Original Research Article

Exploring Women Participation in Small-Scale Dairy Farming in Bangladesh: A Case of Paikgachha upazila, Khulna, Bangladesh

ABSTRACT

The study was conducted to assess the extent of participation of rural women in small-scale dairy farming for poverty reduction in two villages at Paikgachha upazila in the Khulna district, Bangladesh. Data were collected from 50 respondents through direct interviews involved in small-scale dairy farming during June 2017. The study revealed that majority of the women were middle aged (66%) in joint families (68%) with being literates (82%). Majority of the respondent families were marginal farmers (44%, 0.02-0.20 ha) followed by small farmers (42%, 0.21-1.00 ha) with high annual family income (62%, >1,50,000 Tk.) having dairy farming (100%) as the major occupation. About 25 operations of dairy farming were selected in consultation with experts and were broadly categorized into six aspects as economic, feeding, breeding, livestock management, health care, purchasing, processing and marketing activities. The study revealed that women participation was maximum in watering to livestock, cleaning of animal sheds, chopping of straw, care of new born calves, management of calves. The farm women participation was least in farm record maintenance, feeding of urea treated straw, artificial insemination (AI) practice, purchasing of feeds and fodder. Majority (82%) of the respondents had no organizational participation. All the respondents had low extension contact and majority (58%) of them was low cosmopolitanism, all of them having no training but they having high knowledge about dairying activities. Among fourteen selected characteristics of the respondents only age and knowledge had shown positive significant relationship with participation of women in dairy farming activities with 30.5% contribution to the total income returned from these activities with increased happiness, improved education and improved housing condition, which are the poverty reduction indicators.

Key words: Women's participation, dairy farming, poverty reduction, small-scale

INTRODUCTION

Rural women play a significant role in conducting small-scale dairy farming in Bangladesh. They have full potential for achieving sustainable development and improvement of quality of life through their proactive participation in farming activities. The success of a country depends on the status and improvement of its women, not only because they represent nearly half of the population, but they also positively influence the progress of the entire population (Upadhyay and Desai, 2011). Most of the women in rural areas must bear the double burden of domestic work and dairy farming. Many activities related to dairy farming are normally performed by rural women in Bangladesh. They prepare food mixtures, chop straw, water and feed animals, clean the sheds, milk, and collect dung. Due to the patriarchal (father centered) system of the society, their hard work and their contribution to household expenditure have been undervalued, and they do not receive proper respect for their work. Still today they remain unseen workers. Selling milk is the most important means by which rural women can earn money. Farming has enabled them to increase family income as well as fulfill household food needs (Batool *et al.,* 2014).

Today, however, rural women are becoming more conscious of their life patterns, children's education, health, and financial well-being. Rural women have become effective role players in both income-generation and household management. They are struggling hard to improve their life style and trying to overcome poverty through their participation in small-scale dairy farming.

Participation of the rural women in dairy farming is very vital to livestock development of Bangladesh, where an overwhelming majority of them live in rural areas who are very close to agricultural as well as livestock production and management system. It is therefore, important to have adequate understanding on rural women's participation in dairy production especially in dairy farming activities of the country.

Women's participation in small-scale dairy farming is an important tool in reducing poverty in rural area. The present study was undertaken to determine the participation level of rural women in dairy farming activities and to identify the impact of rural women's participation in small-scale dairy farming activities for poverty reduction in two villages of the Paikgachha upazila, at Khulna district in Bangladesh. Due to social and traditional barriers, rural women are not able to work outside of their homes. Therefore, their potential is often unrealized. They are disadvantaged in terms of education, independence, controlling their own assets, and household decision making (Sultana and Hossen, 2013).

The process of dairy development would be incomplete and lop sided, unless farm women are fully involved in it. Unless constraints faced by farm women in dairy are identified and overcome, developmental programs cannot be implemented successfully. With this background, the present study has been formulated with the following specific objectives:

i. To know the socio-economic characteristics of the women dairy farmers in the study area.
ii. To assess the extent of participation of women farmers in dairy farming.
iii. To determine the contribution of women dairy farmers in household management.
iv. To know the relationship between the socio-economic characteristics of women dairy farmers with their participation

METHODOLOGY

Data were collected from 50 respondents, who were selected through purposive random sampling technique, of the two selected villages of Paikgachha upazila of Khulna district through interview schedule by the researchers during May to June, 2017 on some selected characteristics of the respondents which were treated as independent variables. Participation of rural women in dairy farming was treated as dependent variable of the study. A list of 25 commonly used dairy farming practices was prepared by reviewing different literature related to it. The respondents were asked to identify their extent of participation based on 25 dairy farming issues in terms of 'great participation', 'average participation', 'somewhat participation' and 'no participation' and the scores assigned against these responses were 3, 2 ,1 and 0 respectively. The total score of a respondent was calculated by summing up the scores obtained from the selected issues. Participation scores for the selected commonly used dairy farming practices of the respondents could range from 0 to 75. To compare the level of participation in six major aspects as well as 25 issues a participation index (PI) was calculated using following formula,

$$PI = N_{ge} \times 3 + N_{ae} \times 2 + N_{se} \times 1 + N_{na} \times 0$$

Where,

PI=Participation Index
N_{ge}= No. of the respondent participated to a great extent
N_{ae}= No. of the respondent participated to an average extent
N_{se}= No. of the respondent participated to some extent
N_{na}= No. of the respondent not at all participated

The Participation Index (PI) could range 0-150. Where '0' indicated no participation and '150' indicated to great extent participation. Statistical treatments such as number, %, rank order, range, mean and standard deviation were used to interpret data. To explore relationship between any two variables Pearson's correlation coefficient 'r' was employed. Data were analyzed using the concerned software Microsoft Excel and Statistical Package for Social Science (SPSS) 20 version.

RESULTS AND DISCUSSION

Selected characteristics of the respondents

Majority of the women dairy farmers (66%) were middle aged, followed by 30% were young aged and only 4% were old aged**.** Anitha (2004) also found that middle aged women were majorly engaged in dairy farming in Karnataka of India. Elderly farmers seem to be somewhat less motivated to adopt new dairy farm practices than younger ones. Young and middle aged people generally show more favorable attitude towards trying new ideas in farming activities. About 40% of the respondents had secondary level of education while 38% had primary level of education. Only a few of the respondents (18% and 4%) were illiterate and having above secondary education respectively. Mulugeta and Amsalu (2014) also found that most of the women who are engaged in livestock farming have primary to secondary levels of education in Ethiopia. Educated people are more innovative and conscious about farming practices. Majority of the respondents (60%) had medium sized family while 36% of the respondents had small sized family and only 4% of the respondents had large sized family. The average family size (5.20) of the study area indicates that the respondents are not conscious about their family size and population growth because the average family size of the study area is more than that of national average (4.4; BBS, 2011). Most of the respondents (86%) had small (0.21-1.00 ha) to marginal (0.02-0.20 ha) farm size while about 10% belonged to medium (1.01-3.00 ha) farm size. The average farm size of the farmers of the study area (0.67 ha) were higher than that of national average (0.60 ha) of Bangladesh (BBS, 2014). Majority of the respondents (62%) had high annual income while 26% of the respondents had medium annual income and only 12% of the respondents had low annual income. Those who have lesser amount of land ownership try to increase their annual income through other feasible income generating activities. Dairy farming by the women member of any family is an established better choice in this regard. In the present study it is also found that 86% of the respondents having small to medium sized farms earned high annual income (62%) might be due to their dairy farming activities. Majority of the respondents (88%) had medium to high farming experiences in dairy farming followed by 12% low farming experiences. On the other hand, in case of agricultural farming about 74% had medium to high farming experiences followed by 22% no experience and 4% low experience. Majority of the respondents (82%) had no organizational participation while 18% had low participation in different organizations.

In case of knowledge about dairy farming, it seemed that 100% women farmers had clear knowledge. About half of the respondents (58%) had low cosmopolitanism while a large portion (42%) had medium cosmopolitanism. Most of the respondents (100%) had low extension contact to conduct their farming activities. Most of the respondents (58%) believed that small-scale dairy farming played high role in reducing poverty while 42% thought it played medium role in reducing poverty. In terms of training received it seemed that all the respondents (100%) had received no training in conducting dairy farming. All socio-economic data of women farmers are given in Table 1.

Table 1. Distribution of the respondents on the basis of socio-economic characteristics

Characteristics	Categories (Scores)	Respondents (N=101)		Mean	SD	Min.	Max.
		No.	(%)				
Age (Years)	Young (up to 35)	15	30	42.58	10.00	20	70
	Middle (36 to 50)	33	66				
	Old (> 50)	2	4				
Educational Qualification (Years of schooling)	Illiterate (0)	9	18	5.62	3.61	0.0	12.0
	Primary (1 – 5)	19	38				
	Secondary (6 – 10)	20	40				
	Higher secondary or above (> 10)	2	4				
Family size (No.)	Small (1-4)	18	36	5.00	1.60	1	10
	Medium (5-7)	30	60				
	Large (>7)	2	4				
Farm size (ha)	Landless (<0.02)	1	2	0.61	1.84	0.01	13.10
	Marginal (0.02-0.20)	22	44				
	Small (0.21-1.0)	21	42				
	Medium (1.01-3.0)	5	10				
	Large (>3.0)	1	2				
Annual income ('000'Tk.)	Low (<100)	6	12	215.00	184.38	71.0	1336
	Medium (100-150)	13	26				
	High (>150)	31	62				
Farming experience (Dairy) (Years)	No (0)	0	0	11.24	7.22	2.00	35.00
	Low (<5)	6	12				
	Medium (5-10)	29	58				
	High (>10)	15	30				
Farming experience (Agriculture) (Years)	No (0)	11	22	10.02	7.81	.00	35.00
	Low (<5)	02	04				
	Medium (5-10)	22	44				
	High (>10)	15	30				
Organizational participation (Score)	No (0)	41	82	0.68	1.55	0.00	5.00
	Low <36	9	18				
	Medium (36-70)	0	0				
	High (>70)	0	0				
Knowledge (Score)	No (0)	0	0	8.38	6.62	0.0	23.0
	Low (1-3)	0	0				
	Medium (4- 6)	0	0				

	High (>7)	50	100				
Cosmopoliteness (Score)	No (0)	0	0	4.84	1.55	1.0	9.0
	Low (1-5)	29	58				
	Medium (6-10)	21	42				
	High (>10)	0	0				
Extension contact (Score)	No (0)	0	0	6.24	1.33	4.0	11.0
	Low (0-9)	50	100				
	Medium (10-18)	0	0				
	High (>18)	0	0				
Poverty reduction (Score)	No (0)	0	0	20.86	3.77	13.0	30.0
	Low (1-10)	0	0				
	Medium (11-20)	21	42				
	High (21-30)	29	58				
Training (No.)	No (0)	58	100	0.0	0.0	0.0	0.0
	Low (1-3)	0	0				
	Medium (4-7))	0	0				
	High (>7)	0	0				

Source: Field Survey, 2017

Participation of rural women in dairy farming activities

The participation scores of the rural women in dairy farming activities ranged from 40-61 against the possible range of 0-75 with a mean of 50.66 and standard deviation of 4.73. The distribution of rural women according to their extent of participation in dairy farming activities is shown in Table 2.

Table 2. Distribution of rural women according to their extent of participation

Categories	Scores	Respondents(N=50)		Mean	SD	Min.	Max.
		Number	Percentage				
No Participation	0	0	0	50.66	4.73	40.00	61.00
Low participation	1-25	0	0				
Medium participation	26-50	26	52				
High participation	51-75	24	48				
Total		5 0	100				

Data presented in Table 2 show that the highest proportion (52%) of the rural women had medium participation in dairy farming compared to high participation (48%).

Extent of participation by rural women in selected 6-aspects along with 25 issues

To measure the extent of participation of the respondents in selected 6-aspects along with the 25 selected issues under 6-aspects a participation index (PI) was calculated. Based on PI, the relative position of the 6-aspects as well as the 25-issues were determined indicating rank order in Table 3.

Table 3: Relative position (Rank order) of the selected 6-aspects along with 25 issues of rural women in dairy farming activities based on participation index (PI)

Activities	Variable	Not at all (0)	Some extent (1)	Average extent (2)	Great extent (3)	PI	Ranks (25 issues)	Rank(6 aspects)
A) Economics activities	Choosing of animals for dairying	0 × (0)	6×(1)	13 ×(2)	31×(3)	125	8	
	Sale and purchase of animals	1	6	20	23	115	10	1st
$\bar{x}$ of A						120		
B) Feeding Activities	Feeding of green grass to the dairy cattle	0	2	5	43	141	6	
	Feeding of urea treated straw	50	0	0	0	0	18	
	chopping of straw	0	0	1	49	149	2	
	preparing food mixture	1	0	2	47	145	4	4th
	Storage of green grass straw	15	6	8	21	85	13	
	Watering of livestock	0	0	0	50	150	1	
$\bar{x}$ of B						111.6		
C) Breeding Activities	Carrying animals to AI or service center	50	0	0	0	0	18	
	Care of newborn calves	0	1	2	47	146	3	6th
$\bar{x}$ of C						73		
D) Livestock Management	Management of calves	0	0	4	46	146	3	
	Maintenance of farm records	50	0	0	0	0	18	
	cleaning of animals sheds	0	0	0	50	150	1	3rd
	Cleaning of utensils	0	3	11	36	133	7	
	Milking the animals	1	14	16	19	103	11	
	Cow dung collection	0	1	3	46	145	4	
$\bar{x}$ of D						112.8		
E) Activities of health care	Care of sick animals	0	1	2	47	146	3	
	Vaccine of dairy cattle	13	4	17	16	86	12	2nd
	Cleaning and bathing cows	0	5	24	21	116	9	
$\bar{x}$ of E						116		
F) Purchasing, processing and marketing	Quantity of milk to be used for home consumption	0	22	20	08	86	12	
	Surplus milk to be sold	0	2	4	44	142	5	
	Purchasing of feeds and concentrate	12	31	06	01	46	17	
	purchasing of equipment	4	32	12	02	62	15	5th
	processing and preparation of milk products	22	10	07	11	57	16	
	marketing of milk products	16	10	2	22	80	14	
$\bar{x}$ of F						78.8		

Computed participation index score presented in Table 3 indicate that the respondents (rural women) participation was highest in economic activities ($\bar{x}$=120) while it was least in breeding

activities ($\bar{x}$=73). The other dominant aspects of dairy farming activities as participated by the respondents were activities of health care ($\bar{x}$=116) and livestock management ($\bar{x}$=112.83).

Extent of reducing poverty by the respondents in Selected 10 issues

To measure the extent of reducing poverty of the respondents in selected 10- issues a participation index (PI) was calculated. Based on PI, the relative position of the 10-issues was determined indicating rank order (Table 4).

Table 4: Relative position (Rank order) of the selected 10 issues of rural women in dairy farming activities based on participation index (PI)

Livelihood status	Not at all (0)	Some extent (1)	Average extent (2)	Great extent (3)	PI	Ranks (10 issues)
Increased family income	0	15	62	9	86	6th
Increased family saving	2	21	24	3	78	8th
Wear good cloths	0	6	40	4	98	5th
Access to medical care	0	6	40	4	98	5th
Adequate, safe food	0	21	26	3	82	7th
Ability to buy more animals	3	33	11	3	64	9th
Reduced gender discrimination	0	2	19	29	127	4th
Increased happiness	0	0	4	46	146	1st
Improved education	0	0	5	45	145	2nd
Improved housing conditions	0	03	15	32	129	3rd

Computed participation index score presented in Table 4 indicate that the respondents (rural women) poverty reduction was highest in increased happiness ($\bar{x}$=146) while it was least in ability to buy more animal ($\bar{x}$=64). The other dominant aspects of reducing poverty by the respondents were improved education ($\bar{x}$=145) and improved housing condition ($\bar{x}$=129) respectively.

Relationship between the characteristics of the respondents and their Participation in dairy farming activities

Coefficient of correlation was computed in order to explore the relationship between the selected characteristics of the rural women and their participation in dairy farming activities. The selected characteristics of the rural women constituted independent variables and participation of the rural women in dairy farming activities constituted the dependent variable of the study. In these section relationships between eleven selected characteristics (independent variables) of the rural women and dependent variable i.e. participation of rural women in dairy farming activities has been described. Person's Coefficient of Correlation (r) was used in Table 5.

Table 5.Relationship between the selected characteristics of rural women and their participation in dairy farming activities

Characteristics (Independent variables)	Dependent variable	Correlation coefficient
1. Age		0.286*

2. Level of Education	Participation of rural women	-0.127 NS
3. Family type		0.151 NS
4. Family Size		0.250 NS
5. Farm Size		0.174 NS
6. Annual family income		0.171 NS
7. Cosmopolitanism		0.233 NS
8. Extension contact		0.210 NS
9. Organizational participation		-0.278 NS
10. Knowledge about dairy		0.293*
11. Poverty reduction indicator		-0.165 NS

NS= Non-significant. **significant at the 0.01 level (2-tailed), *significant at the 0.05 level (2-tailed)

Data presented in Table 5 indicate that age of the rural women had significant positive relationship with their participation in dairy farming activities. It means that higher age of the respondent the higher is the participation in dairy farming activities. Level of education of the rural women had negative non-significant relationship with their participation in dairy farming activities. It was observed in the study area that educated women might be involved in other income generating activities, so they do not like to participate in dairy farming activities. On the other hand, family size, farm size, annual income, cosmopolitanism, extension contact and organizational participation of the rural women had no significant relationship with their participation in dairy farming activities. Knowledge about dairy farming activities had significant relationship with their participation. Poverty reduction indicator has negative non-significant relationship with participation and this relationship needs further verification in future researches.

Contribution in total family income from dairy farm return

With a view to measuring the contribution percentage of dairy farm return with total household income and the cost percentage in dairy farming with the total household income percentage given in Figure 1.

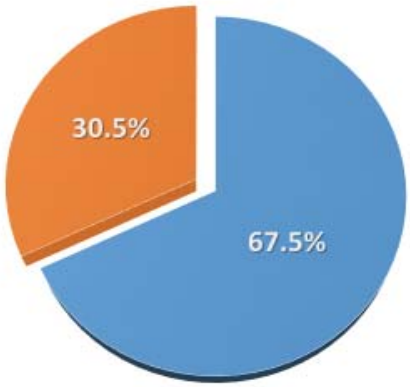

Figure 1. Annual income rate in percentage

Average income share is 30.5% (=70,584 Tk.) which is the contribution from dairy farm made by the women (annually), and 67.5% (=14,4552 Tk.) share is made by others family members i.e., by her husband and others (Figure 1).

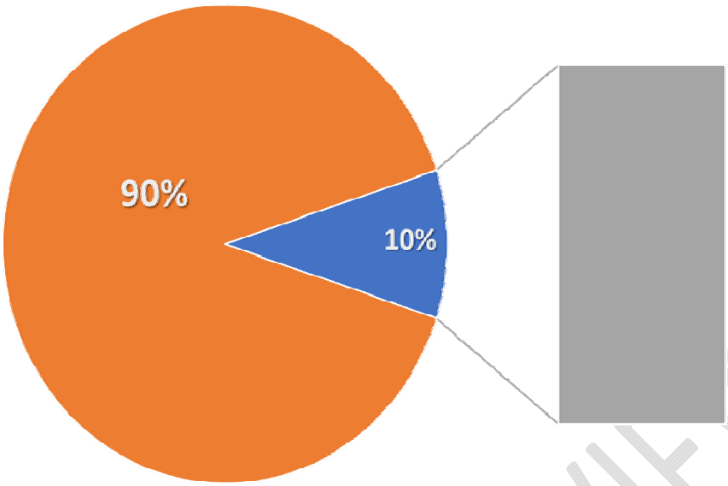

Figure 2. Cost rate in percentage

Average cost for dairy farming is 10% which is only 20,000 Tk.; whereas average income from dairy farm is 90% which is 2,15,136 Tk. The net return is very high which proves the suitability of small-scale dairy farming for poverty reduction (Figure 2).

CONCLUSION

Majority of the rural women (respondents) were medium aged had secondary to primary level education, maintained medium sized family and farm having marginal to small income. Most of them (respondents) showed low to medium cosmopolite behavior and had low extension contact and had no dairy training but showed medium farming experience in both dairy and agriculture. Majority of the rural women had no organizational participation having high knowledge about dairy farming activities, had both medium and high participations in dairy farming activities. The respondents had highest in economic activities and activities of health care while it was least in breeding and purchasing and marketing activities, the high dominant area of participation by the respondents were watering of livestock, cleaning of animal sheds. The least dominant activities of participation was feeding of urea treated straw, carrying animals to artificial insemination center and maintenance of farm records. The highest poverty reduction was increased happiness, improved education, improved housing conditions.

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