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Women's Empowerment and Child Nutrition:
Reducing the Gap with Dairy Cow Rearing

Prepared By

MD. MYNUL ISLAM
Assistant Professor
Department of Women and Gender Studies,
Arts Building (4th floor), University of Dhaka
Dhaka-1000, Bangladesh. Cell: +88-01718-181524; Email: mynul@du.ac.bd

ABU SALEH MOHAMMAD SOWAD
Lecturer
Department of Women and Gender Studies,
Arts Building (4th floor), University of Dhaka
Dhaka-1000, Bangladesh. Cell: +88-01737-746741; Email: asm.sowad@du.ac.bd

Supervised By
DR. SOMA DEY
Assistant Professor
Department of Women and Gender Studies,
University of Dhaka, Bangladesh.
Cell: +88-01715-101395;
Email: somadey1977@yahoo.com

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Summary

In Bangladesh, rural households rear cattle as a component of mixed farming rather than on a truly commercial basis. Like most Asian countries, rural Bangladeshi women extensively participate in livestock management, especially in rearing dairy cows (FAO, 2003; Anderson and Eswaran, 2007; Hashemi et al., 1996; Kabeer 1998) yet society rarely recognizes them as farmers. Consequently, women still receive limited extension services or other support and therefore their contributions to dairy value chains are less than they could be.

Focusing on women's significant roles as dairy farmers and managers of nutrition for their families, this research analyses the real needs of women dairy farmers of Shahjadpur, Bangladesh by collecting individual-level information about their constraints to securing sustainable income and managing family nutrition. Through this study, it is revealed that scarcity of feed and fodder, inadequate veterinary services, lack of extension services, lack of access to improved breeds and artificial insemination, lack of suitable marketing facilities, and complex terms and condition for institutional credit are significant constraints the dairy cow-rearing community faces. Although cow rearing can enable rural women to be involved in income generating activities, they have little control over how their household uses that income. Also, socio-cultural practices are such that those in the farming community do not recognize women as earners or breadwinners, so most women are still not able to visit local markets; overall, the local community members and dairy firms see this value chain as men's domain.

The research highlights the gap between women dairy farmers' specific needs and the kind of support available to them. Most of the women lack adequate knowledge, training, and money for rearing high yielding breeds of dairy cows. They know little about services such as government livestock services available at the sub-district livestock office. Besides, the nongovernmental organizations (NGOs) working in the study villages mainly focus on increasing the production by increasing the numbers of cows. They are running credit programs for women farmers without paying attention to intra-household gender relations that keep women under men's control in all respects.

Based on the field findings, this research identifies and develops potential interventions to meet the needs of women farmers and thereby improve their livelihood security and family nutrition status. Suggested interventions include:

- facilitating dairy cow rearing loans with easy terms and conditions
- regular short training programs on dairy management
- introducing life insurance for dairy cows
- introducing High Yield Varieties fodder
- helping farmers organize so they have stronger negotiating power in the market accumulating the funds needed for cold storage
- improving and subsidizing infrastructure development such as storage and roads

Coordination between relevant government organizations (related to health and agriculture) and linkages between government and private sectors are required to promote those strategies. Furthermore, men are critical stakeholders in ensuring women's empowerment through dairy cow rearing. Therefore, encouraging men to be actively involved in the effort to challenge and change the existing gender hierarchy stereotype is likely to influence the path to gender equity. In this regard, sensitizing community men and boys through campaigns, workshops and cultural programs about gender issues by governmental organizations and local NGOs may bring about change.

Chapter One: Introduction

1.1 Background

Bangladesh is a densely populated developing country, and its economy mostly depends on agriculture. About 47% of the total working population of Bangladesh is in some way related to agriculture, which contributes about 19% of the Gross Domestic Product (GDP) (Economic Review, 2013). Livestock is the prominent agricultural sector, which contributes 3.5% to the GDP (Economic Review, 2013). Rural households rear cattle not on a truly commercial basis but as a component of smallholder mixed farming. Remarkably, Bangladesh has one of the highest cattle densities: 145 large ruminants/km2 compared with 90 for India, 30 for Ethiopia, and 20 for Brazil. However, most of them trace their origin to an inferior genetic base. The average weight of local cattle falls 25-35% short of the average weight of all-purpose cattle in India. Milk yields are extremely low: 200-250 litres during a 10-month lactation period in contrast to 800 litres average in Pakistan, 500 litres in India, and 700 litres average across Asia (B.B.S., 2011).

Women's active participation in agriculture is high throughout Asia with estimates ranging between 35 to 50%, now exceeding 50% in Bangladesh (Team & Doss, 2011). Like most Asian countries, in Bangladesh rural women extensively participate in livestock management, especially in rearing dairy cows (FAO, 2003; Anderson and Eswaran, 2007; Hashemi et al., 1996; Kabeer 1998). Dairy cow rearing seems to be a profitable venture; hence, the number of dairy cows in Bangladesh increase every year (see Table 1). The principal advantage to increasing livestock productivity is the sustainable improvement in producer income. Family nutrition may improve, e.g., by providing milk to the children and pregnant or elderly women. Acknowledging that fact, many development organizations in the global south have emphasized livestock development, but existing extension policies and interventions often fail to address the needs of female farmers. Thus, gender inequality not only persists but also widens over time in the livestock sector. Conventional livestock extension services also undercount health and nutrition aspects. Therefore, the farmers remain unaware of the nutritional value of livestock products, and the quality standard they should maintain while raising livestock, which can have critical health and nutrition consequences for the producers, their family members, and consumers.

Table 1: Increase in the number of cattle raised in Bangladesh from 2006 to 2011

Year	No. of Cattle (in million)
2006	22.87
2007	22.87
2008	22.90
2009	22.98
2010	23.03
2011	23.12

Source: B. B. S. (2011)

Society rarely acknowledge Bangladeshi women as livestock farmers. This underestimation, women's poor resource entitlement (e.g., education, cash/credit, ownership of land/livestock) and prevailing discriminatory social practices (e.g., women's reproductive work burden and restricted mobility) act

as barriers for female livestock farmers to access livestock extension services and interventions (Petit, 2016). Simultaneously, though women's participation in livestock rearing is extensive, they are merely involved in selling the products and controlling that return (Rashid and Gao, 2012). For this reason - though rural women are the primary caretakers of their children's health and nutrition - they have a negligible say in family food expenditures. Also, with their poor educational background, rural women lack adequate nutrition knowledge, which prohibits them from effectively managing their family's nutrition.

Smallholder farmers, most of whom are women, produce nearly 80 percent of the milk in Bangladesh and the Asia-Pacific region. Dairy milk production has been increasing in Bangladesh (see Table 2). Therefore, we should ensure enhanced participation of women in the dairy sector, in which women not only contribute their labor but also become active participants in strategic decision-making (FAO, 2015). We can assume that if female dairy cow farmers are better equipped with knowledge, technology and best practices in dairy production, they will find ways to improve their situation by strengthening their bargaining position within households and other actors in the value chain.

It is likely that more empowered women will better manage their family's food security and nutrition (Gillespie and Kadiyala, 2012; Hawkes and Ruel, 2007; Leroy, Ruel, and Olney, 2008; Meinzen-Dick et al., 2011; Ruel and Alderman, 2013). This research aims to give recommendations to develop gender-responsive and nutrition-sensitive dairy cow agricultural policies and interventions to benefit the rural households with sustainable income and improved nutritional outcomes.

Table 2: Increase in the amount of milk produced in Bangladesh from 2006 to 2011

Year	Production of Milk (Million tons)
2006	2.27
2007	2.28
2008	2.65
2009	2.29
2010	2.37
2011	2.95

Source: B.B.S. (2011)

It is hard to envision how women can become more empowered without men supporting such changes. Men play crucial roles in society, being in the most powerful position within the current patriarchal setting. Therefore, encouraging men to contribute to changes in gender roles is likely to be very influential in the quest for gender equity. Men are critically judged and assessed by themselves, by their peers, by their elders, and by most women based on the dominant ideals of manhood. Therefore, it is important to engage men in the process of ensuring women's empowerment also in dairy cow rearing in a way that does not diminish their ideals. Achieving successful gender-responsive and nutrition-sensitive dairy cow agricultural policies and interventions will be possible if policymakers can create a win-win situation in the eyes of both men and women.

1.2 Literature Review

> "Evidence of the effectiveness of targeted agricultural programmes on maternal and child nutrition, with the exception of vitamin A, is limited; strengthening of nutrition goals and actions and rigorous effectiveness assessments are needed." (Ruel and Alderman, 2013)

There exists a diverse range of research on rural women's livelihood strategies. Many of them are related to the cattle rearing sector and provide information of farmers' socioeconomic characteristics, information about cattle, feeds and feeding systems, milk production, and household cattle rearing problems. Various studies reveal that, despite years of gender sensitization in many institutions, the role of women in dairy cow rearing and marketing their products continues to be underestimated. It is widely assumed that if women have equitable control over milk production strategies, marketing, and income, their household income will increase along with spending on food (World Bank, 2012). There is substantial evidence that women—as mothers and primary caretakers—are more likely to influence health and nutrition outcomes of their children and their families as a whole (FAO, 2011; Quisumbing, 2003; Smith et al., 2003; Bhagowalia et al., 2012; Quisumbing and Maluccio, 2003; Smith and Haddad, 2000). However, there is little evidence of the positive impacts that targeted agricultural interventions have on maternal and child nutrition (Berti, Krasevec, and FitzGerald, 2004; Masset et al., 2012; Ruel and Alderman, 2013).

It is clear that although women's empowerment seems strongly associated with improved nutrition outcomes, more research is needed to analyze the pathways that lead to improved nutrition. Many studies point to women's empowerment as an important pathway by which agricultural programs can achieve nutritional impacts (FAO, 2011; Gillespie and Kadiyala, 2012; Hawkes and Ruel, 2007; Hoddinott, Rosegrant, and Torero, 2012; Leroy, Ruel, and Olney, 2008; Ruel and Alderman, 2013; World Bank, 2011). However, some studies address the importance of examining the women's roles as family caretakers and note how women's empowerment could act as a pathway between agricultural interventions and nutritional outcomes. This may occur, for example, through women's enhanced control over assets and resources or improved knowledge about nutrition practices (Meinzen-Dick et al., 2011).

In Bangladesh, researchers have long been paying attention to unveiling the economic value of dairy cow rearing. The study conducted by Halim (1992) showed that the average lengths of lactation period for local and crossbreed dairy cows were 228 days and 254 days, respectively and milk yield per day was 1.30 liters and 3.09 liters. The study identified some problems with raising dairy cows in rural areas of Bangladesh, such as scarcity of feeds and fodder, lack of veterinary care and services, lack of grazing land, and the low price of milk. Choudhury (2005) studied the profitability of dairy farming under "Bangladesh Milk Producer Co-operative Union Limited (Milk Vita) in Sirajganj district. This study reveals that cross breed dairy cow rearing was a profitable business for the people of Sirajganj. Islam (2005) conducted an analysis of the socioeconomic impact of improved supplementary feeding or rearing dairy cattle and found that smallholder dairy farming can indeed be profitable.

Quddus (2006) performed a study on the profitability of dairy farming, milk consumption patterns, and the marketing system of dairy owners. He found that the net return of dairy milk in a commercially oriented region like Sirajganj was significantly higher than that of other regions because farmers reared cross breed cows and fed them high-quality feed. Net return from the dairy enterprise was on average 69% of the gross cost, and this figure was the highest in the semi-urban regions (75%). The positive values of marginal value product indicate that addition of dry fodder, capital investment, and

labor would add positive returns through milk production. The average per capita daily milk consumption by the dairy owners of different income classes and different regions varied significantly.

From the above literature, it is evident that most of the studies conducted so far focused on the productivity aspect of dairy cow rearing. Few studies focused on the gender or household nutritional aspects of rearing household cattle. Thus, I have designed the present study to add insights for developing gender-responsive and nutrition-sensitive dairy cow agricultural policies and interventions.

1.3 Objectives

Dairy cow development policies and interventions can be redesigned with a focus on women's empowerment to ensure better productivity and nutrition benefits. Hence the objectives are:

1. To reexamine the synergy between dairy cow rearing, women, and child nutrition.
2. To suggest gender-responsive and nutrition-sensitive interventions by assessing female farmers' needs and aspirations.
3. To sensitize the local community about women's active participation in dairy farming as a means to achieve better economic and nutritional benefits.

1.4 Research Questions

1. What are the strengths and needs of women in the Shahjadpur area as dairy cow farmers and family nutrition managers?
2. How can governmental and non-governmental organizations provide female farmers with better access to information, training, and technologies about dairy cow rearing and good nutrition practices?
3. How do we sensitize men so they support equitable access to agricultural services and control over returns from dairy farming?

1.5 Expected Outcomes

1. Production of empirical evidence of women's significant role in livestock production and family nutrition management.
2. Building gender-responsive and nutrition-sensitive institutions that address the needs and capacities of women dairy cow farmers.
3. Sensitizing men in the community about women's critical role in meeting the nutritional needs of children, and that dairy cow rearing can help achieve that.

Chapter Two: Conceptual Framework

This study considers women's empowerment as a prerequisite to improve agricultural extension policy and programs. Kabeer (2001) defines empowerment as the extension in people's capability to make tactical life choices in a context where this capability was previously denied to them. In this action research, we used the Women's Empowerment in Agriculture Index (WEAI) to identify and analyze different challenges that women face in the dairy sector.

The WEAI is a survey-based index designed to measure the empowerment, agency, and inclusion of women in the agricultural sector in an effort to identify ways to overcome those obstacles and

constraints (Alkire et al., 2012). The WEAI is a weighted average of two sub-indexes: (1) the five domains of women's empowerment (5DE) and (2) gender parity (the Gender Parity Index, GPI). The 5DE sub-index shows how empowered women are capturing the roles and extent of women's engagement in the agricultural sector in five domains:

1. Production: This domain concerns decisions over agricultural production, and refers to sole or joint decision making over food and cash-crop farming, livestock and fisheries as well as autonomy in agricultural production.
2. Resources: This domain concerns ownership, access to, and decision-making power over productive resources such as land, livestock, agricultural equipment, consumer durables, and credit.
3. Income: This domain concerns sole or joint control over the use of income and expenditures.
4. Leadership: This domain concerns leadership in the community, here measured by membership in economic or social groups and comfort in speaking in public.
5. Time: This domain concerns the allocation of time to productive and domestic tasks and satisfaction with the available time for leisure activities. (Sraboni, Quisumbing and Ahmed, 2013).

Gendered social norms form a kind of pre-condition for household bargaining power (Agarwal, 1997). Research evidence shows that households do not necessarily act in a unitary manner when allocating resources. Women and men often have different roles that affect the allocation of food and nonfood resources and may therefore distribute these resources differently, based on their bargaining power within a household (Alderman et al., 1995; Hoddinott and Haddad, 1995; Quisumbing and Maluccio, 2003; Quisumbing, 2003). Women derive bargaining power from having resources such as income and productive assets, therefore, women's earnings have a positive impact on their bargaining position (Agarwal, 1994; Kabeer, 1999; Quisumbing, 2003). The household bargaining literature distinguishes between two types of measures for bargaining outcomes: direct measures and indirect measures. Direct measures of bargaining outcomes concern the extent of decision-making power that women have vis-à-vis their partners. Indirect measures concern wellbeing outcomes, such as better health, more self-esteem, or less domestic violence (Panda and Agarwal, 2005; Datta, 2006). For time constraint, in this research we have primarily concentrated on investigating the direct measures of bargaining outcome, i.e., the extent to which women's enhanced income contributes to negotiate decision-making power with marital partners (Figure1).

The research emphasizes that gender differences in intra-household bargaining power are linked with the person's extra-household bargaining power, such as with the community, market and the state. As the existing patriarchal community settings challenge women in every area of their lives, where men play the major role in decision-making, involving community men will enhance women's bargaining power in the family as well as in the communal sphere. In this regard, gender sensitization efforts that target men are important contributors towards ensuring women's empowerment.

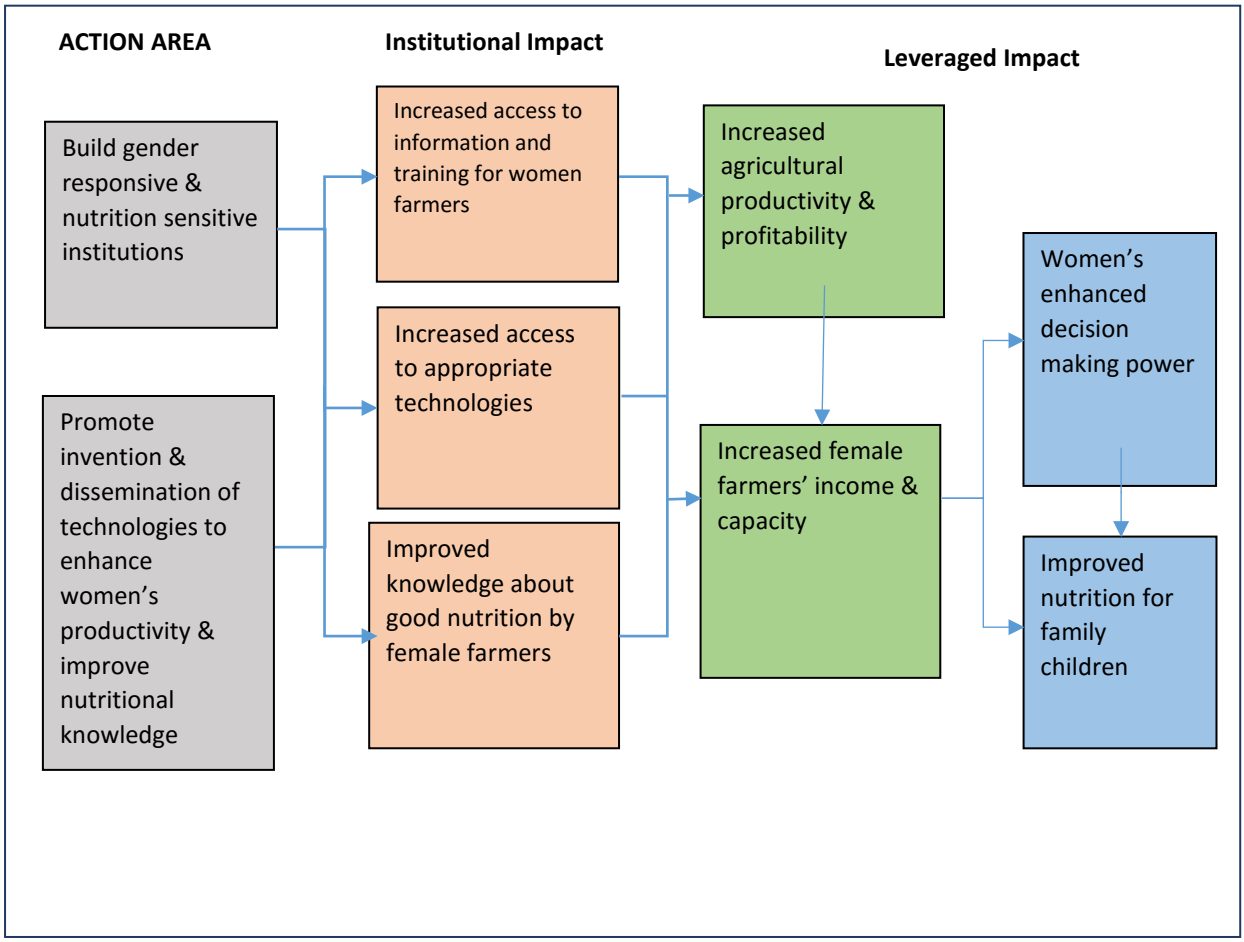
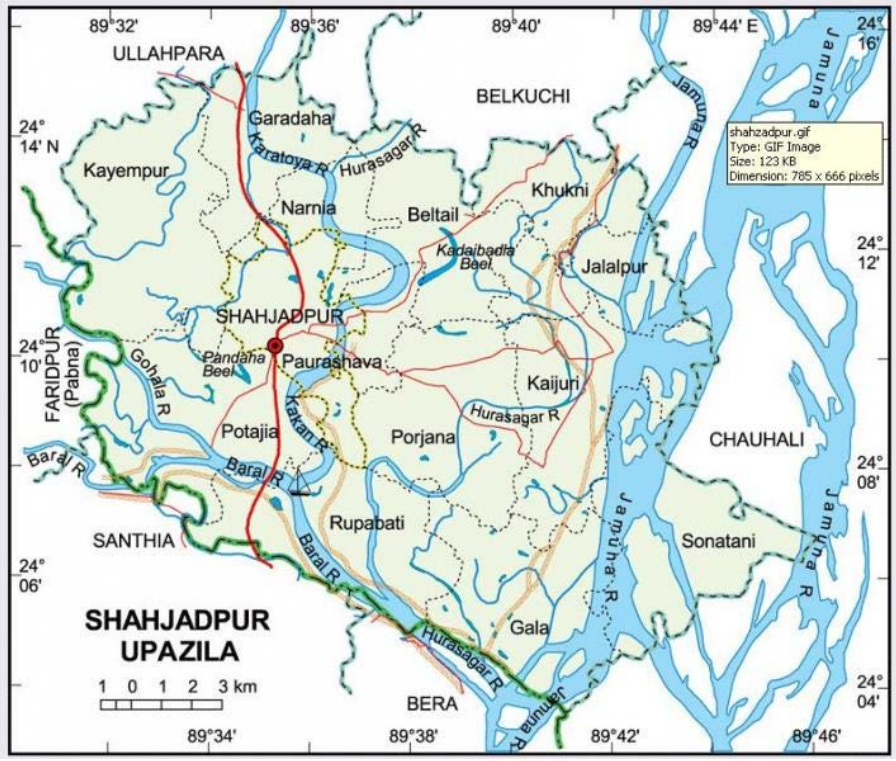


Figure 1: Conceptual Framework

Chapter Three: Methodology

Research methods are "technique(s) for ... gathering data" (Harding, 1987) and are generally dichotomized into being either quantitative or qualitative. Feminist researchers have criticized quantitative positivistic methods for ignoring and excluding women and "adding" women to male knowledge, whereby the findings from research on men are generalized to women (Stanley & Wise, 1993), or "male stream methods" are used to research the experiences of women (Mies, 1983). It has been argued that methodology itself has been gendered (Oakley, 1998), with quantitative methods traditionally being associated with words such as positivism, objectivity, and masculinity. In contrast, qualitative methods have generally been associated with interpretivism, subjectivity and femininity (Westmarland, 2001). Besides, it has always been argued that qualitative methods are more appropriate for feminist research by allowing subjective knowledge, and a more equal relationship between the researcher and the researched (Oakley, 1974; Jayaratne, 1983).



During the pilot survey in the study site we found people unwilling to participate in questionnaire survey, rather they liked talking in informal ways. They liked to know about the researchers and research objectives more closely and wanted to share their experiences personally to the researchers. Therefore, we chose tools like in-depth interviews and Focus Group Discussions (FGDs) to bring out the information rooted within the layers of local environment. The research team visited the study villages twice to gather information about dairy cow rearing and existing dairy cow development policies. The data collection procedure included two phases: pilot survey (April 19 and 20, 2016) and final data collection (May 05 to 09, 2016). During both phases, we used focus group discussions (FGDs) and in-depth interviews of the respective study respondents. The pilot survey served the purpose of gathering baseline information about women and men who are rearing dairy cows in the study region: their livelihood strategies, socio-economic condition, and the eco-social environment of Sirajganj area, and existing government and non-government support services provided to the dairy farmers. In the second phase, we conducted semi-structured interviews and FGDs.

The main purpose of this research is to explore how dairy cow development policies and interventions can be redesigned with a focus on women's empowerment to ensure better productivity and nutrition benefits. We have followed a qualitative methodology with a focus on developing strategies to improve dairy productivity in consultation with farmers. Our major mission was to reach people in way convenient to them and suitable to gathering in-depth data about their real needs and constraints (Westmarland, 2001).

3.1 Study Villages

We conducted the research in two specific villages in Shahjadpur Upazila of Sirajganj district, situated in the northwest part of Bangladesh. Those villages are Reshambari in Potajia Union and Kharuajongla in Kayempur Union. The main occupation of the people of Shahjadpur is agriculture (42.73%). Due to the abundance of grazing lands arising from the surrounding Jamuna River and the demand of dairy milk in both formal and informal markets, many households of this area depend on cattle rearing for family survival and well-being. People raise cows as livestock for meat (beef) and as dairy for milk. Along with local varieties, people raise high-yielding cows imported from Australia, India and Pakistan. In the study villages, most of the marginal families own one or two cows while the well-off families own large farms.

Table 3: Information related to dairy cattle rearing in Shahjadpur Upazila

Total Area	324 square kilometers
Total population	5.61,076
Total male population	2,83,330
Total female population	2,77,746
Number of families	1,24,074
Total number of livestock	3,83,191
Total number of dairy cow	1,70,507
Daily milk production in winter	6,90,000 liters
Daily milk production in summer	5,85,000 liters
Total number of dairy farm (registered)	3,700
Total number of dairy farm (unregistered)	3,900
Upazila livestock development center	01
Veterinary hospital	01
Regional veterinary diseases research organization	01
Artificial insemination center	02
Artificial insemination sub center	01
Artificial insemination service point	12

Source: Shahjadpur Upazila Parishad (2016)

Both study villages, Reshambari in Potajia Union and Kharuajongla in Kayempur Union, are near the banks of the Jamuna River and prone to seasonal flood every year during monsoon. The Jamuna River brings both blessings and curses for the people of these villages. There is a continuous supply of fodder for the cattle in the banks of the Jamuna River, then almost every year, seasonal floods kill many cows. The seasonal floods also make it impossible to cultivate crops year-round in the study districts. As a result, although most of the population's main occupation is land cultivation, cow rearing serves as a secondary source of income for many of the families in these villages. According to the field survey, almost two-thirds of the households in the study villages rear dairy cattle as a source of family income. Another influencing factor for the rearing of dairy cows is the growing market for selling dairy milk and trading of dairy cows. Our male respondents (from whom we collected information through snowball sampling as we did not find any female agricultural extension officers, veterinarians, pharmacists, NGO worker, or trainers) informed us that female participation in cow rearing is increasing rapidly due to availability of micro-credit from different organizations like Care Bangladesh, Japan International Cooperation Agency (JICA) and Poor People's Development (PPD) (umbrella organization of Palli Karma-Sahayak Foundation (PKSF)), religious progressiveness of local people and sustained demand of Milk Vita dairy farm.

3.2 Research Respondents

We conducted the pilot study from 19 April 2016 to 20 April 2016 in Shahjadpur at Sirajganj through which Reshambari in Potajia Union and Kharuajongla in Kayempur Union were selected as study villages. All of the respondents of Key Informant Interviews were (KIIs) selected by purposive sampling as their job designations were the primary selection basis. Men and women respondents for the FGD and in-depth interviews (IDIs) were selected through snowball sampling. After going to the study villages, respondents were selected for the FGD and IDI with the help of the local informants. The number of respondents from the focus group discussions during final data collection varied because of the respondents' availability. We conducted the interviews separately for women and men respondents. As men play an active role regarding dairy cow rearing and share the workload with women most of the time, including men respondents helped to get the entire picture of the situation.

3.3 Data Collection Process in Detail

We conducted a total of 12 IDIs, 8 KIIs, and 4 FGDs in the two villages. We also interviewed NGO officials, veterinary doctor, marketing officer of veterinary medicine, livestock field assistant (Insemination) and manager (Society) of Bangladesh Milk Producers' Co-Operative Union Ltd. (Milk Vita) to gain insight about the existing social reality. All possible types of stakeholders were included in the KII and FGDs to capture views on gender situation of the areas.

In-depth Interviews

We conducted six IDIs in each of the study villages. In total, we interviewed 12 women dairy cow farmers. Among them, we selected ten interviewees from the prior focus group discussions. A couple of interviewees were randomly selected from the study area to crosscheck the validity of information gathered from previous interview sessions.

Key Informant Interviews

Eight KIIs were conducted in the area under study with people from different spheres of the society, which included representatives from NGO officials, a veterinary doctor, a marketing officer of veterinary medicine, a livestock field assistant (Insemina tion) and a manager (Society) of Bangladesh Milk Producers' Co-Operative Union Ltd. (Milk Vita).

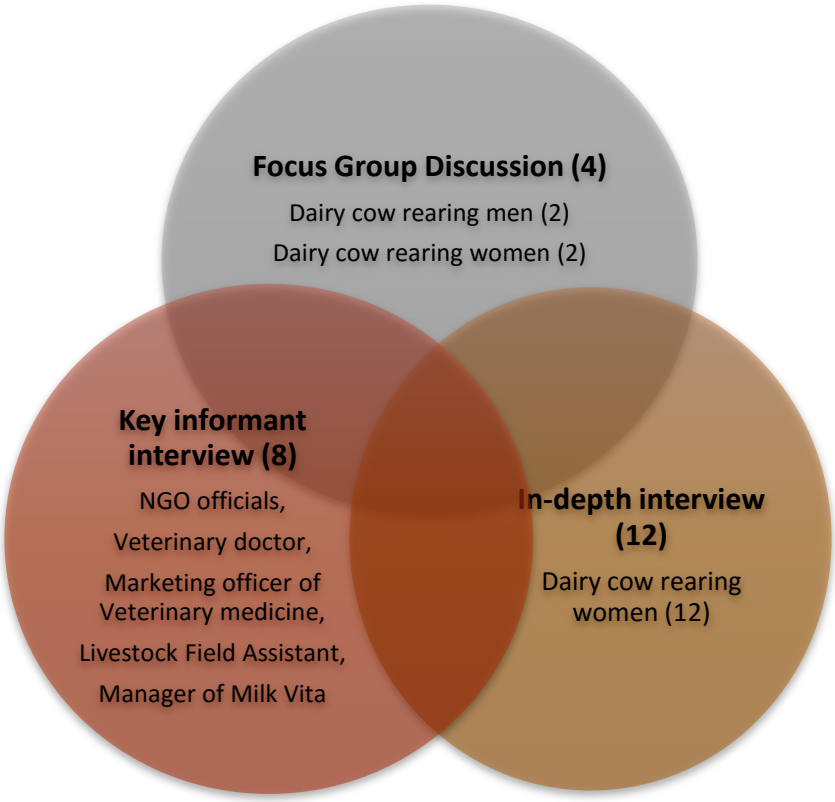


Figure 2: Tools used for primary data collection

Focus Group Discussions

We conducted FGDs at the community level to gather information on community perception about dairy cow rearing and women's empowerment. We searched for detailed insights about activity profiles of men and women, access and control over resources, positive changes in the dairy sector, social norms, customs, behaviors, and barriers to women's participation in dairy farming and family management through asking various questions to the respondents. We conducted two FGDs in each of the villages of the area under study for a total of four FGDs: two with dairy cow rearing women and two with dairy cow rearing men. The FGDs included nine to 12 respondents. Each session lasted for 30 to 40 minutes. Research team member took notes and recorded the conversation with the consent from the respondents.

3.4 Ethical Considerations

While collecting data from the field of study, the research team maintained the ethical standards that provided the study with more in depth insights without compromising the freedom and confidentiality of the respondents. Before conducting any of the FGDs and in-depth interviews, we collected the informed verbal consent from the respondents. We recorded the FGDs and interviews only after receiving the permission from the respondents. The hierarchical relationship between researcher and respondent were avoided and a friendlier approach was undertaken while conducting the FGDs and in-depth interviews. The research team informed the respondents prior to the FGDs and interviews that they were free to leave or skip any questions if they found it was offensive or too sensitive for their liking. The research team held that maintaining respondents' confidentiality was the utmost

priority. The FGDs and interview note-keeper read out the key findings to the respondents after the completion of every FGDs and interviews and asked them whether the notes were proper and just. In this manner, the research team tried to maintain the ethical standards while collecting data from the field of study.

Chapter Four: Study Findings

> *"Usually we get 4000 BDT every week by selling our milk to Milk Vita. From that amount we have to use 3000 BDT each week to buy fodder and we use the rest 1000 BDT for the betterment of our household. But when milk production gets less because of any reason like summer heat or lack of fodder, we have to compromise that 1000 BDT and make sure the cow is well fed." Nayan Tara*

In Shahjadpur, dairy cows play a crucial role in the management of household living. In this area, people have practiced dairy cow rearing for a long time at the household level. Household dairy cow rearing provides work opportunities for the poorer segments of the population, especially poor women. The availability of this form of traditional self-employment to rural dwellers, particularly marginal people, is important where there is scarcity of alternative income generating opportunities. Dairy cow rearing thus widens the scope for the poor with limited access to land to enhance their income for their family. Rearing dairy cows also plays a crucial role to ensure household food security, through improved income and nutrition for the low-income groups. People from low-income groups rear dairy cows to sell milk and calves; use cow dung as fuel and fertilizer; and provide milk to their children to improve their nutrition.

4.1 Gender Roles in Dairy Cow Rearing

In the study villages, Reshambari and Kharuajongla, the research team found that both women and men were participating in dairy cow rearing, but most of the times people perceived dairy cow rearing as an integral part of household activities performed by women.

Table 4: Gendered responsibilities in dairy cow rearing

Activities	Primary Responsibility
Feeding cows	Women and Men
Cleaning up cow dung	Women
Making fuel from cow dungs	Women
Bathing the cow	Women and Men
Collecting grass from the field	Men
Milking the Cow	Men
Selling the milk	Men
Consulting the doctor	Men

Source: Field study (2016)

The above table reveals that generally, women do some specific tasks regarding cow rearing and if we look closely, we find women are assigned to feeding the cows, cleaning up cow dung, making fuel from cow dung, and bathing the cow. Women do not need to go outside the home to perform these tasks. On the other hand, the men's responsibilities include collecting grass from the field, milking the cow,

selling the milk, and consulting the doctor, tasks which are mostly related to the outer sphere and require physical strength. According to the respondents, men's responsibilities are considered more important and given higher value while women are responsible for specific tasks that men never do. For example, cleaning up cow dung is considered inferior work to which only women are assigned. On the other hand, men usually take care of milking or selling milk. The dairy cow rearing families of Shahjadpur have followed this distribution of work for years and consequently, it has led to development of specific skills and value of work depending on gender identity.

4.2 Time Spent in Dairy Cow Rearing

The field investigation revealed that women usually spend around 14 hours doing household work every day, among which 6 hours are spent on dairy cow rearing.

Table 5: Time spent by women for dairy cow rearing everyday

Time of the day	Hours spent	Tasks done
Morning	3 hours	Taking dung out from cowshed, provide food and water
Afternoon	2 hours	Provide food and water, cleaning up cow dung, bathing the cow
Night	1 hour	Checking the cow if it's alright
Total	*6 hours everyday*	

Source: Field study (2016)

On the other hand, the responsibilities of men, including collecting grass from the field, milking the cow, selling the milk and consulting the doctor, either do not demand much time or are not regular tasks. The FGDs with male respondents revealed that men hardly spent two hours every day on dairy cow rearing, consisting of one hour in the morning and one hour in afternoon to milk the cow and later to sell the milk to the milk collectors.

4.3 Cost Related to Dairy Cow Rearing

Dairy cow rearing involves huge costs. The daily nutritional requirements of the dairy cows should be fulfilled to get an adequate amount of milk from them. So, the following amount of food needs to be supplied daily to each cow:

Table 6: Required food amount for dairy cows

Cow's weight	Granular food		Straw		Green grass	
	Dried (kg)	Normal (kg)	Dried (kg)	Normal (kg)	Dried (kg)	Normal (kg)
100	1.00	1.11	1.33	1.48	0.67	3.35
150	1.50	1.66	2.00	2.22	1.00	5.00
200	2.00	2.22	2.66	2.96	1.34	6.70
250	2.50	2.77	3.33	3.70	1.68	8.38

Source: Union Level Training Activity on Cattle and Poultry Rearing, Department of Livestock (2010:11).

To prepare the granular food for cows, households use the following items:

Table 7: Cow's granular food ingredients and amount

Ingredients	Amount
Wheat bran	50%
Rice chaff	20%
Lentil's chaff	18%
Soy meal	10%
Mineral mix	1%
Salt	1%

Source: Union Level Training Activity on Cattle and Poultry Rearing, Department of Livestock (2010:11).

In most of the dairy cow rearing households, there is a need of technological tools such as a tube well, a water pump, and a fan for cows during hot summer days. Electricity shortages make the situation much worse. They have to manage alternative power sources to run the fan for the cows or use the motor (if available) to fetch water for the cows. Such alternative power sources like diesel generators increase the financial investments to cows many folds. A scarcity of such equipment was apparent in most of the household we visited. The major reason of such scarcity is poverty.

4.4 Strengths and Needs of Women as Dairy Cow Farmers and Family Nutrition Managers

Sirajganj is famous for its dairy industry, most of the families from low-income groups rear cows to support their families. While asked about the start of dairy cow rearing a respondent, Mst. Moyna Khatun, said,

> *"We don't have any agricultural land so we can't grow our own food. We have to buy everything from market. It's really hard to survive with my husband's income only. That's why I started rearing cows after my marriage. I have seen the same practice at my parents' place as well."*

Strengths of Female Farmers

- Indigenous knowledge
- Generational practice
- Available local fodder
- Belonging to dairy cow rearing community
- Acknowledgement by family members
- Support of community people
- Supportive market structure

Like Moyna, other respondents mentioned that they did not have formal training on dairy cow rearing. They had learned it from their mothers. Such strategy helps families to ensure economic security and gives women a sense of self-confidence. In this regard, Moyna said,

> *"As I am a woman, I have to stay at home and taking care of dairy cows is part of my household activities. Besides, it generates some income as well." Mst. Moyna Khatun*

From the interview with Moyna it became evident that she does most of the work regarding dairy cow rearing in her home. She said that when she could save a handsome amount of money by selling milk, she used that money in some productive work like refurnishing the house, buying some necessary stuff for the family, or providing better food to their children.

> *"Sometimes I try to buy fruits or meats for my kids with the money I save from selling milk." Mst. Moyna Khatun*

This way, she was receiving more recognition from her in-laws than earlier. This obviously makes women like Moyna feel a little more empowered.

Ownership of Dairy Cows

On average, women of Reshambari and Kharuajongla spend a fourth of their time every day in rearing dairy cows, but they were not acknowledged as cow owners. They have little control over the money generated from selling milk. From the 12 women respondents of this study, nine women acknowledged their respective husbands as the owner of the cows they had who confirmed that ownership by dint of their position as household head; the other three women claimed to have joint ownership with their respective husbands. Interestingly, all these women bought the cows taking loan from a local NGO in their names. Still, they did not consider themselves as owners. As a logical consequence, these women also did not have any control over the money generated by selling milk or calves. They further added that male members of family usually are the ones making decisions about how to spend the money earned and women had very little to say in that regard. According to the respondents, most of the time they spend three-fourths of their weekly income from milk on the cows: for buying fodder, medicine, and other stuff. They spend the remaining money on household purposes as per the guidance of men.

While the research team asked women respondents whether they face any kinds of barriers from their family regarding dairy cow rearing, they disagreed. Through further interrogation, we found that most of the time their husbands and in-laws treated these women rather condescendingly to put more effort in dairy cow rearing as it could bring more money to the family. Such behavior is increasing women's workload and putting immense pressure on them because they are solely responsible for daily household activities.

Household Milk Consumption

While investigating the daily household milk consumption scenario, we found that most of the households keep milk for the children. The elder members of the family, especially women, seldom consumed milk. The households only keep milk for children if they get enough milk from their cows. Households' first priority is selling the milk to repay loans and manage enough food for the cows. Nonetheless, most of the female respondents of the study knew about milk's nutritional value. They knew milk consumption is necessary for children. In the words of one woman,

> *"I provide milk to my kids. It helps with their nutrition. As my kids go to school milk will enhance their intelligence and strength." Mst. Tara Khatun*

Table 8: Weekly household milk consumption

Person	Weekly milk consumption (on average)
Husband	1.5 - 2 liters
Wife	0.5 – 1 liter
Per child	1.5 – 2 liters

Source: Field study (2016)

Trainings on Dairy Cow Rearing

Most of the women respondents did not recognize the importance of trainings to rear up their dairy cows in a better way. It could be said that they were not aware of the significance of trainings due to their lack of intuitional knowledge and access to information. As most of the women respondents had very little or no formal education, they were unaware of the importance of training. Most of the respondents focused on infrastructural and technical support instead of trainings to raise their cows better. A female respondent from FGD said,

> *"We don't need any kind of trainings. We know how to rear dairy cows. All we need is infrastructural support for our cows like electricity, water pumps, milking device etc."*

According to the respondents, the knowledge they have about rearing cows is sufficient. They believe this because they have seen their parents rear dairy cows without any trainings. One of the respondents said,

> *"Since my childhood, I have seen my parents raising dairy cows. It's just like other household works. Why do I need any training for that?" Mst. Moyna Khatun*

Moreover, in the FGDs the respondents informed that they were unable to bear the expenditure associated with any formal training on cow rearing, though they recognize that it could boost up dairy productivity. According to them, they are already so deep down in poverty that they cannot always buy the required amount of food for ensuring dairy nutritional intake for their families and their cows. There is no way to bear the cost of any training. The following quote from one of the respondents of FGD sums up the expression for almost everyone present there.

> *"We can't pay any money for the training we don't need."*

Rather most of the respondents said that they could take trainings if the organizing authority can provide travel and daily allowance for them. A male respondent suggested,

> *"We are very poor people and live hand-to-mouth every day. Being engaged in any training, even for a day, means no food for my family. So if the organizing authority could provide me some incentives for joining the trainings, then maybe people like me would be interested."*

There were some exceptions as well. Though all the respondents were from similar socio-economic and educational backgrounds, some of them have seen training in a very positive way and have acknowledged the need for training to increase milk quality and production. Those who comprehended the importance of trainings to boost up milk production along with the quality of the milk, said that they needed training on how to keep cows healthy, how to make cows eat regularly, what to do to get more milk from cows, as well as training about insemination.

> *"I think we need training because I believe ensuring total betterment of cows is not possible with the only local knowledge we have. May be training could enable us to get more milk from our cows." Mst. Johura Begum*

Although these dairy cow rearing women do not have any sort of trainings regarding dairy cow rearing, their indigenous knowledge is helping them to be confident to rear dairy cows to support their families economically and nutritionally.

4.4 Government and Non-Government Organization's (NGO) Support to Dairy Cow Rearing Women

While most of the people of low-income class in Sirajganj have taken dairy cow rearing as one of the foremost strategies to manage family survival, from the field investigation it came out that they are keenly expecting for government and non-government organizations to help them as dairy farmers. From the FGDs and IDIs, some points regarding the existing services provided to the farmers and their and expectations from the Government and NGOs came out.

Information Gap about Government Services

There are: one Upazila livestock development center, one veterinary hospital, one regional veterinary diseases research organization, two artificial insemination centers, one artificial insemination sub center and twelve artificial insemination service point available in Shahjadpur Upazila. On the other hand, while consulting with an Upazila livestock officer, the research team came to know that for thirteen unions of Shahjadpur Upazila there is only one male livestock field worker, which makes it impossible for the designated person to provide regular service to dairy cow rearing communities.

From the field study, it became apparent that there is a huge information gap existing among the dairy cow rearing community about services provided by government organizations such as government livestock services available at sub-district livestock offices. The main reason is the distance and unavailability/absence of field workers. A respondent said,

> *"I know there is a veterinary hospital in Upazila Sadar but I have no idea what they do or what kind of assistance they provide." Nayan Tara*

Besides, despite women's significant role in livestock rearing, livestock service providing officials did not recognize them as cow owners. The situation worsens with the fact that women in the study areas have restricted mobility due to the existing socio-political culture. To improve their situation, the respondents expect initiatives from the government officials.

> *"Government should come to us and let us know what is better for our cows. Besides government should also provide free medical support and loans without interest." Mst. Johura Begum*

Ambiguous Role of NGOs

It is true that many NGOs are working in the study villages focusing on various socio-economic issues of the locality, but very few NGOs are working with the dairy cow rearing community. Most of such NGOs are focusing on increasing the productivity by increasing the numbers of cows or providing the dairy cow rearing community with superior cows. Many NGOs working with the dairy cow rearing community concentrate on women's empowerment as a major organizational goal. For this, they provide loans to women for buying dairy cows to enhance their economic participation as a mark of empowerment. As a result, and as an integral part of this mechanism, these NGOs always prefer to meet the husbands of their beneficiary women as collateral. Sometimes this strategy sends the wrong message to women; many of them consider that the NGOs are actually providing the loan to their husbands.

It is also difficult to expand NGO activities among the dairy rearing communities. Most of the time male field workers of the NGOS do not get easy access to dairy cow rearing women. Due to the prevailing cultural norm, women are hesitant to talk to unknown men. Consequently, women lack information and a clear understanding about the role of NGOs and how they can help them achieve empowerment through rearing cows. One of the respondents suggested a remedy,

> *"NGOs should consult with and provide information to both husband and wife. Most of the times men fieldworkers from NGOs come to visit us and just talks to the men in the family. They should talk to women as well, not only men." Mst. Laily Khatun*

The role of these loan-providing NGOs is restricted to providing loans and pursuing repayment. They do not provide any support or training for rearing cows. Sometimes they focus so much on loan repayment that people have to keep in mind that repaying loan is their priority over daily milk consumption or over any sorts of expenditures regarding family wellbeing. As a result, households sell milk to repay their weekly or biweekly installments without taking care of household consumption. Moreover, the NGOs provide loans to women based on whether they have husbands who, as they NGOs see it, can provide loan security. In this arrangement, it is the neediest people who get the least for their inability to manage collateral. According to a respondent of the study,

> *"NGOs provide us loans basing on the collateral we have. As most of us are very poor so we don't get the right amount of loan as we expect. If the NGOs could provide loans basing on our need, we could be better off." Mst. Moyna Khatun*

The Monopoly of Milk Vita

The Bangladesh Milk Producers' Cooperative Union Limited (Milk Vita) is operating in Shahjadpur as the main collector of dairy milk, who later process and sell the milk all over the country. Milk Vita goes door to door to collect milk from small farmers as they have formed collection points in almost every corner of the study villages. They have incorporated almost all their members systematically providing necessary services to the people. In reality, the service provided by Milk Vita is not free. Every time Milk Vita collects milk from farmers, they keep a little portion of money (equivalent to BDT 2) per liter before paying them. Essentially, Milk Vita takes their money and then provides some services to them with that money. Milk Vita also provides bonuses to milk providers twice a year, in June and December, with that money. They also provide prescriptions from veterinary doctors employed by them. Nonetheless, when the cows get sick farmers have to buy medicines themselves. Being stuck in such a mechanism of Milk Vita, most of the time people do not feel the urge to seek services from government officials. On the other hand, the non-member households of Milk Vita seek private services from local veterinary pharmacists, informal veterinary practitioners and veterinary doctors. They are concerned with the distance they have to cover to access free, government-provided livestock services, the money they have to spend to go to government hospitals, and they are in fear of lengthy procedures and harassment caused by intermediaries.

Name	Main activities	Strength	Weakness
Poor People's Development (PPD)	• Loan for women to buy dairy cow	• Ensuring women's empowerment through cow rearing	• Do not provide enough loan to buy hybrid cows without collateral • Do not concentrate on gender power relation within household
Sub-district livestock office	• Veterinary service • Vaccination • Training programs	• Low cost services for rural poor people	• Lack of human resources to provide door to door service to people • No attention to women's specific needs as dairy farmers

Name	Main activities	Strength	Weakness
Milk Vita	• Easy marketing system for dairy cow rearing people • Free doctors • Medicine in low costs	• Door to door services for member households	• Not concerned about women farmers' participation

From the findings of the field study, women of Shahjadpur are spending a quarter of their everyday life in rearing dairy cows. They do it as a part of household activities. They strive to ensure daily production accurately. They try to ensure cow's nutrition at any cost to get the maximum amount of milk from them. Even after putting such time and effort to dairy cow rearing, they have very little voice regarding the money generated by selling the milk. The men of the respective families make these decisions. Focusing on nutritional aspects, we found that households only keep milk for children's consumption when they get enough milk from their cows. Although they know about the nutritional value of milk, they prioritize selling milk to repay loans and buy enough fodder and medicines for cows. From the training aspect, it was found that most of the dairy cow rearing women believe that their indigenous intergenerational knowledge is enough to rear cows. Moreover, they do not have money or time to spend for formal training. As a whole, dire poverty and lack of information about the significance of scientific knowledge and techniques of raising dairy cows prohibit women to rear up their dairy cows in a better way. Most of the marginal families rear one or two local cows. It involves a lower cost and minimum return. They are unable to run large cow farms with hybrid varieties as it involves huge costs.

There also is a large information gap in the dairy cow rearing community about the services provided by government organizations. Furthermore, most of the NGOs working in the study villages focus largely on increasing the production by increasing the number of cows, not on raising their productivity. Although one of their major objectives is to ensure women's empowerment, they concentrate on only ensuing women's access to financial resources to reach this destination. They pay no attention to women's least control over resources that originates in the asymmetric gender power relations within households. Women also face social restrictions on their mobility that prevents them from accessing available livestock services or marketing milk by themselves. Examining all these specific constraints of women is important to design gender responsive and nutrition sensitive dairy farming programs for this locality.

Chapter Five: Women's Cow Rearing and Child Nutrition: Process of Dis/empowerment

Empowerment is a process that gives anyone full freedom and capacity to survive independently. According to five domains of WEAI, women's empowerment will ensure their decisions regarding livestock, access and power over productive resources, control over the use of income and expenditures, leadership in the community, and allocation of time to productive and household works and their satisfaction. Unfortunately, after doing longer work daily, most of the rural women in Bangladesh are facing barriers to surviving properly. Women in Shahjadpur are not the exception; though they are working hard to meet their family demands by rearing cows, they cannot prioritize their children's nutrition from dairy production. As head of the household and owner of dairy cows,

their husbands are primarily responsible for spending the money earned from selling milk. Women have little say in family expenditure. In this regard, empowerment through cow rearing would be very tough to achieve for the women farmers of Shahjadpur.

5.1 Understanding Women's Empowerment through Cow Rearing

It was expected that increased levels of cow milk production would help improve the socio-economic status of marginal female farmers in Shahjadpur. Increased production will contribute to secure their economic stability. Additionally, income earning capacity will improve their access and controlling power to take their own decision like what will they do with the money from cow's milk? Or how will they sell their cows/cow milk? How will they preserve milk for their children? Only increased level of cow's milk production cannot bring positive changes for female farmer's socio-economic status in Shahjadpur.

Why are increased level of cow's milk production not contributing to ensure women's empowerment appropriately? To find the answer, we must delve deep to understand the power relationship between women and men. In this regard, Dr. Gulzar, a veterinarian, stated his opinion:

> *"Women are responsible for managing 95% activities of cow rearing, but they do not take any decision independently and come to livestock or Milk Vita office. Due to traditional socio-cultural practices, mostly their husbands are influencing them to stay at home. Additionally, they are not getting the actual benefit from cows as their husbands are controlling both money and cows directly and indirectly, though most of the marginal female farmers are taking the cow loans from different organizations."*

Though women are working hard in this sector, their process of empowerment is still a big challenge for many reasons. Firstly, rural women are not recognized or identified as farmers in the patriarchal society. In this regard, Rehana Sultana, Credit Officer, PPD Local Branch, stated:

> *"Though most of the poor women are involving in cow rearing, they are not recognized as farmer."*

Secondly, marginal women are rearing cows, as they do not have alternative options to earn money or support their families. From their childhood, most of the marginal women found family women doing dairy cow rearing along with taking care of daily household activities. Until now, this tradition continues in marginal households where married women get involved in managing the cows owned by their husbands or fathers-in-law. They consider cow rearing as an integral part of their household activities. They do not take it seriously like other paid work. Regarding this issue Moyna Khatun, aged 40 stated:

> *"From my early days, I came to know that cow rearing is the only way to maintain our family. Before marriage, I was responsible to maintain cows at my father's house. Now I have three cows and my father-in-law gave me one of them to manage my family by selling cow's milk. From then, I am rearing cows as part of my household activities to meet household demands and it is almost like for 16/17 years."*

Thirdly, due to lack of female agricultural officer and veterinarian, most of the rural women are feeling uncomfortable to share their problems freely with extension officers/doctors. Another reason is unequal distribution of livestock resources between men and women., because without having recognition and decision making power only small amount of loans and short training program do little to change the poorest situation of women. Romisa Khatun, aged 45 said in this regard:

> *"Though mostly we are rearing cows, we do not have any female livestock officer or female veterinarian to get the information and services in a friendly environment. Besides, we do not have technological training and tools to improve our farming quality."*

These underlying factors result in female farmers' marginality in Shahjadpur. Most of them end up with a very minimum income from producing 1.5 lakhs liter cow's milk daily. However, this tiny amount secures their income-generating role within family, giving them a feeling of confidence and fulfilment to some extent. Family members also acknowledge their contribution.

In a generic sense, we can assume that increased income will be the way to ensure marginal women's access and power to get the benefits they lack. However, income-earning capacity cannot solely contribute to ensuring women's identity as fully independent farmers and cow owners. The traditional cultural practices make them unable to understand that they can be the owner or farmer like their husbands, though they are doing the majority part of cow rearing activities daily. Nannu Mia, aged 48, farmer stated his opinion in this regard saying:

> *"Usually women are not going to the market regularly in our village like town. They have to maintain the local socio-cultural values; otherwise society will disgrace them. I personally support this. If married women have husbands or adult son, why do they need to go to outside? I think if I take my decision - informing her, that's enough."*

It seems society does not treat women's involvement in cow rearing as an individual activity or occupation. When men are involving in this sector, society identifies them as farmers but at the same time if their wives are also involved, society recognizes them as involved in household work. As part of their role as housewives, women take care of the cow's nutrition but they cannot ensure their children's nutrition through the cow rearing income. The major reason is that they do not hold the decision-making power within their family. Men have sole control over the income and family expenditures, including expenditures on food and nutrition. Furthermore, marginal families indeed earn very little by selling milk. Their weekly income varies mostly between BDT 5000-6000, as three cows give ca. ten liters of milk per day for seven days a week (for a total of 200-220 liters of milk per week). Within this limited income, most of the families have little scope to invest more in child nutrition or to raise the productivity of their cows.

Additionally, as they have to maintain their cow's nutrition and health to get adequate milk, family nutrition becomes their secondary priority. Sometimes they face difficulties in managing granular food because they do not have enough money. Many of them stay in the same house with the, cows as they cannot afford separate cow shed. In this situation, women cannot think about their family's food and children's nutrition. To these women, poverty matters more, not the issue of women's autonomy or empowerment. Romisa Khatun aged 45, like Moyna Khatun aged 40, stated her argument saying:

> *"How we will think about our empowerment? We are doing cow rearing as part of our household work to survive barely. We are not even to think about our family food and children's nutrition regularly. From early morning to evening, at any cost we have to provide 12-15 kg food and enough clean water for our cows. Whether we eat two meals a day or not, have to feed them twice regularly to meet the weekly production. If we failed to get the weekly production, we will not be allowed to get the money from Milk Vita. Besides, would be tough to manage the others family expenses."*

However, the field investigation revealed that women do not face any family barriers to rearing cows; rather they face problems when it comes to market access and going outside the home since that is not seen as a part of their household activities. Being in a dairy cow rearing community provided women in the study area some ease regarding going out sometimes to the Milk Vita collection points to provide milk. When it comes to travel longer distance, e.g., going to the Upazila livestock office or to cattle markets, women face socio-cultural barriers. Although most of the women follow the norm silently, only few of them overcome the barrier imposed by society. Such a woman said,

> *"Whether I will go out or not is my personal decision. Besides, I have to decide how will I earn for the betterment of the family. Nobody else pays for my food."*

While talking to the respondents during FGDs and IDIs, it came out that community barriers, which once existed rigidly and gave women a hard time are now becoming flexible. Local cooperatives, especially Milk Vita despite of its controversial position, played a great role in removing such barriers. Through the encouraging role played by the cooperatives, community people became interested in rearing dairy cows. Family members assigned women in the study areas, as they stay at home most of the time, the important role of dairy cow rearing. Additionally, as the cooperatives collect the milk through their own milk collection points in every area, women do not have to go to the market any more to sell the milk. One of the respondents in FGD said,

> *"Earlier people used to make bad remarks behind our backs. They used to say we don't care about or pay heed to the opinions of our husbands that's why we go to local cooperatives (Milk Vita)."*

Existence of such sociocultural barriers still allow people to undermine women as the dairy cow owners. Though women take out loans to raise livestock, family members, neighbours, government and nongovernment officials, and even they themselves do not recognize themselves as owners. As a result, even if a training opportunity comes, the host invites the men, with the results rarely trickling down to the women.

5.2 Sensitizing Men to Support Women's Empowerment

Though most of the women respondents claimed that their husbands are rather helpful regarding dairy cow rearing, sometimes they sounded quite rhetorical. The field investigation revealed that men do help their wives to rear up dairy cows, if they always listen to their husbands. Besides, from the words of the respondents it came out that sometimes men get violent towards women when loans pile up, as they do not have enough money for fodder, family and loan repayments.

As mentioned earlier, men do not recognize women as the cow owners, so they have a preconceived notion that women do not need to go outside the home to participate in any trainings or workshops regarding dairy cow rearing. If it becomes possible to obligate men to be present at trainings, the process will help men to think women as their partners and incorporate them in the decision-making process regarding dairy cow rearing. Against this backdrop, it is evident that increased income can improve women's lives in Shahjadpur through cow rearing, but right now due to their extreme poverty, they are not in a position to think about empowerment. Before talking about their empowerment, development organizations need to emphasize their first priority improving their socio-economic status. In this endeavour, engaging men to empower women with a focus on family well-being is a prism for a better future.

Chapter Six: Recommendation and Conclusion

6.1 Concluding Remarks

In Shahjadpur, cow rearing is becoming a unique occupation for people's livelihoods, due to a good number of local dairy farms and dairy related business. Both men and women are engaging in this sector to manage their family survival and wellbeing. Due to men's involvement in outside agricultural activities, women perform the major responsibilities to rear dairy cows considering it as a part of household activities. It allows them to earn money along with their husbands. However, society does not consider them as farmers, and the women lack control over the income their labour generates. Men dominate ownership, decision-making, and spending in the household sphere.

The socio-cultural environment of Shahjadpur is not favourable in recognizing women as income earning persons or family nutrition managers. Still most women are not able to visit local markets and dairy firms because the local community identifies it as men's job. It indicates the patriarchal notion that, whether women are income earners or not, they have to be in domestic arenas under men.

Despite their immense contribution to dairy cow rearing, women do not own the cows. All members of the local society consider husbands as the owners of the cows, who decide where, and how to sell the cow's milk, as well as what to do with the money generated from the cow's milk. In addition, both men and women prioritize their families' milk consumption due to their poverty. They have to ensure their household and cow- related needs are met by selling cow milk. The activities of several organizations operating in Shahjadpur signify that women are being involved in meeting the demands of local dairy farms and other local markets' businesses, their real needs, e.g., family nutrition or socio-economic empowerment remain unaddressed.

Throughout the field investigation, several issues come up that must be addressed to ensure better economic and nutritional outcomes for the families through dairy cow rearing and achieving women's empowerment. These issues include scarcity of feed and fodder, inadequate veterinary services, lack of extension services, lack of improved breed and artificial insemination, lack of suitable marketing facilities and complex terms and condition for institutional credit.

6.2 Recommendations

To redesign the dairy cow development policies and interventions with a focus on women's empowerment to ensure better productivity and nutrition benefits, the first thing needed is to strengthen the synergy between dairy cow rearing, women, and child nutrition. Through an assessment of the demand needs of women dairy farmers and existing institutional supports and services provided to them, we recommend some potential interventions to improve their lives and livelihoods.

Action area	Intervention	Responsible organizations
Build gender responsive and nutrition sensitive institutions	1. Women focused farming & marketing	Milk Vita
	2. Flexible credit program/livestock insurance for women -	PPD Regional livestock development center Bangladesh Agriculture Bank

Action area	Intervention	Responsible organizations
	3. Women focused livestock service by women-livestock officer	Sub-district livestock office
	4. Door to door livestock service by women veterinarian	Sub-district livestock hospital and Sub-district livestock office
	5. Sensitized government and NGO officials	Sub-district livestock office PPD
	6. Availability of information on nutrition	Sub-district hospital , Sub-district livestock office, - and PPD
Promote invention and dissemination of local technologies to enhance women's productivity and improve nutritional knowledge	1. Water management	Sub-district livestock office and Milk Vita
	2. Cooling Fan	Sub-district livestock office and Milk Vita
	3. Cow milking machine	Sub-district livestock office and Milk Vita
	4. Insect killer	Sub-district livestock office and Milk Vita

According to the respondents, the government should come forward to address the needs of women farmers. GoB should facilitate dairy cow rearing loans for women with easy terms and conditions through regional livestock developments centers and Bangladesh Agriculture Bank. Additionally, government organizations and NGOs should arrange regular short training programs on different dairying management techniques for the women.

Every year due to the absence of a dependable communication and transportation system, a number of dairy cows die of various diseases even before the families' consult with veterinary doctors and specialists. Moreover, this locality becomes prone to the Jamuna River's seasonal floods every year, which takes several cows' lives. As most of the owners of dairy cows are very poor and a dead cow means nothing to them but a huge loss with the burden of debt, governmental and non-governmental organizations can start a provision of life insurance for dairy cows that could help farmers immensely.

It is also crucial to sensitize local community members, especially the men, about women's active participation in dairy farming as a means to achieve better economic and nutritional benefits. The government and NGOs could do this work through campaigns, workshops, and cultural programs about gender issues relating to farming and household roles; otherwise, they will not understand the importance of women's role in dairy cow rearing. To bridge the information gap among women dairy farmers about government and non-government service, stakeholders could take several steps. The concerned livestock officials in Upazila can take a more effective role through various campaigns so that rural people have a clear idea about the livestock services. They can disseminate knowledge using digital media.

The government and non-government organizations can play a vital role in disseminating the technology of HYV fodder cultivation in rural areas in order to overcome the shortage of feeds and

fodder. Government can provide khas lands to small dairy cow rearing families to grow fodder for their cows.

To stop the market monopoly of any specific organization, the government should intervene by fixing the price of milk at a reasonable level, and they must improve the milk-marketing system. In addition, government and private organizations should create milk preservation facilities for the farmers to ensure the marketing of their product. The government should also take the necessary steps to improve the communication, power, water supply situation, and modern storage facilities for dairy products. The local livestock office should monitor the use of vaccines and their supply to the market. Local organizations should always encourage invention and promotion of suitable technologies for dairy cow rearing.

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Study Area Photos

These pictures were taken by the researchers and field assistants during field visit in the study villages of Shahjadpur.