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Landless Rural Women's Participation in Income Generating Activities (IGAs): The Case of *Char* Dwellers in Selected Areas of Bangladesh

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ABSTRACT This study explores how landless women on isolated islands in rivers obtain their livelihoods. They mostly use Income Generating Activities (IGAs) like livestock rearing and vegetable production. Those not involved in IGAs tend to get involved in odd activities like becoming domestic servants. Their land availability, transport, training, public services, capital are almost non-existent, so they face many problems in carrying on their IGAs. The paper concludes that State support is needed to redistribute available land, provide basic services, including infrastructure and capital/loans, including training, so that these women have a chance for a better life. The study used triangulated qualitative and quantitative methods to analyze data. Regression results showed that IGAs participation is significantly related with age, family size, educational level, family income, agricultural service frequency and mass media use whereas problem confrontation is significantly related with age, farm size training experiences and cosmopolitanism of the rural women.

INTRODUCTION

Most rural women of Bangladesh are still dependent on male heads of their families, due to lack of economic empowerment of women and a patriarchal culture (Sarker and Rahman 2007; Islam et al. 2008). They are mostly engaged in unpaid household chores and caregiving activities (Islam 2000). Women's employment at the national level is only around 22.9 percent (Ferdaush and Rahman 2011). Women represent only twenty percent of the Members of Parliament and nine percent of the policymakers in Bangladesh (Chowdhury 2016). Therefore, women need to participate in economic development at all levels.

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The recent literature on rural development emphasizes the need to increase the Income Generating Activities (IGAs) of the poor sharply. However, the IGAs of the poor requires a diversified set of assets, including financial, human and social capital, as well as natural resources (Winter et al. 2002). Credit, training and group mobilization may be needed to develop the other required assets, including the acquisition of land (Islam 2011).

Rural livelihood in the agricultural society of Bangladesh is land-based: but most of the female-headed households are landless. This is the women's main obstacle to successful livelihood development. The Agricultural Census (2008) surveyed 28.67 million farm families: among them, around 4.48 million or 15.5 percent were completely landless. In Bangladesh, landless people are those who own less than 0.02 hectare of land, including the homestead (BBS 1993). Landless people in Bangladesh are facing multidimensional poverty. The landless poor women generally have interlocking causes for

their poverty (Chowdhury 2009). Therefore, rural women's access to land should be increased first to alleviate their poverty.

The emergence of river islands (*chars*) offers some land to the poor. Many of the landless rural women take shelter on those *chars* even though they still struggle with the poverty of multiple causes (Sultana and Hasan 2010). According to Zakaria and Kumar (2018) incidence of poverty is higher among the *char* dwellers than that of the national average (35% living below poverty line).

A *Char* is a tract of land normally surrounded by water: of a sea, a lake, a stream or a piece of land produced by the deposit of silt in river channels. In Bangladesh, most of the *chars* are surrounded by river water. *Char* area in Bangladesh is around 1, 777 km^2 and around 4.3 million people live on riverine *char* lands (Rahman and Davis 2005). Bangladesh possesses more than 250 big and small rivers across the country (Mahamud 2011). *Char* land in Bangladesh can be categorized into five sub-areas according to the river in which the *char* arises: Jamuna, Ganges; upper Meghna; lower Meghna; and Padma. In addition to the five main *char* lands, two additional areas are the old Brahmaputra and Tista.

Char dwellers in Bangladesh have very limited access to public services for example education, healthcare, policing or banking (Kabir 2006). Their land, which suddenly appeared as the river receded and may equally suddenly disappear, is not registered, so they cannot obtain title documents. The *char* dwellers have limited IGAs for their livelihoods. Generally, income-generating activities require an initial investment (Mwakatobe et al. 2016) but the *char* ladies have no money. Some of the IGAs need management knowledge to administer them but the *char* ladies are not well-educated. Therefore, the rural *char* women may face constraints in different ways. Removing such constraints of these poor people is essential for sustainable livelihood.

Both sustainable livelihood approach and IGA approach are interventions (Haan 2012; Morse and McNamara 2013). Many poor *char* women of Bangladesh are still unaware of the possibility of changing their livelihood through IGA. *Char* women are generally more hardworking and careful than the women from other parts of the country (Akther 2015). Some of them, therefore, realize that they need to engage in IGAs of some kind to maintain their livelihood.

Objectives

Despite the growing research interest in IGAs, little attention has been paid to the IGA needs of landless riverine women. Hence, the current study was undertaken with the following objectives:

- To find out the types of IGAs common among the landless *char* women
- To measure the extent of the *char* women's participation in each type of IGA
- To identify the problems confronted by rural women while engaging in IGAs
- To measure the intensity of each problem of rural women in engaging in IGAs
- To understand the relationship of the socio-demographic characteristics of the landless rural women in *char* areas to their participation in IGAs
- To discover the relation between the problems of the landless *char* women in conducting IGAs and their socio-demographic characteristics

Why is Income Generation Important for Landless *Char* Women?

The extreme poor and the most vulnerable people, who do not have access to land on the mainland, seek livelihoods in *char* areas. In contrast, the mighty landlords, who have connections to power sources and control over them, grab *char* areas as available fertile land and take the opportunity to rear livestock on the vast grassy land of the *chars* (Chowdhury 2001).

There is a significant psycho-social difference between the mainland and *char* lands populace of Bangladesh (Aminuzzaman 2001). The beliefs and behavioral tendencies held by *char* society people of Bangladesh are traditional. The male heads of poor families seek their employment on the mainland and migrate seasonally, leaving behind the women and children in the face of disaster (Chowdhury 2001). Sometimes, the males never come back due to second marriages on the mainland.

Women, therefore, need to generate some income to feed their children and to run the fam-

ily. Some landless *char* women are compelled to work as maidservants to feed their children. Sometimes the young maidservants are sexually assaulted by their masters (Kabir 2006). The landless *char* women have less opportunity to get the credit due to having no valuable assets for security and the small number of credit institutions available in *char* areas. Their social networks are poor due to their remoteness. Access to technology for better livelihoods also requires money. Poverty is, therefore, a curse to their lives.

The recent report of the *Char* Livelihood Program (CLP) highlighted the negative impact of dowry[1]; domestic violence, for example, could be reduced by engaging women in income- generating activities (Haneef et al. 2014). Increasing women's income is the right way to empower women (Islam and Mainuddin 2015) in the patriarchal society of *char* Bangladesh. Economic empowerment through income-generating activities, on the other hand, reduces the poverty of the women themselves (Islam 2011). Economic development ensures sustainable development, pro-poor growth and equitable distribution of the benefits of growth (OECD 2012). Income generation is also a way to gain political power (Mondal et al. 2009). It also offers access to health services, nutritional services and schooling opportunity for children (Downs 2007; Hoque and Itohara 2008).

METHODOLOGY

The mixed method approach is a famous paradigm in social research and also regarded as a revolution in social research methodology. Johnson et al. (2007), Pervez et al. (2015), Uddin (2015) and Uddin et al. (2016) mentioned several advantages of mixed method in achieving of triangulation in research findings where the combined-effect of qualitative and quantitative approach minimizes the limitations of each method. For clarification of a research problem and to verify qualitative observations using quantitative data, the mixed method approach can be a suitable method (Clark 2005; Tashakkori and Teddle 2003).

The present study was undertaken in three districts in northern Bangladesh. Three villages (Naiar Char, Kalasona Char and Bowalmari Char) were selected purposively from three districts of northern Bangladesh: Kurigram, Gaibandha and Lalmonirhat, respectively. Familiarity with the locale to the researchers is one of the reasons for purposive selection. The selected areas are comparatively poorer than other *char* areas, as well as other parts of the country. A list of 650 landless rural households was collected from three *Upazilla* agriculture offices. From the population, twenty percent of the families were selected as a sample of the study by using a table of random numbers.

Rapport building was very important during data collection. For this purpose, researchers took help from three female students from the same *char* to collect data from the landless *char* women. Rural Muslim women are shy about speaking to outsiders generally and think speaking to men outside their family is sinful. Data were collected in a face-to-face setting, using a structured interview schedule, from May 2016 to August 2016.

The socio-demographic characteristics of the rural women, such as age, family size, educational level, family annual income, agricultural extension service frequency, training received, watching/listening agricultural program on radio/TV, organizational participation and cosmopolitanism, were selected as independent variables of the study. The variables were measured using appropriate scales (Table 1). On the other hand, the dependent variable of the study was the participation of women in Income Generating Activities (IGAs) and problem confrontation by the landless rural women in practicing IGAs.

Women's participation in IGAs was measured by using a four-point scale ranging from "not participating", "rarely participating", "occasionally participating" to "frequently participating" (see Table 3). Twenty selected IGAs practices were rated through the above mentioned four-point scale (0-3). The scores 0, 1, 2 or 3 were assigned for not participating, rarely participating, occasionally participating and frequently participating, respectively. For each woman, her participation score assigned as above was given for each IGA that she was participating in. When these IGA scores were summed up participation varied, for each woman, from 0 to 60. This represents the range of extent of participation of women in the sample. However, it does not mean that all women participate in all 20 IGAs.

Table 1: The socio-demographic characteristics of landless rural women living in *char* lands

Variable and scoring technique	*Range*		*SD*	*Mean*	*Mode*
	Possible	*Observed*			
Age (1 for each year)	-	18 -55	10.29	34.06	45
Family size (1 for each member)	-	2 -9	1.13	5.31	5
Education (1 for each year of schooling)	-	0 -10	2.16	4.23	5
Annual family income ('0000 BDT)	-	10-140	32.17	49.78	25
Farm size (hectare)	0 -0.2	0 -0.2	0.067	0.062	0.00
Agricultural extension service frequency (0= Never, 1= Watch/listen once in a month, 2= Once in a week, 3= More than once in a week)	0 -3	0 -3	0.98	1.01	0
Training (1 for each day of training)	-	0 -5	1.43	1.06	0
Listening/watching agricultural program on Radio/TV (0= Not listen/watch, 1= Watch/listen once in a month, 2= Once in a week, 3= More than once in a week)	0 -3	0 -3	1.03	1.00	0
Organizational participation (= "position weight (1, 2, 3) × duration weight (1, 2, 3)	0 -9	0 -6	1.91	1.74	0
Cosmopolitism (= " frequency of vising different place (never= 0, rarely = 1, occasionally = 3, regularly= 4)	0-12	0 -8	2.37	1.95	0

An individual woman may have more than one or more IGAs for her livelihood.

Similarly, the problem confrontation was measured on the basis of fifteen items (see Table 5). Scores of 3, 2, 1 and 0 were used for frequently faced, occasionally faced, rarely faced and never faced, respectively. The IGAs and items for problem confrontation were selected by discussing with landless women in five Focus Group Discussions (FGDs) meeting.

RESULTS

Socio-demographic Characteristics of Landless *Char* Women

The results of socio-demographic characteristics are shown in Table 1. The majority of the respondents were young to middle-aged. Average family size of the landless rural women in the *char* area was 5.31. The majority of *char* women attended school up to class six. Average annual family income was only around 49,780 BDT[2]. The average land-holding was 0.062 hectares. Around forty percent of the respondents never got any agricultural extension services. The majority of the respondents never attended any training program from any organization. The percentage of the respondents watching agricultural programs on TV/radio was very low. Average organizational participation and cosmopolitism were 1.74 and 1.95, respectively, which indicates a very low organizational participation and low level of cosmopolitism.

Participation of Women in IGAs

The possible IGAs participation score for rural landless women can be 0-60. The obtained participation score ranged from 2-41 whereas the mean and standard deviation is 21.01 and 8.44 respectively. On the basis of mean and standard deviation, the participation of different IGAs was classified into three (Table 2). The majority of the rural women participated in a wide range of IGAs for their livelihoods. However, their extent of participation can be regarded as "moderate".

Table 2: Distribution of rural landless women in *char* areas on the basis of IGA participation

Categories	*f (N= 130)*	*%*	*M*	*SD*
Low participation (up to 13)	24	18.46		
Medium participation (14-30)	89	68.46	21.01	8.44
High participation (above 30)	17	13.08		

Table 3: IGAs participation level of *char* women

S. No.	*IGAs*	*IGA participation level (n)*				*Score*	*Rank*
		NP	*RP*	*OP*	*FP*		
1	Crop seeds production	34	27	49	20	185	5
2	Seasonal vegetable cultivation	26	25	47	32	215	2
3	Nursery business	28	40	39	23	187	4
4	Tree plantation	40	45	35	10	145	11
5	Organic manure production	81	33	15	1	66	15
6	Poultry rearing	34	27	50	19	184	6
7	Goat/sheep rearing	31	7	7	85	276	1
8	Broiler production	110	5	6	9	44	19
9	Dairy cow rearing	36	28	49	17	177	7.5
10	Beef fattening	57	11	9	53	188	3
11	Fish farming in small pond	67	11	29	23	138	12
12	Rice-fish combined culture	78	30	17	5	79	14
13	Dry fish production and marketing	86	33	8	3	58	16
14	Street vending	93	23	12	2	53	17
15	Puffed rice making	97	17	13	3	52	18
16	Toys making	31	50	36	13	161	10
17	Selling labor	37	34	39	20	172	9
18	Handicrafts from bamboo	50	42	28	10	128	13
19	*Nokshikatha* making	10	68	47	5	177	7.5
20	Rice husking and selling	111	6	5	8	40	20

NP= Never participated, RP= Rarely participated, OP= Occasionally participated, FP= Frequently participated
**Nokshikatha* is a type of embroidered quilt which is a century-old tradition in rural Bangladesh.
*One women participated more than one IGAs

Detailed participation scores and rank order of the IGAs are shown in Table 3. Among 20 selected IGAs 'goat/sheep rearing' gained the maximum score (276). The other popular IGAs for the *char* landers landless women were 'seasonal vegetable cultivation' (215), 'beef fattening' (188), 'nursery business' (187), and 'crop seeds production' (185).

Problem Confrontation by Landless *Char* Women in Practicing the IGAs

The problems confronted by the rural women could be ranged from 0-60 where 0 means no problem confronted and 60 means the worst problem confronted in practicing IGAs. On the basis of the mean and standard deviation, the rural women in this study were categorized into three groups.

Table 4 represents the distribution of the rural landless women on the basis of their problem confrontation. From the table, it is clear that most of the rural women in *char* land were suffering from medium to high levels of problems in conducting IGAs.

The rural women in *char* land frequently faced problems that made their livelihoods vulnerable. Problems were ranked on the basis of their exposure.

Table 5 represents the detail of the problems confronted by the rural *char* women. 'Low-level technological know-how' and 'low price of produce' were noted most often (268). Other significant problems were 'poor infrastructure facilities on *char* land' (264), 'harassment by outsiders' (263), 'natural disaster' (255) and so on.

The Relationship between the Selected Socio-Demographic Characteristics and IGA Participation of Respondents

The regression result (Table 6) shows that, among the ten independent variables, age and

Table 4: Categories of landless *char* women on the basis of problems confronted

Categories	*f (N= 130)*	*%*	*M*	*SD*
Minor problems confronted (up to 17)	24	18.46		
Medium-level problems confronted (18-35)	76	58.46	26.58	9.01
Major problem confrontation	30	23.08		

Table 5: Problems confronted by rural women in rank order

S. No.	*Problems confronted*	*IGA participation level (n)*				*Score*	*Rank*
		NP	*RP*	*OP*	*FP*		
1	Lack of input supply	13	21	61	35	248	6
2	Low level technological know-how	15	17	44	54	268	1.5
3	Scarcity of land	20	30	24	56	246	7
4	High cost of agriculture inputs	41	9	4	76	245	8
5	Natural disaster	39	7	4	80	255	5
6	Poor infra-structure facilities in *char* land (example, roads)	21	14	35	60	264	3
7	Harassment by outsiders from *char*	23	3	52	52	263	4
8	Lack of financing	11	59	57	3	182	14
9	Low price of produces	23	7	39	61	268	1.5
10	Lack of extension support	42	7	7	74	243	9
11	Lack of marketing	4	66	58	2	188	12
12	Complication in loan allotment process	16	50	55	9	187	13
13	High interest rate from NGOs	31	7	42	50	241	10
14	Health hazards	14	46	9	130	195	11
15	Children's sickness	14	70	44	2	164	15

NC= never confronted, RC= rarely confronted, OC= occasionally confronted, RC= regularly confronted

Table 6: The regression results between participation in IGAs and socio-demographic factors

Variables	*B*	*SE*	α	*t*	*Sig.*
(Constant)	26.151	2.687		9.733	.000
Age	-.103	.043	-.125	-2.395	.018
Family size	-1.867	.387	-.251	-4.823	.000
Educational level	.599	.170	.153	3.516	.001
Family income	.047	.013	.179	3.502	.001
Farm size	2.100	5.738	.017	.366	.715
Agricultural service frequency	1.486	.382	.173	3.890	.000
Training received	-.031	.256	-.005	-.123	.903
Watching/listening agricultural program on TV/radio	2.038	.417	.251	4.883	.000
Organizational participation	-.165	.219	-.037	-.750	.455
Cosmopolitanism	.016	.112	.004	.138	.890

R= 0.95, R^2= 0.911, Adjusted R^2= 0.90, F=121.52, p= 0.000

family size have a significant negative relationship ($p<0.05$) with rural women's IGA participation. Educational level of the respondents, annual family income, agricultural service frequency, and watching/ listening to agricultural programs on TV/radio have positive significant re-

Table 7: The regression result between socio-demographic factors and problem confrontation

Variables B	*B*	*SE*	α	*t*	*Sig.*
(Constant)	31.492	5.132		6.137	.000
Age	.162	.082	.185	1.980	.050
Family size	-.606	.739	-.076	-.820	.414
Educational level	-.356	.325	-.085	-1.094	.276
Family income	.043	.026	.155	1.688	.094
Farm size	-32.78	10.959	-.245	-2.992	.003
Agricultural service frequency	-.334	.729	-.036	-.458	.648
Training received	-2.013	.489	-.321	-4.119	.000
Watching/listening agricultural program on TV/radio	-.117	.797	-.013	-.146	.884
Organizational participation	-.763	.419	-.162	-1.821	.071
Cosmopolitism	-.949	.214	-.251	-4.427	.000

R= 0.84, R^2= 0.71, Adjusted R^2= 0.69, F=29.76, p=0.000

lationships (pd"0.01) with the rural women's IGA participation.

The Relationship between the Selected Socio-demographic Characteristics and Problem Confrontation of the Landless *Char* Women

The relationship between selected socio-demographic variables and problem confrontation of the respondents is shown in Table 7. Only age shows a significant positive relation ($p<0.05$) with problem confrontation, whereas farm size, training received and cosmopolitanism show a significant negative relation ($p<0.05$). The other variables did not show any significant influence ($p>0.05$) with problem confrontation.

DISCUSSION

Characteristically, most of the respondents in the researchers' study were middle-aged. In reality, both younger and older rural women usually feel shy to meet with an outsider (Pervez et al. 2015), so, this may have biased the sample toward middle-aged participants.

The average family size of the respondents was higher (4.85) than the national average (HIES 2005). This is because, in the *char* areas, people are less concerned and aware about family planning than in cities, towns or more-accessible villages. This is because of the low availability of community health workers in *char*. Therefore, the first *char* convention also demanded special allocation of skilled health workers to ensure healthcare and family planning facilities for the people of *char* land. These workers would strengthen the referral system and enhance access to lifesaving drugs (Char Convention 2015).

The average number of years of schooling in *char* land is very low because of a lack of schools in these areas and poor infrastructure, like roads and vehicles, to take children to study elsewhere. This finding is similar to that of Steer et al. (2014), *Char* Convention (2015) and UN (2015). The average annual family income was 32,170 BDT (around 402 USD). This amount is far below national per capita annual income (1602 USD) (AIS 2018).

As all the respondents are landless in researchers' study, the average farm size is very low at around 0.062 hectares. Although arable per capita land in Bangladesh is very low, around 0.195 ha (WB 2017), farm size of the respondents in *char* land is even lower. The frequency of extension service is much lower than in other parts of the country. The main reasons behind this are the isolation of the *char* areas and the absence of paved roads for extension agents to use to come to the *char*. Along with that, low-level accountability of service providers and isolation of the land lead to low levels of extension service in *char* areas generally (*Char* Convention 2015).

In an interview, a farmer said:

To come from the upazilla (sub-district) office to our char you need at least 3 hours and you can come only by boat: therefore, extension workers generally avoid these areas. In addition, our roads are not suitable for vehicles: thus walking is the only alternative. Why would an extension worker come to us if he has to walk? (Rahela Begum, 36, May, 2016).

Extension service provisioning for the *char* people needs to be intensified through pluralistic agencies (Unnayan Onneshan nd.). In the first national convention for *char* development, participants noted that, despite many efforts for development in Bangladesh, *char* dwellers remained deprived. People on the *char* are constantly fighting against fragile infrastructure, adverse effect of natural hazards (such as flood, river erosion), loss of crops and so on (*Char* Convention 2015).

During a group discussion, researchers asked the opinions of *char* dwellers about how to solve the problems. A young *char* woman then replied:

As our char lands are isolated from the mainland, therefore we cannot demand all facilities to be provided frequently in the char. The Government can ensure different facilities at least once in a week, for example, medical facilities for us and our animals, agricultural extension services and banking. The Government can establish mobile hospitals, banks and schools etc. for us (Fatema Khatun, 36, July, 2016).

On *chars* there are no formal training facilities and the cost of travel between *char* and the mainland is very high, (*Char* Convention 2015; InM 2017). Therefore, people on the *chars* get little opportunity to obtain any training, from agricultural extension agents or from others. Furthermore, women on the *chars* do not want to spend their time going to *upazilla* agriculture offices because of many work burdens on the *char,* for example, looking after domestic animals, birds and child rearing.

During the FGD session a woman expressed the feeling of most women:

If I work as a day labor in the field, I can earn at least 200 taka [BDT] *in 8 hours but if go for training I need to spend 100 taka for travelling. Sometimes they provide lunch but this is not enough for a whole day: in fact, going outside the char is time-consuming and expensive* (Sufia, 40, May, 2016).

Few of the *char* women spent time watching and listening to agricultural programs on TV and radio. This is mainly because of low time allocation for TV/radio watching/ listening. On the *chars*, rural women need to work hard at their household duties. Child rearing, cooking, washing clothes and cleaning all type of household utensils takes up most of their time. Furthermore, there is no electricity in any *char* in Bangladesh (GK 2017) and few of them can afford to buy a TV or a solar power system. Similarly, organizational participation is very low among the *char* women; most of the women are members of NGOs but they have very little involvement in other social activities. They become members of NGOs because banks are not easily accessible but they can deposit some money in NGOs and also borrow microcredit from NGOs if they need it. As described earlier, the rural women have few opportunities to go outside the *char*; therefore, cosmopolitism is very low among the landless rural women.

Participation of rural women in IGAs is quite good in *char* areas. In this study, most of the women used more than one IGA to reduce their poverty. Thus, 130 respondent women in this study used 20 IGAs to different extents.

Char life is full of struggles. On the *char*, people live in extreme poverty. They do not have other jobs or sources of income except the IGAs. Therefore, *char* women prefer to engage in farming and non-farming IGAs (The Independent 2015). Rearing goats/sheep is regarded as the most popular IGA in *char* land for the rural women. Rural women rear goats/sheep easily, because they can feed them with household food wastage. Bilkis (28) said:

Goats/ sheep are less expensive then cows, we can easily buy and sell them. We do not need extra money to rear them because they live on the food wastage and green grass which is plentiful on the char.

Among other IGAs, seasonal vegetable cultivation and beef fattening were also popular. Hasan et al. (2015) found hundred percent of the respondents were engaged in vegetable cultivation whereas ninety-two percent and 46.6 percent respondents involved in goat rearing and beef fattening, respectively. On *char* land it is not possible to go outside every day to buy vegetables or other food. Therefore, most of the time, they can manage their food with the vegetables they are growing in their small gardens. The soil of the *char* is fertile because of the presence of river silt and available water. Therefore, women can grow vegetables easily.

An interested woman said:

If you look carefully you will find an overhanging bamboo structure in every house. This structure is used for vine crops, especially the bottle gourd. There is no vegetable market in the char and we cannot go to the distant market more than twice in a week. The other days we manage our food from the char (Sumona, 25).

Beef fattening is one of the most profitable businesses in *char* areas. People generally buy a calf and rear it for from four months to one year. Finally, they sell them during the *Eid-ul-Azha* (the religious festival of Muslims when they sacrifice animals, such as cows). Raising cows is also easy because of plentiful grass on the *char*. Women and children generally take care of the cattle. During the *Eid-ul-Azha* there is high demand for the cattle around the country. The local buyers also wander around the *char*s looking for cattle to buy. Women, therefore, can easily sell their cattle at profitable prices. Sorifunessa (55) said gladly:

Beef fattening is the most popular business in the char. Every family has at least one bull for fattening. Last year, we earned 35,000 taka by selling an ox before the Eid-ul-Azha.

The most significant problems confronted by the rural women in income generation are low technological know-how and the low price of produce. Osmani and Hossain (2015) and Pervez et al. (2016) found that farmers in rural areas rarely get a fair price for their produce. Similarly, Pervez et al. (2017) found that low-level technological know-how of farmers is one of the main barriers to agricultural production in Bangladesh. Rural women on *char* land are too isolated to learn modern technologies in agriculture.

Low prices of produce hinder the profit of *char* women. Furthermore, transport from *char* to market is costly because markets are generally very far. Middlemen generally buy from the

locality at a very low price. Ultimately the producers count losses. One woman explained the problem graphically:

We need a functioning market in our char. I have many bottle gourds in my garden this year. But the middlemen come to buy them at a negligible price. I, therefore, feed the bottle gourds to my cattle (Jahanara, 40, May 2016).

Zakaria and Kumar (2018) in their study of M4C model proved making market works in *char* can add additional 11,000 BDT/ household. They have shown immense importance of market-related infrastructure in economic empowerment of *char* women of Bangladesh.

The IGA participation shows a negative relation with age and family size of the respondents, which means an increase of these two independent variables, decreases the IGAs participation. Some other researchers also found women labor force participation is negatively related to their family size (Majbouri 2016; Cheah et al. 2017). This is because young women are comparatively better-educated and very conscious about household income and food security. Thus, they carry on many and diversified IGAs.

The rural women from large families can manage less time for IGAs because they are too busy with the household work like child-rearing, cooking, and cleaning and so on. On the other hand, educational level, family income, agricultural service frequency and watching/listening agricultural programs on TV/radio shows a positive relation to the participation in IGAs. Education generally broadens the outlook of a person. Therefore, educated women participated in a wide range of IGAs. Haile (2016) found women farmer participation in agricultural extension services positively related to their education level. Women from comparatively higher family incomes are capable to invest more than the women from lower family incomes. Rothstein and Valletta (2017) found program participation is positively related with family income of the respondents. The rural women who were getting extension services participated more because they could solve their problems with IGAs. Haile (2016) found the similar result in his experiment. Similarly, the women who were aware of agricultural programs on TV/radio participated more in IGAs activities then the women who are not aware of it.

Problem confrontation has a positive relation with age of the respondent. Aged women had low capabilities and scope for participation in IGAs due to illness, the responsibility of caring children, household activities. Therefore, they confronted many problems when trying to carry on IGAs.

Farm size, training received and cosmopolitanism show a negative relation with problem confrontation. Hossain et al. (2011) found a negative significant relation with training received and cosmopolitanism with farmer' problem confrontation in seed potato production in Bangladesh. Ullah et al. (2013) found training received and farm size had a significant negative relation with problem confrontation in practicing one house one farm approach. The women from higher family farm size are facing fewer problems because they generally engaged in more-diversified IGAs. Training helps to improve know-how and develop the capability of IGA performance. Therefore, the trained women were facing fewer problems in practicing IGAs. The women who were more cosmopolitan outside the *char* had fewer problems due to their experience from the exposure.

CONCLUSION

Char definitely covers a significant area of Bangladesh and habitat of around four and half millions of people with experiences of multidimensional poverty. Mostly young to middle-aged women, who had enough courage and stamina to do so, lived in *char* areas. Many of them are left behind by their husband and forced to live in *char*. They had a poor average family annual income. Most of the *char* women participated in a wide multiplicity of IGAs to make their livelihood more secure. The extent of *Char* women's participation in IGAs can be labeled as moderate. Livestock rearing and vegetable cultivation are the common IGAs practiced in the *char* area due to the abundance of natural feed and fertile soil. Their economic condition and geographical position permit more IGA involvement. However, involvement is beset by many challenges: including the poor level of technology use and a falling market price for the fresh product. Therefore, appropriate programs are needed to enhance the landless *char* women's participation in IGAs.

From the regression results, the researchers found IGA participation is negatively related to

age and family size of the respondents whereas positively related with educational level, family income, agricultural service frequency and watching/ listening agricultural programs on TV/ radio. Age and cosmopolitanism are negatively related with problem confrontation. Similarly, training received, cosmopolitism are negatively related to the problems they faced. Therefore, findings of this study would be helpful to the Government of Bangladesh and other agencies for planning suitable program in *char* or reshaping services policies for landless *char* women.

RECOMMENDATIONS

The reviews and unique results of the study paved a way to put forward some general recommendations. As the educational level, annual family income, farm size, extension contact and training experience of the *char* women have been observed very low, the government interventions are urgently needed. The State agricultural extension should create training and development facilities for the *cha*r women. Planning of suitable training programs in regards to IGA involvement is quite necessary. NGOs should also come forward with suitable training programs for *char* women.

Agricultural extension services and the educational program should be strengthened to increase the extension contact with women farmers and enhancing human resource development to mitigate the production problems confronted by the *char* landless women. Poor infrastructure inhibits market working in *char* and women get the very low price of their produce. Therefore, infrastructure development such as building roads, the establishment of schools, farmers' bank, market and creating connectivity with the mainland is required to attract the market agents and agro-processing companies to come in *char,* will surely help in women agro-entrepreneur development as well as improvement of livelihoods of the *char* women.

This study revealed that IGA participation is negatively-related to family size whereas educational level, family income and agricultural service frequency are positively related. Therefore, an intensive family planning program is needed in *char* areas. Arranging more education facilities is equally important in *char* land which in the long run will also help in better income and making a small and happy family. Problem confrontation is negatively related to farm size, training received and cosmopolitanism. Therefore, the fair and equal distribution of new *char* lands among the landless women is important. These activities can ensure high participation of IGAs among the landless *char* women.

The majority of landless *char* women faced problems in IGAs because of low technological know-how, poor loan facilities, poor connectivity, harassment by outsiders, frequent natural disaster and so on. Therefore, suitable planning is needed from the State to reduce the problems. In addition, in the current study, the researchers found farm size, training received and cosmopolitanism are negatively related to problem confrontation. Therefore, the government should redistribute *char* lands equally among the inhabitants and ensure adequate extension services.

Above all, a good transport and communication network with the mainland is needed for the *char* people. These activities can increase cosmopolitanism as well as enhance technology adoption by the *char* people, particularly the women.

The researchers also recommend the establishment of a separate research institute for improvement of the livelihoods of *char* people. As few people live on each *char*, the establishment of a hospital or an animal clinic is difficult. In congruence with the demand and need of the *char* women, the researchers recommend floating mobile hospitals as a suitable alternative. The big boats with all equipment and doctors can visit several *chars* each day in the week. This concept is also applicable for the establishment of floating mobile schools in *char* areas.

NOTES

1. Dowry means the practice of fathers paying their new son-in-law's to take their wives as brides. Often poor fathers cannot pay the dowry and poor husbands take it out of the hides of their new wives by beatings or even murder.
2. Currency of Bangladesh, locally known as Bangladeshi taka (approximately 80 BDT =1 USD).

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