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Rural Women's Participation in Aquaculture: Experience of a Technology Dissemination Project

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Abstract

The study was undertaken to have understandings on rural women's extent of participation in some selected aquaculture practices as a result of a technology demonstration project intervention in two selected districts in Bangladesh. The study also aimed at exploring relationships between the women's nine selected characteristics and their participation in aquaculture practices. Nakla upazila under Sherpur district and Katiadi upazila under Kishoreganj district were the location of the researcher where a sample of 200 women were randomly drawn from a population of 394 eligible rural women. Data were collected by using a pre-tested structured interview schedule during September to December, 2004. An overwhelming majority (72.5%) of the rural women had 'very low' level of participation in aquaculture activities while 13% had 'low' participation. However, no woman was found having 'high' participation and 12.5% were found having 'no' participation in aquaculture practices. The respondents had low to negligible level of participation in majority of the ten selected aquaculture practices. Rural women's participation in aquaculture practices had significant and negative correlation with their education, family farm size, family size and family annual income. Only knowledge on aquaculture had a significant and positive relationship with participation in aquaculture.

Keywords: *Rural women, participation, aquaculture, NGO*

Introduction

Women are the integral part of development, without whose active participation no development can be successfully realized. Although women perform specific jobs in inland and costal capture fisheries (preparing and maintenance nets, drying of fish etc.) and shrimp cultivation (processing worker), their involvement in aquaculture is not widely reported. The 1998 National Fisheries Policy did not mention the strategy to improve women's participation in fisheries despite having it as an objective (Williams, 2001). It is only now that there is a growing recognition of the ability and potential of women to contribute in the fisheries sector. Many GOs and NGOs are now working in Bangladesh involving rural women in aquaculture activities. A variety of reports from different NGOs are claiming success on women involvement in aquaculture (Williams, 2001).

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The World Fish Center, a member of CGIAR (Consultative Group of International Agricultural Research) is working in Bangladesh, undertook the USAID supported project 'Development of Sustainable Aquaculture Project' (DSAP). The major thrust of the project was to implement aquaculture demonstration and to bring unused and/or underused seasonal and perennial ponds and rice fields into improved productions with methods that are feasible, affordable and acceptable to resource poor households in rural areas of Bangladesh. The DSAP had a unique strategy for development of small scale aquaculture – the holistic strategy, which encouraged involvement of all family members of the beneficiaries, especially the women. Thus, it was anticipated that through the intervention of DSAP, the womenfolk of Bangladesh would gradually increase their involvement in aquaculture, which would eventually bring a wide range of benefits for them. The women are supposed to be benefited in terms of employment, income and empowerment through active participation in aquaculture. In order to keep womenfolk in the streamline of national development, it is of utmost important to document different aspects of their participation in aquaculture. Although a number of NGOs reported women participation in aquaculture, these reports did not go for threadbare analysis on women's extent of participation. The present work, therefore, aimed at determining extent and nature of women's participation in aquaculture activities under the DSAP intervention.

Methodology

Locale, population and sample: The study was conducted in Sherpur and Kishoreganj districts of Bangladesh. The DSAP had a number of partner NGOs who were in charge of dissemination of appropriate aquaculture technologies among the fish farmers of these localities. Two such partner NGOs, namely Foundation for Human Development (FHD) and Centre for Rural and Environment Development (CRED) were selected for the study while women members of the demonstration farmers' families under these NGOs were the target population. The women were selected following the criteria that they were involved in aquaculture activities under the DSAP intervention for at least three years. A total 394 rural women were identified in the study area that fulfilled the criteria; while a sample of 200 women were randomly selected for the present study.

Instrument and method of data collection: In order to collect data required for the study a structured questionnaire was developed keeping the objectives of the study in mind. A number of scales were used in the questionnaire to secure necessary information. The draft questionnaire was pre-tested with 20 women in the study area and necessary modifications were made in it from the experience of pre-testing. Data were collected from the selected rural women through face to face interview during the months of September to December, 2004. Besides the quantitative method of data collection, four focus group discussion sessions were also conducted.

Measurement of participation in aquaculture: Rural women's level of participation in aquaculture was actually perceived as their participation in ten common aquaculture practices. The

aquaculture practices considered for the purpose were: pond excavation, removing weeds from pond, liming, use of insecticides, application of fertilizers, management of fish stock, feeding, disease checking, catching of fry/fish, and selling of fry/fish. Participation of a respondent in each of the above-mentioned aquaculture activities was measured by considering two dimensions of participation, namely (i) frequency of participation and (ii) share of workload. The frequency of participation score was measured by using a 4-point rating scale, where a respondent was asked to indicate her frequency of participation in a particular aquaculture activity. The weights were assigned as 0 for 'no participation', 1 for 'rare participation', 2 for 'occasional participation' and 3 for 'frequent participation.' The share of workload score was determined by using a 3-point rating scale. A respondent was asked to indicate her share in an aquaculture activity and the weights were assigned as 1 for 'conducted mainly by men', 2 for 'fairly shared conduction' and 3 for 'conducted mainly by women (the respondent)'. Thus, a participation score was computed by using the following formula:

Participation score = Frequency of participation score × Share of workload score

Thus, participation score of a respondent in a particular practice could range from 0 to 9, where 0 indicating no participation and 9 indicating the highest level of participation. The total participation score of a rural woman was obtained by summing her scores in all the ten selected aquaculture activities. Thus, the total participation score of a rural woman could range from 0-90, zero indicated no participation and 90 indicated the highest level of participation.

Analysis of data: The collected data were compiled and analysed by using computer software SPSS 11.0 version. Besides the descriptive statistical techniques like mean, standard deviation and rank order, Pearson's Correlation Coefficient (r) was used to interpret the results of the research.

Findings and Discussion

Rural women's participation in aquaculture

Rural women's participation in aquaculture activities was determined by their extent and nature of activities in ten selected aquaculture practices. Table 1 presents the scenario of respondent rural women's participation aquaculture practices.

The Table 1 clearly indicates that the rural women's level of participation in common aquaculture activities was not substantial. Although it was supposed that the concerned partner NGOs of DSAP would work with a holistic approach to motivate women participation in aquaculture, the study reveals that the goal was not materialized at least in the study areas under the concerned NGOs. Among the ten aquaculture practices, only 'food preparation and feeding' was found to be moderately participated by the respondent women, while 'removing weeds from pond' was found to have low participation. All other practices were participated either to 'very low' extent or the level of participation was 'negligible' as perceived by their average participation scores. The result has some similarity with some previous

observations. Felsing *et al.* (2000) reported that in Bangladesh women involvement in aquaculture was often confined to small scale home processing and feeding, while Baluyut (2004) observed that Bangladeshi women confined to such domestic-based or auxiliary tasks as feed preparation, fish feeding, and even pond construction. However, these two reports did not focus on the issues of extent of women participation in those practices.

Table 1. Rural women's extent of participation in ten selected aquaculture practices

Aquaculture activities	Observed score range (possible range: 0-9)	Average score	Rank order	Level of participation
Food preparation and feeding	0-9	4.23	1	Medium
Removing weeds from pond	0-9	1.23	2	Low
Disease checking	0-9	0.83	3	Very Low
Application of fertilizers	0-6	0.55	4	Very low
Liming in ponds	0-9	0.41	5	Very low
Management of fish stock	0-9	0.32	6	Very low
Catching of fry/fish	0-9	0.30	7	Very low
Pond excavation	0-6	0.24	8	Negligible
Use of pesticides	0-6	0.16	9	Negligible
Selling of fry/fish	0-2	0.02	10	Negligible

Table 2 presents the categorization of rural women on the basis of their overall participation in aquaculture practices. The overall participation scores of the respondents ranged from 0 to 64 against a possible range from 0 to 90.

Table 2. Categorization of rural women according to their overall participation in aquaculture practices

Categories with score range	Rural women		Mean	Standard Deviation
	Number	Percent		
No participation (0)	25	12.5	8.32	8.634
Very low participation (1-15)	145	72.5		
Low participation (16-30)	26	13.0		
Medium participation (31-60)	4	2.0		
High participation (61-90)	0	0		
Total	200	100		

The Table shows that an overwhelming majority (72.5%) of the rural women had 'very low' level participation in aquaculture activities, followed by 13% and 2% having 'low' and 'medium' participation, respectively. No respondent was found having a 'high' level participation, while a considerable 12.5% woman was found having no participation in aquaculture. It is interesting to note that although only a few women demonstration farmers were included in the study (the majorities were women members of the demonstration farmers' families), they too were found not having significant level of participation in aquaculture. Rahman and Minkin (2003) also observed that women participation in aquaculture in Bangladesh was very low.

The women, during focus group discussion sessions, were asked to explain the reasons behind such a low level participation in aqua-

culture practices. The major reasons were: (i) daylong occupation in household activities, (ii) less interest in aquaculture (iii) perception of aquaculture as work for men, (iv) less participation in aquaculture as a livelihoods activity due to economic solvency of the family, (v) low access to economic benefits received from aquaculture, (vi) social and religious conservatism, (vii) distance of household from pond, and (viii) lack of motivation by extension agents. Some of the reasons have also been recorded by Fesling *et al.* (2000) and Brugere *et al.* (2004).

Characteristics of the respondent rural women

Nine characteristics of rural women under the study area had been selected for the study. Salient features of the characteristics of the 200 respondents have been presented in Table 3.

Table 3. Salient features of the selected characteristics of the rural women

Characteristics	Measuring unit/method	Possible range	Observed range	Mean	Standard deviation
Age	Years	-	18-65	34.45	10.03
Education	Level of schooling	0-17	0-16	4.25	4.30
Family size	Numbers	-	2-18	6.67	2.50
Family farm size	Hectare	-	0.23-5.82	1.58	1.19
Area under aquaculture	Hectare	-	0.04-3.49	0.32	0.48
Annual family income	'000' Taka	-	16.18-440.70	110.97	81.79
Extension media contact	Scale score	0-54	0-26	7.98	3.65
Training exposure	No. of days	-	0-30	0.53	3.14
Knowledge in aquaculture	Scale score	0-30	12-30	22.89	3.76

The Table shows that the rural women were middle aged in average and had primary level education (however, a relatively large standard deviation indicating a wide range of educational qualification) with relatively larger family sizes. Average family size and annual family income indicated that the respondents' families were not the poorer part of the society. As only solvent families in the rural area have own ponds, this is an expected outcome that none of the 200 respondents came from an ultra poor family. Because of some regular contact with NGO agent, the extension contact score was also not low for the respondents. Although training exposure was found low among the respondents, their knowledge on aquaculture was good in average.

Relationship between dependent and independent variables

Relationships between the selected characteristics of the respondent women and their extent of participation in aquaculture were determined though Pearson's Product Moment Correlation Coefficient (r), results of which have been presented in Table 4.

Data presented in Table 4 revealed that rural women's participation in aquaculture practices had significant and negative relationships with their education, family size, family farm size and family annual income, while their participation showed a positive and significant relationship with their knowledge on aquaculture. The remaining four characteristics of the respondents did not show any significant relationships with their participation in aquaculture.

Table 4. Relationship between women's participation in aquaculture and their selected characteristics

Selected characteristics	'r' values with participation
Age	-0.086
Education	-0.156*
Family size	-0.142*
Family farm size	-0.222*
Area under aquaculture	-0.106
Extension contact	0.087
Training exposure	0.026
Knowledge on aquaculture	0.3648**
Family annual income	-0.217**

**P<0.05 and **P<0.01 with 198 d.f.*

Traditionally, in rural Bangladesh women having good educational exposure do not like to get involve in labourious and farm related works. Moreover, if an educated woman looks after her aquaculture business, she usually prefers to use hired laborers for the works. So, educated women were found having less participation in aquaculture. Women's family size and participation in aquaculture showed a significant negative relationship, which implies that level of participation in aquaculture decreases with the increase of family size. This perhaps happened because of two interrelated reasons. Firstly, women of a big family generally engaged in huge family chores, what makes them unavailable for involvement in aquaculture. Secondly, as women are usually busy with day to day household activities, the male members of big families can look after the aquaculture aspects. Family farm size and participation in aquaculture showed a significant negative relationship, which indicates that women belonged to large family farm might be busy with activities related to crops and livestock production, processing, and conservation, and therefore they had less time for aquaculture. Family annual income of rural women also showed a significant and negative relationship with their level of participation in aquaculture. The finding implies that women members of economically solvent families were not substantially involved in aquaculture activities. In rural Bangladesh, if a woman's family is economically solvent, the woman does not engaged in laborious jobs mainly because of availability of cheap laborers in rural areas. Furthermore, rural women's participation in aquaculture had a significant and positive relationship with their knowledge on aquaculture, which is plausible in the context of technology dissemination.

Conclusions

Although women participation in aquaculture is now being emphasised by a good number of development organisations, the results of the study indicate that the level of participation has not been substantially increased even in a project intervention like DSAP. The reasons behind such low participation are also discussed in the paper. A concerted effort along with pragmatic strategy both from the GOs and NGOs including development partners of Bangladesh can play a vital role to change the scenario. A better understanding of the existing gender relations in the community and the households must be gained by the organizations working for the development of aquaculture. Formulating gender sensitive aquaculture extension programs along with a good number of female extension agents in the grassroots level can better motivate rural women's participation in aquaculture. More importantly, an organization while working

with women participation issue must incorporate regular monitoring activity in its programme so that their activities or participation in aquaculture can be re-focused regularly.

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References

Baluyut, E. 2004. Women in Aquaculture Production in Asian Countries. <http://www.fao.org/docrep/s4863E06.htm>

Brugere, C., K. McAndrew and P. Bulcock. 2004. Does Cage Aquaculture Address Gender Goals in Development? *Research Report*, The Institute of Aquaculture, University of Stirling, Stirling.

Felsing, M., C. Brugere, K. Kukakabe and G. Kelker. 2000. Women for Aquaculture or Aquaculture for Women? *SPC Women in Fisheries Information Bulletin No. 7*. <http://www.spc.coastfish/news/WIF/WIF7-Internet/09.htm>

Rahman, M. and S.F. Minkin. 2003. Net Benefits: The Ecological Restoration of Inland Fisheries in Bangladesh. Paper Presented at the International Conference on Natural Assets, held on 8-11 January 2003 at Tagaytay City, Philippines.

Williams, M.J. (ed.). 2001. *Proceedings of the International Symposium on Women in Asian Fisheries*. WorldFish Center, Penang, Malaysia.