage, women began to experience an increased voice in household decisions as a result of the production of material goods for the family. The demonstration of an ability to make productive decisions for the family in the garden which resulted in both increased food security and the benefits discussed in stage four compelled the husbands to listen to their opinions more often and with greater respect. Subsequently, their input began to become more highly valued in household decisions.

The men noted both that as the gardens became more successful, they began to trust their wives' judgement more, and that their wives were 'braver' than before about expressing an opinion once they felt they were participating in a productive activity. Supporting this, the husband of a participant relayed that "*Women were not aware of many things in the past. They used to be barred from being aware of those things. Now they understand everything. They are getting help from the NGOs and with that they have become aware of many things. They were restricted to only household chores in the past. But now they are doing different things to support their families. They understand a lot of things now. Their husbands, brothers and brothers-in-law take advice from them nowadays."- (Male, FGD).* Meanwhile, the women reported increasing self-efficacy and decision-making power within their households as a result of contributing material resources to their families. One woman observed the change as follows: "*Now [my husband] sees the income and expenditure that is happening in our family. Decisions that I take he sees become fruitful for our family. By this way the change happened." - (Female, IDI).*

Stage 6: Sustainable Resource Production

Stage 6 establishes the long-term sustainability of the efforts of the FAARM intervention as the participants demonstrate an ability and willingness to participate in storing seeds and preparing for a future without aide from the intervention team. By this stage, those who have continued to maintain their gardens were no longer receiving seeds from FAARM and began applying the techniques they learned for sowing and storing seeds. Additionally, this stage may also be marked by the chickens continually supplying enough eggs to be both sold or consumed and to maintain the current population. Those who can maintain daily maintenance of a garden over time and without additional assistance and inputs prove a pathway exists to habit building and long-term success.

This stage is distinct from the initial home garden and poultry success noted in stage 3, because with it comes the establishment of additional skills and the maintenance of a long-term gardening habits. While the initial success of a first harvest was achieved by most participants via short term motivation, reaching this stage was a result of habits built over time, and the utilization of additional behaviors such as storing seeds and maintaining the gardens, fencing, and chicken coops.

This stage is additionally the start of community support around trading seeds, giving them away to those who did not manage to store any, and teaching others in the community proper gardening techniques. This behavior is most prevalent in communities that favor sharing their surplus produce to neighbors over selling it and

foster a social norm of community support. These communities were most likely to share seeds with their neighbors who did not have any to trade. However, this was sometimes done with an underlying expectation that the vegetables grown from those seeds would be shared in return. In one particular community (Cluster A) FGD, participants unanimously reported sharing seeds and excess produce to those who were lacking, despite the encouragement from the FAARM team to sell seeds and surplus produce instead. This was done with the general understanding that they should support one another, and that this was beneficial to all of them in the long term when others would share with them. One Cluster A participant stated that "*Suppose, I have not stored the seeds and I don't have seeds now. I can borrow some seeds from her. In the same way she can also borrow some seeds from me…. Mustaq 'vai' (FAARM trainer) told us that we can sell the seeds as well. But we don't do that. We give seeds to each other for free."*- (Female, FGD).

Stage 7: Sustained Empowerment

This final stage of the pathway marks a sustained improvement in empowerment in the female participants. By the conclusion of the intervention, the participants who had succeeded in gardening, leveraging surplus, negotiating within their households, and maintaining a renewable supply of resources reported a sustained change in the decision-making dynamics of their households. Both men and women noted a change in the involvement of the wives when making larger decisions regarding finances and their children's education, rather than only the small day to day decisions the women were

responsible for before, such as what to cook. One husband describes this change over time as a community wide occurrence, stating that "*Women's opinions were not considered seriously four years back. But now their opinions are considered seriously. We see that women's opinions are taken in every family nowadays. I think, this is a significant change… The women are now participating in some productive and income generating works. Therefore, they have the courage to give their opinions to their husbands." -(Male, FGD)*

These changes were more likely in nuclear households. In a joint household, the opinion of the in-laws is often more important than that of the husband, and it is they who have the greatest decision-making autonomy. Additionally, because women are the caretakers of the children, having children increased their ability to make decisions, especially if the husband agrees her decisions are for the good of their children. However, the issue is nuanced, as children also create more work for the women, and the addition of in-laws may also decrease the amount of work for the wife, since they generally, but not always, assist in daily chores

Discussion

Framework in Relation to Prior Research

This study developed a framework to describe a pathway to empowerment among female participants in the FAARM trial. The pathway is depicted using an upward spiral, indicating the cumulative nature of the events outlined. The stages occur

in the following order: 1) The beginning of the intervention, when participants receive training and materials, 2) Home garden initiation, 3) The initial harvest, 4) Social or monetary resources generated through the leveraging of garden surplus, 5) Increased respect in household decision making, 6) Renewable, sustainable resource generation, and 7) sustained empowerment.

This empowerment framework reflects components of Kabeer's framework of empowerment, which includes the dimensions of resources, agency, and achievements (Kabeer 1999). Our framework of empowerment within FAARM depicts a cycle of resource acquisition, agency development, and achievement of goals, and is expressed as two distinct rounds of resource acquisition, agency development, and growth in decision-making power (empowerment), shown in Figure 1. Elements in the resource stages (numbers one and four in Figure 1) describe the various material, financial, social, and human resources as they are acquired throughout the intervention. The agency stages (numbers two and five in Figure 1) describe the growing ability to define and act upon goals. Finally, the achievement stages (three and six in Figure 1) describe the outcomes of the applied goals and actions. This discussion will focus on the themes from the framework with the largest implications for future program design and long-term sustainability. These will include motivation and negotiation as expressions of agency, and spousal support and social support networks as key resources in the project of women's empowerment.

Psychological Dimensions of Agency

Stage Two, “Home Garden Initiation”, indicates the application of motivation when participants returned home to begin their own home gardens after attending FAARM trainings on vegetable gardening. Kabeer recognizes motivation as an aspect of “sense of agency”, or the “power within” (Kabeer, 1999). She further describes it as the purpose which individuals bring to their activity (Kabeer, 1999). With agency being defined as “the ability to define one's goals and act upon them” (Kabeer, 1999), it follows that a motivating force to initiate action and assist participants would prove important in overcoming the initial inertia and energy inputs required to begin their home garden. This phenomenon is important to the overall project, as most of these participants had either never attempted a garden in the past despite being interested in trying or had attempted a garden previously and determined that the soil or environmental conditions were not conducive to gardening. It can therefore be inferred that the participation group was demotivated in their normal daily lives to initiate a garden, either through previous failures or perceived difficulty. However, after receiving training and proper instruction in a group setting, most of the participants were able to go home, and successfully initiate a productive home garden. Since it was a pre-existing interest for most, the desire to garden was already present, but the motivation to overcome the initiating challenges were not.

This increase in motivation may also be partially attributable to the utilization of women’s groups in FAARM. While evidence is limited, women’s groups can provide

peer support and mutual accountability, which may increase women's motivation (Diaz-Martin 2020). This is exemplified by the women of Cluster A, captured in the IDIs, the assigned "village model farmer", who was asked to assist community members between training sessions, consistently visited the other participants from their clusters and facilitated group work in order to solve unforeseen challenges and to ensure that all participants were following the training. This is an exemplification of both peer support and mutual accountability as a facilitator of motivation (Diaz-Martin, 2020).

Motivation has been recognized in the literature as a subset of self-efficacy where one's confidence, sense of control, and motivation cumulate to represent their sense of self-efficacy (Donald, 2017). FAARM participants described increased confidence alongside their increased motivation, particularly when describing their ability to provide nutritious foods to their families and make household decisions that benefit their families. This demonstrates an improvement in confidence and sense of control over the outcomes of their gardens, which may account for the accompanied motivation to maintain their gardening efforts over time. While there is intermittent research on the relationship or connection between self-efficacy and motivation, more research is needed in this domain (Donald, 2017), particularly in the realm of agriculture-nutrition interventions.

As this study observed self-efficacy in participants growing over time, it begs the question how self-efficacy can be learned over the course of an agriculture-nutrition intervention. In his 1986 paper, Stretcher proposes mastery over a "difficult or

previously feared task" (termed Performance Accomplishment) as being the most effective method through which self-efficacy can be learned or developed (Stretcher, 1986). The FAARM intervention fostered Performance Accomplishment by setting participants up for success in a task (gardening and poultry rearing) that they had not had prior success in, either due to previous failures or perceived barriers.

Stretcher's second method of learning self-efficacy is termed "Vicarious Experiences", or learning through observing others (Stretcher, 1986). He recognized this as the second most effective method for building self-efficacy. Some neighbors of FAARM participants with successfully established home gardens asked those families to teach them how and established their own gardens. Some participant related the same idea of Vicarious Experiences to the data collectors, relaying that when their husbands and neighbors witnessed their success gardening, they became interested in learning from the participants and gardening themselves. Learning self-efficacy through witnessing the achievements of others that you perceive as similar to yourself, followed by attempts to replicate their success also demonstrates agency, as these FAARM-adjacent households begin to establish goals and work towards them, based on the observed success of their neighbors.

Negotiation as an expression of Agency

At various points during the FAARM intervention, female participants used negotiation as a tool for gaining support from their husbands or gaining access to resources. Once the home garden was successfully initiated, these participants felt

overall more able to negotiate regarding other matters in their homes, perhaps based on their status as a resource generating participant in the household. This finding relates to prior research which suggests that bargaining power (or negotiation) is determined by an individual's utility within their home (Harris-Fry, 2017). By participating in resource generating activities, the women raise their utility, thereby raising their bargaining power. While participants noted that this occurred alongside an improvement in communication with their husbands, a similar program showed that spousal communication was not improved by the intervention despite incorporating a behavior change communication component (Olney, 2016).This discrepancy may be due to the inherent differences between quantitative and qualitative research, or potentially to the cultural differences between South Asian and African communities.

Negotiation is a key component of agency, especially for this population. Kabeer states about South Asian woman that "the renegotiation of power relations, particularly within the family, is often precisely about changes in informal decision-making, with women opting for private forms of empowerment, which retain intact the public image, and honor, of the traditional decision-maker but which nevertheless increases women's `backstage' influence in decision-making processes " (Kabeer, 1999). This "backstage influence" is what is being demonstrated here. While the husbands remain the head of the household, the wives are able to quietly negotiate for the circumstances they desire, and in that way, bring their goals to fruition. Negotiation can be considered a subset of voice, which has been defined as "the right and ability to enter into the household bargaining process" (Katz, 1997) and "the ability to articulate practical needs and

strategic interests" (Gammage, 2016), both of which are being demonstrated by women who are successfully engaging with their husbands to advocate for strategic choices.

Negotiation also relates to the research done on locus of control (LOC) (Donald, 2017). This research establishes that one's "sense of agency or control" is a product of their self-efficacy and LOC. The LOC is the degree to which one attributes events in their lives to their own behavior (internal LOC) versus external factors (external LOC) (Donald, 2017). An individual with an external LOC may be more likely to believe that their actions will not affect their outcomes and therefore to be less motivated to affect change. Under these circumstances, women are unlikely to attempt to negotiate for improved life circumstances, since it is their belief that these negotiations will be implicitly unsuccessful. However, once the women in our study experience their action leading to the intended results, this may affect their LOC to the point at which they internalize that their actions lead to their outcomes, and therefore would be motivated to engage in negotiations.

Furthermore, like motivation, the improvements seen in bargaining power and negotiation seen among participants could be attributed to increases in self-efficacy, respect, or increases in ownership of assets. In a literature review, Doss, 2013, found that acquisition and ownership of assets was linked to improved bargaining power, with asset ownership most likely leading to bargaining power, and not the reverse (Doss, 2013). The women who participated in the FAARM intervention acquired both the garden and poultry, and those assets could consequently be sold for income (another

asset). This increased their bargaining power within the household. What men recognized as their wives being “braver” in expressing their opinions, was likely their wives experiencing an increase in bargaining power due to asset acquisition (Doss, 2013) and increased utility within their household (Harris-Fry, 2017). While Van Den Bold (2015) found mixed evidence to support the relationship between agriculture intervention and women’s control over the assets of income and resources, the women in this study clearly identify their gardens and poultry as their personal resources to support and use for the family or to sell at their own discretion. This clearly demonstrates them as resources that could be used to improve their bargaining power within the household.

Spousal Support as a key resource towards agency

Since women in rural Bangladesh exist within the confines of a classic patriarchal culture (Head, 2015), the support of the men of the community, especially their husbands, proved crucial at many points during the intervention. The husbands were in a position of power to either support their wives towards reaching their goals, or restrict their ability to work, attend trainings, or collect necessary supplies. For example, some participants failed to effectively initiate their home gardens due to travel restrictions placed on them by their husbands meaning they rarely or never attended the trainings. This is consistent with claims by the Bill and Melinda Gates Foundation citing support from boys and men as a key resource in the transformation of power relations between

men and women (Eerdewijk, 2017), and ultimately in the process of women's empowerment.

Kabeer (2011) recognized the importance of spousal support, and that it commonly begins after the initiation of a project. It often occurs once the men realize that their wives could ease their burden as the primary breadwinner if empowered (She notes that the products that women produce through these agriculture interventions, while insufficient to lift families out of poverty, ease their reliance on "humiliating" dependency relationships (Kabeer, 2011). Kabeer's findings were consistent with the data from the FAARM population. Men and women in FAARM both noted that husbands often contributed to the gardens only after they began to see it as a productive endeavor, and were henceforth happy to rely less on income for their produce and to help their neighbors, putting them in a favorable position to receive other favors.

In another study on transferring assets to women living in poverty in West Bengal and Sindh (India), Kabeer (2019) found that while antagonistic husbands represented a significant barrier to their wives attaining success through the interventions, absence of a husband did not represent the same barrier. Wives with no husbands present experienced the same levels of success as those with supportive husbands. This reasons that while spousal support is certainly helpful in removing the barriers related to unsupportive husbands, it may not provide any additional benefits. However, in the FAARM population, an actively supportive husband played an important role in the success of their wives, and absence of a husband in the home (All participants were

married, but some had spouses who were often away for work) did not have similar benefits. This could be because this intervention required women to attend trainings, so they needed their husbands to watch their children while they were there, or because of the physical support husbands could provide in the garden.

Social Support Networks as a Key Resource Towards Agency

Participants with the most productive gardens and greatest improvements in agency in the form of bargaining power gleaned much of their success not through greater access to material resources or time, but through social support provided by family and those in the community. This primarily includes other women in their immediate community and their husbands. Since we have already discussed spousal support above, here we will discuss the importance of other women as a key contributor of social support.

Kabeer notes that “collective solidarity” between women in public spaces is crucial to the development of women's empowerment (Kabeer, 1999), and describes women supporting each other in their collective work towards shared interests. Support from other women in the community or from the training groups was not often discussed in the interviews, with the exception of the female participants from Cluster A. In this cluster, the assigned village model farmer discussed continuing to visit other women in the training groups to monitor their gardens and to offer advice and assistance as needed. Additionally, the female FGD from the same cluster indicated a high amount of collaboration and support between the women, who all reported sharing seeds and

surplus produce for free. In this way, the women in this community support each other in their common goals, and foster relationships which are not dependency based, but rather collaborative, increasing their utility (bargaining power) within their homes.

A qualitative analysis of nutrition-agriculture interventions in Nepal, noted the same phenomenon (Kjeldsberg, 2018). They purposively sampled participants based on success producing surplus produce for sales at the market, with three categories representing varied levels of current or past success. This study found that only the most successful group which had continued to have long-term success producing and selling vegetables, reported receiving group support from other women (Kjeldsberg, 2018). This aligns with the findings from this paper, which suggest that Cluster A, where women actively supported each other, were the most widely successful in sustaining gardens and improving their bargaining power in their households. This holds promising implications for future programs, which may choose to specifically foster collaborative relationships rather than individual solo endeavors to garden.

Program Implications

Programs aimed at women in South Asia which aspire to increase empowerment should focus on strengthening the multiple dimensions of women's agency, reducing barriers to achieving social capital, and engaging men. To begin, programs should include a focus on the psychological dimensions of agency such as internal LOC and high self-efficacy by incorporating built-in successes related to the project goals,

therefore building “performance accomplishment”, which would in-turn increase motivation and sense of agency. In addition, programs should engage husbands in early programming to communicate the benefits of the intervention, which may harness the key element of spousal support early on. However, it is important not to provide men with the same technical training skills as the women, so the women retain their added utility, and the garden will avoid transferring to the husband. Even so, securing higher levels of spousal support from the onset by involving husbands will both improve negotiation and increase support while improving participation by the husbands.

A final barrier that women encountered on the pathway to empowerment was not producing enough vegetables or eggs to have any surplus to leverage for additional resources. This stalled them on the pathway to empowerment, as they did not generate additional resources, and did not accomplish additional utility sufficient to meaningfully increase their bargaining power within their household. This was a function of the size of the space they were gardening in, as well as the size of their household, with larger households with smaller gardening space proving less likely to meet the needs of the inhabitants. To combat this, future programs should include components aimed at increasing potential for social capital generation without the necessary sales or distribution of produce. This could take the form of teaching others, leadership positions, encouraging close neighbors to collaborate on gardening and share their outputs, or encouraging communities to work together to share seeds and support their peers to the added benefit of everyone.

Strengths and Limitations

The most distinct strength of this study was the inclusion of men in both in-depth interviews and focus group discussions. Including men allowed for the analysis of events from the perspective of the non-participating spouse, who in this case, may have distinct perspectives on issues including finances, women's freedom of movement, and household decision making. Including the men additionally allowed us to see both sides of the narratives, and assess if spouses were reporting a similar phenomenon, or if one was reporting events in such a way as to appease the interviewer, rather than in a reflection of reality.

The primary limitation of this analysis was the use of identical IDI and FGD guides between genders and study arms. While the aim was to produce an "equal opportunity" tool to used ubiquitously across the study population, this ultimately resulted in questions that were sometimes vague, and it became difficult to elicit specific responses. However, interviewers attempted to account for this using extensive probing techniques, and leading participants towards topics of interest without asking "leading questions" which are meant to elect certain responses. Additionally, among intervention arms, this issue ended up, to a certain extent, accounting for itself. Because the participants understood that the interviewers were affiliated with the intervention they all participated in, they were likely to lean toward discussing the questions in terms of the intervention. However, this may have created a social desirability bias, where

participants were compelled to mostly share experiences they perceived as positive or gratifying to the data collectors.

Conclusion

By conceptualizing the pathway to women's empowerment taken by the most successful FAARM participants, we are able to identify areas of particular importance and areas of critical interruption where the pathway was vulnerable to inference. The findings of this study suggest that the women in the FAARM intervention were most successful in their gardens and in developing overall empowerment when they were able to leverage a variety of skills and resources, some of which were provided or taught by the intervention, and some of which were developed from skills learned and fostered collaboration. While the FAARM program ensured that all participants received material resources, and all participants who attended trainings received skill development, failure to achieve long-lasting improvements in decision making power (empowerment), stemmed from failures to produce or leverage the resources they produced due to lapses in agency, insufficient social support from family and the community, or occasionally unforeseeable life circumstances.

The most meaningful improvements in empowerment occurred among participants who were able to produce beyond their household consumption and successfully leverage surplus resources and gain higher utility and therefore bargaining power in their household. Future agriculture-nutrition interventions should seek to mitigate these barriers and replicate these successes by teaching self-efficacy, involving

men in components other than the women's technical training, and creating a system among participants for generating social support networks and capital from each other. Greater success in women attaining empowerment can be developed culturally over time by increasing the levels of agency inherent in women’s lives, possibly through policy reformation, and potentially through social movements and education.

CHAPTER 4. PUBLIC HEALTH IMPLICATIONS

Public Health Implications

Bangladesh is still considered to be a classic patriarchy with strict limitations around the behaviors and activities of women (Head, 2015). These limitations create circumstances under which the barriers to agency and empowerment are such that most women struggle to attain it, even with support through interventions or NGOs. Therefore, the overarching public health implications point towards policy changes that seek to provide women with educational and vocational opportunities, as well as to support them in their agriculture-based endeavors at home, so that interventions such as FAARM become less necessary.

Developing a system which supports women and girls will ultimately produce a generation of Bangladeshi women who face fewer barriers and greater opportunities to exercise agency and develop goals. As access to resources such as education, employment, mobility, and social networks increases, interventions aimed at women will be better able to reach their empowerment outcomes, and women without access to interventions or NGO assistance would be better able to navigate their own pathways to empowerment and improved life circumstances.

Policy Recommendations

Although the subset of women participating in FAARM are not representative of the female population of Bangladesh, we can infer that general policies to address

education, employment, and skillset development may help to improve overall women's empowerment across the region.

Address Education

Empowerment programs as well as financial conditional incentive programs aimed at Bangladeshi girls have shown a modest but significant impact on keeping girls in school, with financial incentives having the greater impact, at 24% versus 10% respectively (Buchmann, 2017). It's possible that at this early stage, it may need to be either legally mandated or conditionally incentivized for Bangladeshi girls to remain in school through a certain age. Our findings suggest that parents generally remove their daughters from school because of tuition expenses and the need for additional income, which indicates that a financial incentive program or the removal of mandated tuition to support public schools may be effective at convincing parents to keep their daughters in school for longer.

Address Employment

A lack of employment opportunities in rural Bangladesh, combined with the expectation that women stay in the home to maintain household duties, means that most women do not get the opportunity to participate in income generating activities, which add utility to their household status and increase their voice with their husband (Harris-Fry, 2017). To address this, the establishment and normalization of day-care facilities would reduce the burden on women to stay home with their children, while the importance of anti-child marriage laws would help women to stay in school longer, and therefore be increasingly employable. Finally, safe and hygienic facilities for women must be provided in public spaces to reduce the risk of physical violence, harassment,

and hygiene issues that face women who are forced to use the common restrooms available in rural areas outside the home.

Address Skillset Development

While Bangladesh currently has programs in place to support Bangladeshi men in rural areas in agriculture, especially in the efficient farming of rice, this training generally only reaches men and there are no policies outside of intervention type programs to provide similar training to women. Providing women with access to skillsets that increase their utility in their households is key to building their bargaining power and self-efficacy, and therefore are deserving of support via national policies. This is especially needed in rural areas where women have low mobility and limited access to resources and educational opportunities. Ideally, rising levels of empowerment among Bangladeshi women could later lead to these women raising more empowered daughters, and passing on skills such as gardening, marketing, and sewing, as well as modelling soft skills such as negotiation to their daughters. Additionally, they may ensure their daughters receive higher levels of education and marry at later ages, increasing their opportunities for employment, decreasing their lifetime fertility, and improving their voice within their marriages.

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