

Relationship between income generating activities of rural women and their decision making ability in Bangladesh

F Khatun¹ SA Islam² MMR Dewan² MR Talukder³ and MAM Miah⁴

Present address

¹Senior Teacher, Stamford School and College
Dhanmondi, Dhaka ²SSO Librarian, Bangladesh Rice Research Institute ⁴Professor Dept. of Agril. Extension Education, Bangladesh Agricultural University Mymensingh-2202

Correspondence

mrtalukder70@yahoo.com

Accepted: 21 March, 2017

Abstract

The study was conducted to determine the socioeconomic characteristics of the female respondents participating in different income generating activities (IGAs) and also to attain the nature and extent of the relationship between the selected characteristics of the respondents and their opinion in poverty alleviation of their family. An interview schedule was used to collect information through face to face interview from randomly selected sample size of 100 respondents. The respondents showed remarkable individual differences in their characteristics and majority (45%) of them belonged to young and middle aged category having high literacy rate (80%). Their duration of family life was more than 20 years (43%); family size was medium (34%); having small (47%) farm size and medium homestead area (62%). Most of the respondents' (36%) annual income was more than Tk 70,000.00 and they have low (59%) communication exposure and had no organizational participation (76%). Most of the rural women respondents had moderate participation in agricultural IGAs (55%); low participation in non-agricultural IGAs (63%) and medium participation (72%) in decision making process. Participation Index (PI) of the respondents in storage of agricultural product, agricultural product processing, poultry rearing, tree plantation and vegetable cultivation were the top five activities against nine items in agricultural IGAs. The respondents' PI was high in rice husking and selling, muri making and selling and sewing of six items in non-agricultural IGAs. PI of respondents' was higher in taking credit, taking or giving the land on lease, rearing of poultry, goat, sheep and cattle, buying or selling of land and making or buying furniture among ten decision making topics. Participation of rural women in agricultural IGAs had no relation with their participation in non-agricultural IGAs. However, decision making had strong positive correlation with both of their participation in agricultural and non-agricultural IGAs.

Keywords: Women empowerment, Income Generating Activities (IGAs), Decision making, Rural area of Bangladesh

Introduction

The rural population of Bangladesh is about 114.7 million, which represent 80% of the total population of the country (Anonymous, 2013). Women constitute almost half of the total population (BBS, 2015), however they experienced from multiple destitutions (Sultana and Hasan, 2010). Women's participation and contribution are significant in homestead management through income generating activities, decision making and in many other ways. However, they are still economically, educationally behind, also socially and politically disadvantaged and stay in backward position (Sarker and Rahman, 2007). Development of the society occurs when women would have participation in the development activities as well as the male member of the society (Hoque and Itohara, 2008).

Income is the most important element of human well fare and improved living condition (Mondal et al. 2009). Women engaged in different income generating activities beside the household management in many ways especially in the rural area of Bangladesh

(Ahmed et al. 2011) and improve their economic solvency (Sultana and Hasan, 2010). As the total household income of the families is improved by the help of women income generating activities, the women can also contribute for improving the housing facilities and consumption pattern that is the overall livelihood status. Different types of income generating activities are found in the rural areas and agricultural related activities occupies the major portion (Hoque and Itohara, 2008; Haque and Yamao, 2009; Mondal et al. 2009; Panda, 2009).

Women were pioneers in plant domestication and planned agriculture (Childe, 1971). They contribute significantly in agriculture by participation in pre and post-harvest operations in various activities under homestead agriculture like composting, transplanting, weeding, harvesting, drying, homestead gardening, fruits and tree planting, timber collecting for fuel, livestock rearing, poultry rearing, fish culture as an integrated manner (Ali and Rahman, 1978; Akhter, 1990). Integrated homestead farming might be a good strategy for survival and secured supply of food and petty cash even in the scarcity of agricultural land.

Homestead agricultural activities have special significance in the content of Bangladesh where about 62 per cent farmers are landless.

Micevska and Rahut (2008) stated that sometimes non-agricultural activities are considered as alternate coping mechanism to insufficient land of the poor people or less income from agriculture. Akhter (1990) reported that woman's household income generating activities meet at part of their family expenditure. Miah *et al.* (1994) found that women spent about one fifth (19.89%) of their total time in homestead agricultural activities to develop their socioeconomic condition. Findings of different researchers (e.g., Davis 2004; FAO, 1998; Reardon *et al.* 2001) reveal that rural non-farm activities is growing more in developing countries of the world accounts to 32% in Asia, 42% of rural income in Africa, 40% in Latin America and 44% in Eastern Europe. In a country like Bangladesh, more involvement of women in income generating activities becomes mandatory to combat overall food shortage, malnutrition and socioeconomic condition of rural women.

Although a considerable volume of research has been conducted on rural women and their contribution on IGAs and some with the assistance of micro-credit so far, little attention has been paid on women's opinion and decision making capacity with the IGAs' of female in rural areas. Islam and Mainuddin (2015) concluded some research and reported that income help improving the empowerment of rural women which ultimately changing life. Considering the above facts and findings the investigators became interested to find out the relationship between participation of rural women in IGAs and their decision making with some characteristics of the rural women in two villages of sadar upazila under Mymensingh district. The existing study presents the current socio-economic status of rural women in selected areas as well their involvement in different IGAs and decision making in Bangladesh. Particular attention is paid to investigate the opinion of the respondent women about the contribution of IGAs in the way of poverty alleviation and their contribution through decision making in homestead management. The current research is useful to produce the end product of (1) current status of the socio-demographic attributes of the respondents; (2) degree of their participation in various IGAs; and (3) scrutinize the opinion of the respondents approaching the contribution of IGAs and its relation to the empowerment of women toward decision making furthermore interrogating the influence of their characteristics upon their opinion. The findings of the study are expected to be helpful for the field workers of different nation building departments and extension providers to improve strategies of extension for effectively working with the women.

2. Methodology

Accurate information is highly dependent upon the survey method (Ahmed *et al.*, 2011). Furthermore, the most commonly and effective approach is the direct face-to-face interview (Ogunlade and Adebayo, 2009). This study was carried out with face to face interview survey research, administered using interview schedule that is used to collect data from the respondents on socio-economic characteristics as well as income generating activities. Two villages namely Bhati Barerar par and Madhya Barera under Ghagra union of Mymensingh Sadar Upazila (lower administrative unit) of Mymensingh District of Bangladesh are selected as the study area. Family of Bhati Barerar par village (60) and Madhya Barera village (40) are the population of the study whose total number was 100, using simple random sampling technique. The entire process of data collection was conducted from September to December, 2004. Necessary coding of data was done after collecting the data and transferred these into computer for analysis. Different analysis like frequency count, means, ranges with percentages were administered utilizing Statistical Package for Social Science (SPSS) software. To show the contribution of socio demographic characteristics of the respondents on their opinion towards poverty alleviation through IGAs, this study treated range, percentage, mean, standard deviation, multiple regression analysis and rank order were used wherever possible. Pearson's Product Moment Coefficient of Correlation (r) was used in order to explore the relationship between the concerned variables.

2.1. Measurement of Dependent Variable

Respondents' agricultural IGAs, non-agricultural IGAs and decision making ability were measured by constructing a 4-point type scale ranged from 0 = Not at all, 1 = Low participation, 2 = Medium participation and 3 = High participation. Each respondent provided their opinion by nine statements for agricultural IGAs, by six statements for non-agricultural IGAs and by ten statements for decision making. Based on the calculation the respondents each were classified into 3 categories, 1) less participation, 2) moderate participation and 3) high participation.

2.2. Measurement of Independent Variable

Ten independent variables were accommodated in the interview schedule to judge the salient feature of the respondents are i) age, ii) academic qualification, iii) duration of family life, iv) occupation, v) family farm size, vi) homestead area, vii) annual income, viii) family size, ix) communication exposure, and x) organizational participation.

3. Results and Discussion

3.1. Characteristics of independent variables

There are various characteristics that influence activities done by an individual behaviour of a woman, and were determined to a large extent by her characteristics. Table 1 reveal that the highest proportion (45%) of the respondent women was middle aged (31 to 45 years) while 20% were old housewives. The mean age of the participant was 36 years, which range from 16-55 years and the standard deviation (SD) was 9.67. The people who are in between 15 years to 29 years of age are considered as young in Bangladesh (DYD, 2016). In this study area, about 35% women were considered to be as young. An important finding from MDG (2015) indicates that, rural women participation rate in labor force increases with the increase of age from 20 years and the highest participation is accounted for the age group of 40 to 44 years. During this study, it is observed that about 80% of the respondents are in between the age group of 16 to 45 years.

Literacy percentage of the respondents was quite good in the study area. About 80% of the respondents were literate and most of them had an educational attainment of primary level to secondary or Secondary School Certificate (SSC) level. The average study of the rural women was up to class 4 with the SD value 3.6. However, this was a good sign of women education level improvement of the country (Bangladesh). For improving the female education in Bangladesh, the Government for the last few years has been take some important actions like free distribution of the books, establishment of new schools both in urban and rural areas, full free studentship, stipend for the female students, education fee waiver, food for education etc. programs (MoEdu, 2010). All those initiatives have greatly upgraded the present scenario of improvement of female education and our findings also similar to that.

Marriage is starting of family life and wife usually operates the household activities, sometimes under their mothers-in-law's authority in a joint family (James and Robert, 1989). Duration of family life of the respondent women ranged from 2 to 42 years and the highest proportion (43 %) had high duration of family life and 24 % having medium duration family life. The mean value of the duration of family life was 18.57 years with SD value 10.90 (Table 1). The high duration of family life of rural women is helpful for performing homestead management and especially in decision making. Particularly the high duration of family life housewives are well experienced and more acquainted with the farming and non-farming activities. Thus the decision making and income generating activities regarding the participation in

homestead management activities in the study area might be influenced by the high duration of family life housewives.

Most percentage of the respondents of the study area has family size in between 2 to 6 (67%). Average family members of the study area were 5.65 and SD was 1.95 (Table 1). The national average family size in rural areas in Bangladesh was 4.89 (Anonymous, 2015). Therefore, the average family size of this study was a few more than that of the national average as the area belongs to the rural area, as the nuclear family is commonly found in the urban area of Bangladesh.

Family farm size of the rural women of the study area mainly belong to the Small farm (0.2-1.0 ha) and that is 47% and the mean value was 1.2 ha with the SD value 2.76 (Table 1). Therefore, the average farm size of this study area was similar to the national average of Bangladesh (Anonymous, 2015). Islam (2002) observed in his study that farm size of the women had significant positive relationship with their involvement income generating activities. However, rural women of all farm categories participated in poultry rising. Further, rural housewives with small farm size participated more in goat rearing than those of big farm.

Homestead area of the respondent women was highly belongs to the medium size homestead (0.041-0.202 ha) in the study area. About 84% of the respondents have medium to large size homestead and the average value was 0.12 with SD 0.09 (Table 1). Rahman (2007) and Basak (1997) found that homestead farm size had a significant positive relationship with their participation in rural development activities.

The respondents have an average annual family income of 74,650 BDT although about 67% of the respondent's annual family income has up to 264,000 BDT (Table 1). According to the findings of Ahmed *et al.* (2011), income is a crucial aspect of judging the living standard of any human being. So involvement of the women members of the family into the income earning is common and this earning is utilized for the betterment and continuity of the family.

Communication exposure scores of the respondents observed that most of them had very low score (59%) with the range from 5-10 and mean value 5.7 (Table 1). However, most of the respondent gave correct answers to questions related to agriculture. Findings of Salawat *et al.* 2013 in their work on "Study on knowledge and attitude of Mushroom growers at selected upazilas of Dhaka District" also indicated that about 71% women mushroom growers of the study area had moderately favourable attitude towards mushroom cultivation and which ultimately helped them to earn more income from this enterprise.

Table 1. Salient features of the selected characteristics of rural women

Characteristics (Measuring units)	Categories	Percentage	Observed Ranges	Mean	Standard deviation
Age (Years)	Young (≤ 30)	35	16-55	36	9.67
	Middle aged (31-45)	45			
	Old aged (>45)	20			
Academic qualification (Years of schooling)	Illiterate(0 schooling)	20	0-12	3.92	3.6
	Can sign only (0.5)	22			
	Primary education (1-5)	36			
	Secondary education (6-10)	21			
	Higher education (>10)	1			
Duration of family life (Years)	Short (2-10)	33	2-42	18.57	10.90
	Medium (11-20)	24			
	Long (> 20)	43			
Family size (No. of Members)	Small family (Up to 4)	33	2-10	5.65	1.95
	Medium family (5-6)	34			
	Large family (above 6)	33			
Family farm size (Hectares)	Marginal (0.02-0.2 ha)	24	0.02-20.26	1.20	2.76
	Small (0.2-1.0 ha)	47			
	Medium (1.0-3.0 ha)	27			
	Large (above 3.0)	2			
Homestead area (Hectares)	Small homestead (≤ 0.041 ha)	16	0.02-0.43	0.12	0.09
	Medium homestead (0.041-0.202 ha)	62			
	Large homestead (>0.203 ha)	22			
Annual income (In Tk. '000)	Low (≤ 35)	33	15.9-264	74.65	55.97
	Medium (36-70)	31			
	High (>70)	36			
Communication Exposure	Low (1-5)	59	5-10	5.7	1.04
	Medium (6-8)	40			
	High (>8)	1			
Organizational Participation	No participation (0)	76	0-4	0.34	0.69
	Low participation (1-3)	23			
	Medium participation (4-6)	1			

*Number of respondent was 100, so the percentages also represent the frequencies.

The highest proportion (76%) of the rural women had no organizational participation exposure compared to 23% had low organizational participation and only 1% in medium organizational participation (Table 1). Women are perhaps engaged with their homestead production activities for a long period of time. Except this, existing social system, illiteracy and limited facilities for improving knowledge and skill of the women along with employment opportunities could have blocked them in the participation of development activities. According to the Nurzaman (2000) in his study that organizational participation of the Farmer's Field School (FFS) farmers had positive correlation with their attitude towards IPM.

3.2.1. Participation rural women Agricultural IGAs

Result from this study showed that, Women's participation score in agricultural IGAs ranged from 3 to 17 against the possible range of 0 to 27. Most of the rural women respondents had moderate participation in agricultural IGAs (55%). The mean and standard deviation were 11.11 and 2.74, respectively (Table 2). The women Participation Index could range from 0 to 300. However, Participation Index (PI) of the respondents against nine items in agricultural IGAs ranged from 2 to 251. Storage of agricultural product, agricultural product processing, poultry rearing, tree plantation and vegetable cultivation were the top five activities where women had maximum participation in agricultural IGAs in that particular area.

Table 2. Distribution of the rural women opinion to the agricultural IGAs, non-agricultural IGAs and their decision making ability in the family

Dependent variables	Categories	Percentage	Possible range	Observed range	Mean	Standard deviation
Agricultural IGAs	Less participation (3-8)	12	0-27	3-17	11.11	2.74
	Moderate participation (9-12)	55				
	High participation (>12)	33				
Non-agricultural IGAs	Less participation (4-8)	63	0-18	4-15	7.99	1.94
	Moderate participation (9-12)	36				
	High participation (>12)	1				
Decision Making	Less participation (6-12)	12	0-30	6-27	15.30	3.38
	Moderate participation (13-18)	72				
	High participation (>19)	16				

Table 3. Women Participation Index regarding the participation in agricultural IGAs

Sl. No.	Activities	Extent to participation				PI	Rank
		High	Medium	Low	Not at all		
1	Storage of agricultural product	61	32	4	3	251	1
2	Agricultural product processing	58	31	4	7	240	2
3	Poultry rearing	8	71	15	6	181	3
4	Tree plantation	3	57	39	1	162	4
5	Vegetable cultivation	3	58	29	10	154	5
6	Cattle rearing	3	6	42	49	63	6
7	Goat rearing	0	5	43	52	53	7
8	Fish culture	0	0	7	93	7	8
9	Nursery management	0	0	2	98	2	9

The computed PI regarding the participation in homestead farming activities of different items are shown in Table 3. A finding from Khan et al. 2009 indicates that homestead gardening is the leading agricultural activity of the Bangladeshi rural women and that occupies the lion's share of the poor farmer's livelihood resources. Poultry production is another important IGA and about 86% of the respondents raised poultry for layering also some broiler production of the study area. Not only is that livestock rearing another important enterprise of the women includes both cow (about 94%) and goat (92%) raising in the study area. Poor and landless households in Bangladesh utilize the livestock sector as a mean of their survival with an important associate sector for unemployed (Shamsuddoha, 2009) which are also associated with the collection and selling of dried dung cake by the poorest women during cooler time of the year. Islam (2008) also identifies an important approach prevailing in Bangladesh is that poor women are taking animals as share basis. The poor women take animal and rear animal from the rich people as a 50% return share basis with offspring. Several studies quoted from Jahan and Rahman (2003); Parveen (2008) supported that in Bangladesh taking care of

livestock is mainly done by women. Livestock take care includes graze, feeding preparation, feeding and cleaning of the animals and also their shed, sometimes milking the cows etc. Rahman (2003) also identifies poultry production as an important activity of income generation which is carried out by the women in Bangladesh. This finding is supported by BRAC (2007) and they concluded that 94% of the poultry production is owned by the women in Bangladesh which is the pivotal contributor of the household nutrition, income and savings ultimately food security (Nielsen et al. 2003; Sonaiya, 2007; Smucker and Wisner, 2008). Moreover, for up gradation of income level of the poor, poultry production is a quick and good return investment strategy (Islam et al. 2010). In this study form the findings it is clear that about 89% and 37% women are involved with mini pond culture and rice cum fish culture respectively as IGA. Findings from Rahman and Naoroze (2007) also indicate that pond fish production is an important employment creator for the women which ultimately help to improve their standard of living. They also concluded that women can manage and produce fishes in smaller pond which are associated with their homestead areas.

Table 4. Women Participation Index regarding the participation in non-agricultural IGAs

Sl. No.	Activities	Extent to participation				PI	Rank
		High	Medium	Low	Not at all		
1	Rice husking and selling	79	17	4	0	275	1
2	Muri making and selling	65	35	0	0	265	2
3	Sewing	13	57	11	19	164	3
4	Tailoring	11	9	8	72	59	4
5	Small business	9	0	0	91	27	5
6	Cottage industry	0	0	6	94	6	6

Table 5. Women Participation Index regarding the participation in decision making process

Sl. No.	Activities	Extent of participation				PI	Rank
		High	Medium	Low	Not at all		
1	Taking credit	0	95	5	0	195	1
2	Taking or giving the land on lease	0	92	8	0	192	2
3	Rearing of poultry, goat, sheep and cattle	9	74	13	4	188	3
4	Buying or selling of land	0	87	13	0	187	4
5	Making or buying furniture	5	61	33	1	170	5
6	Social or religious ceremony	6	56	29	9	159	6
7	Vegetables and fruits cultivation in the homestead area	14	49	15	22	155	7
8	House making	0	64	23	13	151	8
9	Education of children	8	26	54	12	130	9
10	Selling of crops, vegetables and fruits	1	15	29	55	62	10

3.2.2. Non-agricultural IGAs

Result from this study showed that, Women's participation score in non-agricultural IGAs ranged from 4 to 15 against the possible range of 0 to 18. Most of the rural women respondents had low participation in non-agricultural IGAs (63%). The mean and standard deviation were 7.99 and 1.94 respectively (Table 4). The women Participation Index could range from 0 to 300. However, Participation Index (PI) of the respondents against six items in non-agricultural IGAs ranged from 6 to 275. Rice husking and selling, muri making and selling and sewing were the top three activities where women had high participation in non-agricultural IGAs in that particular area. Nonfarm self-employment activities are common by the women as an important IGA and income earning. The important activities includes dressmaking, embroidered quilt or nakshikatha, wall mats jute bags, bamboo work, basket making, household accessories etc. (Al-Amin, 2008). Fakir (2008) and Farid *et al.* (2009) also concludes that women in Bangladesh also conduct several small businesses like small shop keeping, trading video cassettes, operate small grocery shops close to their homes, sometimes moving from place to place for selling cloths and other household items.

3.2.3. Participation of rural women in decision making

Women's participation score in decision making ranged from 6 to 27 against the possible range of 0 to 30. The mean and standard deviation were 15.3 and 3.38 respectively (Table 2). Most of the rural women respondents (72%) had medium participation in decision making process while 12 per cent had low and 16 per cent having high. The Women Participation Index could range from 0 to 300. The computed PI regarding the participation in decision making process of different items are shown in Table 5. Participation Index (PI) of the respondents against ten items in decision making process ranged from 62 to 195. Taking credit, taking or giving the land on lease, rearing of poultry, goat, sheep and cattle, buying or selling of land and making or buying furniture were the top five activities where women had maximum participation in decision making.

Ahmed *et al.* (2011) through their study conducted on the Bangladeshi women found that those women who received credit contributed much higher to their family incomes than their counterparts (without credit). They also concluded that through different IGAs performed by the women with participating micro-credit program operated by the Grameen Bank of Bangladesh, contributed more towards family income. In the long

run this improved income is treated as life sustaining issue.

3.3.1. Relationship of the characteristics of rural women with their IGAs and decision making ability

The participation of rural women in the agricultural IGAs had strong positive significant (0.001) relations with the family annual income as their added income highly contributes to increase their total income of the family (Table 6). The long duration of family life of women had positively (0.05) contributes to the agricultural IGAs in that study area. However, the academic qualification of the rural women had a negative significant (0.05) relationship with the agricultural IGAs. The other characteristics i.e., age, occupation, family farm size, homestead area, family size, communication exposure, and organizational participation had no relationship with the participation in agricultural IGAs in that particular study area. Islam and Sultana (2006) stated that earning money of the women members of the family helps to upgrade their status in the feeling of their husband, family members, relatives as well as neighbours.

The rural women participate in different non-agricultural IGAs had strong negative significant (0.001) relations with age and duration of family life as aged women with long duration family life are quite busy with the other household activities, child rearing and other social activities (Table 6). Nevertheless, the communication exposure of the rural women had a positive significant (0.01) relationship with non-agricultural IGAs. Furthermore, the academic qualification of the rural women had positively contributes (0.05) with their non-agricultural IGAs. The other characteristics i.e., occupation, family farm size, homestead area, family size, family annual

income, and organizational participation had no relationship with the participation in agricultural IGAs in that particular study area. Akhter (1990) supported by his findings that women mainly contribute to income through fruit and vegetable gardening, poultry rearing, goat rearing etc. This income may meet at part of their family expenditure.

The rural women participate in decision making had strong positive significant (0.001) relations with communication exposure and organizational participation as social involvement increase their capability in decision making ability (Table 6). Furthermore, the family size of the rural women had a positive significant (0.01) relationship with decision making empowerment toward rural women. Moreover, occupation, duration of family life and homestead size of the rural women had positively contributes (0.05) with their decision making capability. The other characteristics i.e., age, academic qualification, family farm size and family annual income had no relationship with the participation in decision making ability of rural women in that particular study area. Participation of women in the decision-making process of IGAs cannot be looked at in isolation. The participation of men, women and children in a family is so interdependent that they support each other in everyday life in a large number of social, productive and economic activities (Hossain, 1985). However, Simeen *et al.* (2012) reported that on average, married women's role in household decision-making was relatively greater in health and family planning decisions (35-43%), and lower in decisions related to household expenditures and personal autonomy (22-29%). A woman is engaged with several responsibilities at the same time to maintaining the family household activities.

Table 6. Relationship between selected characteristics and extent of participation in IGAs and decision making ability of rural women (n = 100)

Independent variables	r- value with dependent variables (df = 98)		
	Participation in agricultural IGAs	Participation in non-agricultural IGAs	Participation in decision making
Age	0.034 ^{ns}	-0.375***	0.110 ^{ns}
Academic qualification	-0.224*	0.219*	-0.125 ^{ns}
Occupation	0.044 ^{ns}	-0.145 ^{ns}	0.209*
Duration of family life	0.212*	-0.339***	0.224*
Family size	0.150 ^{ns}	-0.196 ^{ns}	0.257**
Family farm size	0.085 ^{ns}	-0.1 ^{ns}	0.114 ^{ns}
Homestead size	0.161 ^{ns}	0.106 ^{ns}	0.201*
Family annual income	0.333***	0.164 ^{ns}	0.162 ^{ns}
Communication exposure	0.006 ^{ns}	0.295**	0.356***
Organizational participation	0.181 ^{ns}	0.13 ^{ns}	0.338***

*= significant at 0.05 level of probability (table value = ± 0.196), ** = significant at 0.01 level of probability (table value = ± 0.254), ***= significant at 0.001 level of probability (table value = ± 0.325) and ns = Not significant

Table 7. Correlation matrix of the independent and dependent variables (N = 100)

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	Y ₁	Y ₂	Y ₃
X ₁	1												
X ₂	-0.505***	1											
X ₃	0.486***	-0.383***	1										
X ₄	0.925***	-0.578***	0.514***	1									
X ₅	0.375***	-0.383***	0.271**	0.461***	1								
X ₆	0.048 ^{ns}	-0.006 ^{ns}	-0.037 ^{ns}	0.015 ^{ns}	0.44 ^{ns}	1							
X ₇	-0.161 ^{ns}	0.373***	-0.072 ^{ns}	-0.128 ^{ns}	-0.165 ^{ns}	-0.022 ^{ns}	1						
X ₈	0.264**	-0.221*	0.507***	0.333***	0.005 ^{ns}	-0.002 ^{ns}	0.266**	1					
X ₉	-0.230*	0.170 ^{ns}	-0.170 ^{ns}	-0.149**	-0.262 ^{ns}	-0.062 ^{ns}	0.180 ^{ns}	0.017 ^{ns}	1				
X ₁₀	-0.155 ^{ns}	0.153 ^{ns}	0.15 ^{ns}	-0.113 ^{ns}	0.091 ^{ns}	-0.052 ^{ns}	0.300**	0.048 ^{ns}	0.338***	1			
Y ₁	0.034 ^{ns}	-0.224*	0.044 ^{ns}	0.212*	0.150 ^{ns}	0.085 ^{ns}	0.161 ^{ns}	0.333***	0.006 ^{ns}	0.181 ^{ns}	1		
Y ₂	-0.375***	0.219*	-0.145 ^{ns}	-0.339***	-0.196 ^{ns}	-0.100 ^{ns}	0.106 ^{ns}	0.164 ^{ns}	0.295**	0.130 ^{ns}	-0.028 ^{ns}	1	
Y ₃	0.110 ^{ns}	-0.125 ^{ns}	0.209*	0.224*	0.257**	0.114 ^{ns}	0.201*	0.162 ^{ns}	0.356***	0.338***	0.413***	0.207*	1

*= significant at 0.05 level of probability, ** = significant at 0.01 level of probability, ***= significant at 0.001 level of probability and ns = Not significant

X₁ = Age

X₂ = Academic qualification

X₃ = Occupation

X₄ = Duration of family life

X₅ = Family size

X₆ = Family farm size

X₇ = Homestead area

X₈ = Family annual income

X₉ = Communication exposure

X₁₀ = Organizational participation

Y₁ = Participation in agricultural IGAs

Y₂ = Participation in non-agricultural IGAs

Y₃ = Participation in decision making process

3.3.2. Correlation in between the characteristics of independent variables of the rural women

The correlation among the dependent and independent variables are presented in the Table 7 and the extent of participation of rural women is described in this section. Age of the rural women participant had strong positive correlation with their occupation, duration of family life, family size; however it has strong negative correlation with their academic qualification. Academic qualification of the rural women had strong positive correlation with their homestead area; however it has strong negative correlation with their occupation, duration of family life, family size. Occupation of the participant had strong positive correlation with their duration of family life and family annual income. Duration of family life of the participant had strong positive correlation with their family size and family annual income. Communication exposure of the rural women was highly correlated with their organizational participation. Furthermore, participation of rural women in agricultural IGAs had no relation with their participation in non-agricultural IGAs. However, decision making of the rural women has strongly positive correlation with both of their participation in agricultural and non-agricultural IGAs in that study area. Islam and Mainuddin (2015) supported that income generating activities empower women to increase their likelihood and are one of the key issues for changing the life of rural women in Bangladesh.

Conclusions

The present study gives final results that women in the study area are mostly in between young and middle

aged having high literacy rate (80%). The respondents' duration of family life was more than 20 years (43%); family size was mostly medium (34%); having small farm size (47%) and medium size homestead area (62%) are quite equal to the average of Bangladesh. Their average annual family earnings from different IGAs are as Tk. 74,650.00 which helps them to escalate their contribution towards the betterment of their family. Substantial communication exposure is low (59%) and no organizational participation (76%) influence negatively towards different IGAs of the respondents. As a result the respondents had moderate participation in agricultural IGAs (55%) by storage of agricultural product, agricultural product processing, poultry rearing, tree plantation and vegetable cultivation; low participation in non-agricultural IGAs (63%) by rice husking and selling, muri making and selling and sewing; and medium participation (72%) in decision making process. Participation Index (PI) of the respondents against nine items in agricultural IGAs ranged from 2 to 251; against six items in non-agricultural IGAs ranged from 6 to 275. Participation Index (PI) of the respondents against ten items in decision making process ranged from 62 to 195. Taking credit, taking or giving the land on lease, rearing of poultry, goat, sheep and cattle, buying or selling of land and making or buying furniture were the top five activities where women had maximum participation in decision making. Participation of rural women in agricultural IGAs had no relation with their participation in non-agricultural IGAs. However, decision making had strong positive correlation with both of their participation in agricultural and non-agricultural IGAs in that study area. Therefore the findings of the study suggest that after participation

into different IGAs the women are triggered more to earn money to help to boost up their current situation into a more positive direction and help to give decision in the family for better empowerment of women in the rural area. This situation can be accelerated more by arranging more social motivation; specific need base training and extension activities related to agriculture for upgrading their knowledge and attitude towards IGAs.

References

- Ahmed F, Siwar C and Idris NAH. 2011. Contribution of Rural Women to Family Income Through Participation in Microcredit: An Empirical Analysis. *American Journal of Applied Sciences* 8 (3): 238-245. Available at:
- Al-Amin S. 2008. Role of Women in Maintaining Sustainable Livelihoods of Char Landers in Selected Areas of Jamalpur District. PhD Thesis. Department of Agricultural Extension Education Bangladesh Agricultural University, Mymensingh.
- Akhtar A. 1990. Involvement of Women in Homestead Production in Selected Village of Tangial District. *M. Sc. (Dept. Agril. Extn. Edu.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Ali R and Rahman MM. 1978. An Evaluation of Women Development Programme of Mymensingh District. *Workshop Proceeding*, GTI, BAU, Mymensingh.
- Anonymous. 2008. Statistical Yearbook of Bangladesh 2007, 27th edn, Bangladesh Bureau of Statistics, Panning Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka.
- Anonymous. 2013. Gender Statics of Bangladesh 2012. Bangladesh Bureau of Statistics, pp. 9-12. Available at: http://bbs.gov.bd/WebTestApplication/userfiles/Image/Health_Demo/Gender_Statistics.pdf.
- Anonymous. 2015. Average household size by sex of head of household and residence. Bangladesh Bureau of Statistics. Available at: http://bbs.gov.bd/RptHIES_2_1.aspx
- Basak NC. 1997. Impact of BRAC Rural Development Activities as Perceived by the Participating Women. *M.S. (Dept. Agril. Extn. Edu.) Thesis*, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- BBS. 2015. *Statistical Year Book of Bangladesh 2015*. Bangladesh Bureau of Statistics, Ministry of Planning, Government of People's Republic of Bangladesh.
- BRAC, 2007. At a Glance. (on line accessed 10 Octobar, 2009). <http://www.brac.net>
- Childe GV. 1971. *Origin of Agriculture*. In: *Prehistoric Agriculture*. New York: National History Press, p. 19.
- Davis J. 2004. The Rural Non-Farm Economy, Livelihoods and their Diversification: Issues and Options Chatham, UK: NRI.
- DYD. 2016. Department of Youth Development, Government of Bangladesh.
- Fakir SK. 2008. Women Empowerment through Participation in Income Generating Activities of Sabalamby Unnayan Samity. PhD Thesis. Department of Agricultural Extension Education BAU, Mymensingh.
- FAO. 1998. The State of Food and Agriculture: Rural NonFarm Income in Developing Countries. Rome: Food and Agriculture Organization.
- Farid KS, Mozumdar L, Kabir MS and Goswami UK. 2009. Nature and Extent of Rural Women's Participation in Agricultural and Non-agricultural Activities. *Agricultural Science Digest*, 29(4)
- Haque MS and Yamao M. 2009. Can microcredit alleviate rural poverty? A case study of Bangladesh. *World Academy Science, Engineering and Technology*, 46: 648-656.
- Hoque M and Itohara Y. 2008. Participation and decision making role of rural women in economic activities: A comparative study for members and non-members of the micro-credit organizations in Bangladesh. *Journal of Social Science*, 4: 229-236. Available at: <http://DOI:10.3844/jssp.2008.229.236>.
- Hossain SH. 1985. Women in Rice Culture: A Case Study in Bangladesh Village. Paper presented at the 16th working group meeting of Asia Rice Farming Systems Network, Bangladesh 9-13 November.
- Islam N and Sultana N. 2006. The status of women in Bangladesh: Is the situation really encouraging? *Research Journal of Social Science*, 1: 56-65.
- Islam MR. 2002. Involvement of BRAC Trained Women Beneficiaries in Income Generating Activities and Decision Making Role. *M. S. (Ag. Ext. Ed.) Thesis*. Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Islam MS, Takashi S and Chhabi KQN. 2010. Women's Contribution to Self-financed Small-Scale Independent Broiler Farming and their Participation in Farm Extension Activities in Rural Bangladesh. *Livestock Research for Rural Development*. Volume 22, Article # 141.

- Islam MZA. 2008. Survival Strategies of the Female Displaces in Rural Bangladesh: A Study of Two Riparian Villages on the Right Bank of Jamuna. XII World Congress of Rural Sociology, Goyang, Korea.
- Islam S and Mainuddin A. 2015. Relationship between income generating activities of rural women and their reproductive health behavior in Bangladesh. *Journal of Rural and Remote Health Research, Education, Practice and Policy*.
- Jahan N and Rahman H. 2003. Livestock Services and the Poor in Bangladesh: A Case Study. Danish Agricultural Advisory Centre, Udkaersvej 15, Skejby, DK- 8200 Aarhus N, Denmark. An Initiative by Danida, IFAD and World Bank. Available at http://lr.dynamicweb.dk/Files/Filer/Global/Bangladesh_case_study.pdf (searched date: 10 August 2011).
- James Heitzman and Robert W. 1989. *Bangladesh: A Country Study*. Washington: GPO for the Library of Congress.
- Miah MAM, Parveen S and Rahman MH. 1994. Time Spent in Farming Activities by the Rural Women. *Bangladesh Journal of Training and Development*, 7(2): 41-46.
- MDG 2015. MDGs - Bangladesh Progress Report, 2015.
- MoEdu. 2010. National Education Policy - 2010. Ministry of Education. Bangladesh.
- Micevska M and Rahut DB. 2008. Rural Nonfarm Employment and Incomes in the Himilayas. *Working Paper* No. 205. New Dehli: Indian Council for Research on International Development.
- Mondal NI, Khan AR, Chakma J and Hossain G. 2009. Family structure, economic security and educational status of rural chakma in CHT of Bangladesh. *J. of Social Science*, 19: 219-224.
- Nielsen H, Roos N and Hilsted SH. 2003. The Impact of Semi-Scavenging Poultry Production on the Consumption of Animal Source Foods by Women and Girls in Bangladesh. *The Journal of Nutrition*, 133: 4027S-4030S.
- Nurzaman M. 2000. Knowledge, Attitude and Practice of FFS and Non-FFS Farmers in respect of IPM. *M. S. (Ag. Ext. Ed.)*. Thesis, Department of Agricultural Extension Education, Bangladesh Agricultural University, Mymensingh.
- Ogunlade I and Adebayo SA. 2009. Socio-economic Status of Women in Rural Poultry Production in Selected Areas of Kwara State Nigeria. *Int. Journal of Poultry Science*, 8: 55-59.
- Panda DK. 2009. Participation in the Group Based Microfinance and its Impact on Rural Households: A Quasi experimental Evidence from an Indian State. *Global Journal of Finance Management*, 1: 171-183.
- Rahman M. 2003. Growth of Poultry Industry in Bangladesh Poverty Alleviation and Employment Opportunity. In: Proceedings of 3rd International Poultry Show and Seminar, Organized by World's Poultry Science Association Bangladesh Branch. 1-7.
- Rahman MH and Naoroze K. 2007. Women Empowerment through Participation in Aquaculture: Experience of a Largescale Technology Demonstration Project in Bangladesh *Journal of Social Science*, 3(4): 164-171
- Reardon T, Berdegú J and Escobar G .2001. Rural Nonfarm Employment and Incomes in Latin America: Overview and Policy Implications. *World Development*, 29(3):411-425
- Salawat N, Hasan SS, Khan AS, Rahman MS, Hoque MM and Moonmoon M. 2013. Study on Knowledge and Attitude of Mushroom Growers at Selected Upazilas of Dhaka. *Bangladesh Journal of Mushroom*. 7 (1): 49-57
- Sarker AS and Rahman MH. 2007. The emerging perspective of governance and poverty alleviation: A case of Bangladesh. *Public Organization Review*, 7: 93-112.
- Shamsuddoha M. 2009. Development of Livestock Sector through Leading NGO in Bangladesh. The Annals of the "Ștefan cel Mare" University Suceava. Fascicle of the Faculty of Economics and Public Administration, 9(1): 1-9.
- Simeen M, Nirali MS and Stan B. 2012. Measurement of Women's Empowerment in Rural Bangladesh. *World Development* Vol. 40, No. 3, pp. 610-619.
- Smucker TA and Wisner B. 2008. Changing Household Responses to drought in Tharaka, Kenya: Vulnerability, Persistence and Challenge. *Journal Compilation at Overseas Development Institute*. Blackwell Publishing.
- Sonaiya EB. 2007. Family Poultry, Food Security and the Impact of HPAI. *World's Poultry Science Journal*, Vol. 63.
- Sultana B, Zaaba ZB and Umemoto K. 2010. Women's Empowerment Through the Development of Micro Entrepreneurship in Rural Bangladesh. *Social Science*, 5: 1-9. DOI: 10.3923/sscience.2010.1.9
- Sultana S and Hasan SS. 2010. Impact of Micro-Credit on Economic Empowerment of Rural Women. *The Agriculturists*, 8(2): 43-49. Available at: <http://banglajol.info/index.php/AGRIC/article/view/7576>