

# Impact of Fishery Training Programs on the Household Income of the Rural Poor Women in Bangladesh

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**Abstract** Development organizations of Bangladesh provided training facilities to the poor rural women in order to improve their skills in pursuing fishery activities. The prime objective of the study was to assess the impact of fishery training on the household income of the rural women. Ordinary Least Square (OLS) technique was used to assess the impact of fishery training programs on the household income. This study showed that fishery training programs had created a significant impact on the household income of the rural poor women. It was also found that fishery credit, possession of land, and the number of natural hazards were the key determinants of household income.

**Keywords** Training, Fishery, Income, Women, Bangladesh

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## 1. Introduction

Agriculture plays a vital role in the economy of Bangladesh [1]. Fishery sector is considered one of the potential sub-sectors of agriculture [2, 3]. This sector contributes significantly to improving nutrition status, generating rural employment opportunities, reducing rural poverty and inequality; and earning foreign exchange for Bangladesh [2-5]. In the Fiscal Year (FY) 2015-16, the contribution of the fishery sector to the GDP was about four percent [3]. In FY 2015-16, Bangladesh earned 42828.2 million BDT<sup>1</sup> by exporting fish and fish product to the foreign countries [3]. The livelihood of about 6.7 million people of the country, directly and indirectly, depend on the fishery sector [4]. Nevertheless, the socioeconomic condition of fishing community shows a dismal picture. Researchers find that the fishermen in Bangladesh have low level of education, lack of physical and financial assets and lack of skills [5]. Due to their poverty, they fail to invest properly on fishery related Income Generating Activities (IGAs) for which low fishery production and returns are yielded. Despite the potentials, fish production is still low in Bangladesh. For example, in the FY 2015-16, the total fish production was 3.85million Metric Tons [3].

Lack of capital, over fishing, shrinkage of flood-plains, lack of modern technology, destruction of spawning ground, lack of knowledge on fishery production, and inadequate extension services are identified as the major causes of low fishery production in Bangladesh [6]. The Government of Bangladesh (GoB) is committed to providing adequate financial and technological support to the fishermen to increase fishery production. It is generally believed that along with fishery-credit support, training facilities provided to the fishermen would play a significant role in increasing production. It is observed by the researchers that training can play a vital role in increasing skills and agricultural production, improving analytical power of a person and decision-making capacity [1, 2, 7, 8]. Being consistent with the national agricultural development policies of the government, both the government organizations and non-governmental organizations (NGOs) are providing both training and credit facilities to the fishing community mainly focusing on the women. It is assumed that due to participation in the fishery training programs, living-standard of women, in terms of income would increase. However, in the context of sub-continent, training programs, in many cases, failed to create desired outcomes [9, 10]. Therefore, the following question can be raised: Does the fishery training programs increase the borrowers' household income? Do the borrowers prefer to participate in the NGO-operated fishery training programs?

In this study, an effort was taken to measure the impact of fishery training programs on the household income of the women using the econometric technique.

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<sup>1</sup> BDT indicates currency of Bangladesh. 1 USD = 78.26 BDT [3]

## 2. Previous Studies Related to Training Programs

Some researchers indicated that rural women borrowers who were involved in agribusiness became successful in increasing their household incomes because of their participation in the agricultural training programs of BRAC (a reputed NGO in Bangladesh) [1]. Providing skill building training along with the asset grants could play a vital role in increasing the capacity of the ultra poor to build productive assets [11]. The researchers also indicated that providing training to the farmers assisted them in adopting scientific technology and increasing their agricultural production [12]. In a study in Uganda, the researchers provided the evidence that the rice farmers who received agricultural training obtained higher profit than a farmer who had no training [13]. The researchers also added that adoption of improved cultivation methods by the rice farmers increased because of their participation in the training program [13]. Training can be considered one of the important factors for improving competency of the managers and firms' business performance [14]. According to the researchers, household healthcare expenditure of the rural poor borrowers in Bangladesh increased due to receiving training from BRAC [7]. In the context of India, providing training to the women members of the Self-Help-Groups (SHGs) played a vital role in increasing their skills in livestock rearing [15]. Similarly, Malaysian farmers succeeded in increasing their livestock production and competencies due to the intervention of agricultural training programs [16]. In Bangladesh, the researchers reported that participation in the agricultural training programs assisted the potato farmers in increasing their household expenditure and agricultural production [8]. In Egypt, fishery training played a positive role in improving management practices of the fishermen and obtaining higher profit for them [17]. In the context of Bangladesh, Integrated Aquaculture-Agriculture (IAA) training program had a significant impact on increasing their technical efficiency and fishery production [2]. It was observed by the researchers that providing agricultural training to the poor farmers in Rwanda was one of the effective ways to increase assets, income, and production [18]. However, the training programs were also criticized by the researchers. They observed that training programs launched by the NGOs in Bangladesh could not bring the desired outcomes in terms of income generation and economic development of the individuals due to lack of infrastructural facilities and the absence of the Training Needs Assessment (TNA) [9].

Very few studies were conducted on assessing the impact of fishery training focusing on the living-standard of the poor rural women. In this study, therefore, an emphasis was given to assess the impact of fishery training on the household income of the women.

## 3. Research Methods

Primary data were collected from the rural poor woman members of the NGOs who received fishery training. At first, a comprehensive list of the women who received trainings from the NGOs on fishery-related activities was collected. Afterwards, using the Simple Random Sampling (SRS) technique, 443 women were selected as samples from the population size of 1695 conceiving four percent of error at the 95 percent confidence level. The criteria that were used to select the samples for this study were:

- (i) Women who were engaged in fishery-related activities during 2014 and 2016.
- (ii) Women who received at least one fishery training during 2014 and 2016.

A survey was conducted in seven upazilas (upazila is a lowest administrative unit) of Kishoreganj districts in Bangladesh from January, 2017 to February 2017. Data were mainly collected from the landless, marginal and small woman farmers on their demographic characteristics, household income, household savings and expenditure, perceptions on training programs, types of trainings, duration of training program, types of fishery activities pursued by the women and the problems encountered by the women under the fishery training programs.

In this study, '5-point Likert-scale' was used to assess the opinions of the women on the selected indicators. Ordinarily Least Square (OLS) technique was also used to assess the impact of fishery trainings on the household income of women who were engaged in fishery-related activities. Heteroscedasticity is a serious problem if it arises [19]. In this study, BPG test was conducted and the problem of heteroscedasticity was detected. The problem of heteroscedasticity can be solved by using the Weighted Least Square (WLS) or White method [20]. In this study, the White method was used to solve the problem of heteroscedasticity. The household income model can be specified as:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + \mu$$

Where, Y= Total household income in 2016 (BDT)

X<sub>1</sub> = Distance of the nearest Fishery Extension Office (FEO) from the house of the respondent (kilometer)

X<sub>2</sub> = Years of schooling of the respondent (number)

X<sub>3</sub> = Training received by the respondent during 2014 to 2016 (number)

X<sub>4</sub> = Total land possessed by the household in 2016 (decimal) X<sub>5</sub> = Microcredit received by respondent from NGOs during 2014 to 2016 (BDT) for pursuing fishery activities

X<sub>6</sub> = Natural hazards faced by the household during 2014 to 2016 (number)

b<sub>i</sub> = Coefficient to be estimated

μ = Error term

## 4. Results and Discussion

### 4.1. Types of Trainings Received by the Respondents

Respondents of this study were mainly provided with three types of trainings that were: (i) fishery technology, (ii) fishery management and awareness building, and (iii) IGAs. Training on fishery technology includes fish-culture, stocking, disease control, methods of catching, use of fishery equipment, fish conservation, and processing and marketing of fishery products. Fishery management and awareness building training includes leadership quality, literacy, credit management, record keeping, gender relation, conflict management, and healthcare. Training on the IGAs includes fishery related small business. The majority (about 54 percent) of the respondents received training on fishery technology followed by fishery management and awareness building (Table 1).

**Table 1.** Types of Trainings Received by Respondents during 2014 and 2016

Categories	Total	Frequency	Percentage
Fishery technology	443	241	54.40
Fishery management	443	132	29.79
IGAs	443	70	15.81

Source: Survey, 2017

### 4.2. Number of Trainings Received by the Respondents

Respondents were categorized into four categories on the basis of the number of training received from the NGOs (Table 2). It can be seen from the Table 2 that the majority of the respondents are in the category-1 followed by category-2 and category-3.

**Table 2.** Number of Training Received by Trainees during 2014 to 2016

Categories	Total	Frequency
Received one training (category-1)	443	267
Received two training (category-2)	443	148
Received three training (category-3)	443	22
Received more than three training (category-4)	443	6

Source: Survey, 2017

### 4.3. Opinions of the Respondents on the Training Programs

Respondents provided their opinions on the following seven indicators relating to their living-standard, which were: (i) household income, (ii) skills on pursuing IGAs, (iii) Investment capacity on IGAs, (iv) fishery production and (v) risk management capacity, (vi) food expenditure, and (vii) healthcare expenditure (Table 3). Respondents had five options for providing their opinions on each indicator which were: (i) strongly agree (SA), (ii) agree (A), (iii) neutral (N),

(iv) disagree (DA) and (v) strongly disagree (SDA). It was observed that a significant portion of the respondents opined that the training programs they received had a positive contribution to improving their living-standard on the above mentioned indicators. For example, about 64.80 percent respondents agreed that training increased their household income while about 24.83 percent respondents disagreed that their income increased for getting trainings (Table 3). However, most of the respondents had their opinions that their skills in pursuing agricultural activities increased because of receiving trainings (Table 3).

**Table 3.** Opinions of the Respondents on the Selected Indicators (number)

Statements	SA	A	N	DA	SDA
Income of the household increased	17	270	46	89	21
My skills in pursuing IGAs increased	29	337	14	55	8
Fishery production of the household increased	12	253	32	127	19
Investment capacity of the household increased	21	209	53	146	14
Risk bearing capacity of the household increased	18	166	45	178	36
Food expenditure of the household increased	15	251	38	112	27
Healthcare expenditure of the household increased	11	195	29	167	41

Source: Survey, 2017

### 4.4. Factors of Household Income

Microcredit provides the opportunity to the rural poor to start new IGA or to pursue the existing IGAs properly [1, 7]. It is found that a person who got credit support from the formal financial institutions was in the advantageous position than a person who did not receive any credit support [7]. The study showed that the amount of fishery credit received by the respondents had a positive and significant impact on the dependent variable 'household income' (Table 4). It indicates that the household income would increase if the amount of fishery credit increases.

Fishery activities are complex and diversified in nature. Without proper training, it is difficult to obtain expected outcomes pursuing fishery activities. In fact, rural poor women in Bangladesh usually have lack of skills to pursue the IGAs which leads low production and income [1, 7]. Training plays a vital role in improving the skills of a person [1]. A trained person will be in an advantageous position than an untrained person in analyzing the socioeconomic phenomena, taking appropriate decision, negotiation, and risk management and using modern technologies [1, 7]. It was mentioned earlier that the respondents under this study were provided trainings by the NGOs on three aspects, which were: fishery technology, fishery management, and IGAs. It was expected that the respondents would be able to improve their living-standard in terms of household income because of training intervention by the NGOs. This study showed that

training received by the respondents was positively and significantly related to the household income (Table 4). It indicates that household income would increase if the number of training increases.

In the context of Bangladesh, rural poor farming households usually have a small pieces of land [1, 7] which is one of the major obstacles for them in obtaining higher production and income. In fact, possession of land by the household helps in diversifying production, increasing income, and enhancing negotiation and risk-bearing capacity [1, 7]. It is generally believed that the households which possess more land areas for pursuing fishery-related activities are in an advantageous position, in terms of modern fishery technology use, earning income and tackling the risks than the households having small pieces of land. This study confirmed that possession of land was positively and significantly related to the dependent variable (Table 4). It indicates that household income would increase if the land size increases.

Natural hazards are one of the major threats to the fishery production. In Bangladesh, loss of fishery production is common phenomena due to the occurrence of natural calamities. In this study, it was found that the number of occurrence of natural hazard was negatively and significantly related to the dependent variable (Table 4). It indicates that the household income would decrease if the number of natural hazards increases.

**Table 4.** Estimated Results of the OLS

Variable	Coefficient	t-value	p-value
Distance of FEO (kilometer)	-0.02	-1.06	0.316
Year of schooling (number)	0.07	0.08	0.729
Fishery training received (number)	0.03	3.72	0.000
Total land possessed by the household (decimal)	6.49	4.29	0.000
Amount of fishery credit received (BDT)	5.07	10.47	0.000
Natural hazard faced by the household (number)	-0.37	-4.89	0.000
R-square: 54.27			

Source: Survey, 2017

## 5. Conclusions and Implications

It was mentioned earlier that the prime goal of the study was to assess the impact of fishery training on the household income of the rural poor women involved in fishery-related activities. In this study, it was observed that fishery training programs had a significant impact on the household income. Providing trainings by the experienced trainers focusing on the training demands of the trainees might be considered as the major causes of creating significant impact. Though the co-efficient of training in the regression analysis was found significant but the magnitude of impact on household income was small. Providing few number of trainings for a short

duration of time might be the major cause of creating small impact on their living-standard.

It was also found in this study that the amount of fishery credit; the possession of land, and the number of natural hazards were the key determinants of household income. It was also observed that the majority of the respondents under this study had their opinions that they were benefited because of participation in the fishery training program which assisted them in improving their living-standard in terms of socioeconomic aspects. The policy makers should focus on the following aspects in order to improve the living-standard of the rural poor women through training programs:

Training should be provided for a long period of time by the experienced trainers centering the needs of the trainees. Training manuals/materials should be updated with the modern techniques of fish culture. Focus should be given to provide the training materials to the trainees at a free of cost or by charging a nominal price. It is also necessary to establish the training centers in the rural areas so that the trainees have an easy access to the training center. Moreover, steps should be taken to provide adequate training allowances to the trainees to motivate them in participating in the future training programs.

Steps should be taken to provide fishery credit facilities to the rural poor women who are engaged in the fishery-related activities as per the needs. Fishery credit should be disbursed to them on time at a low interest rate through simple disbursement procedure. Provision should be made to repay the loan in a small amount with the higher number of installments. Flexibility should be made in the loan repayment system. It is important to take proper steps to introduce insurance policies for the fishing community. Emphasis should be given on improving the rural infrastructural facilities (e.g. dams, culverts, roads, processing units etc.) so that the loss of fishery production from the natural calamities can be minimized.

Steps should also be taken to prevent the use of agricultural land for the non-farming activities such as building houses etc. Steps should be taken to ensure land rights of the poor women by the proper implementation of existing laws. Community based fishery management practices should also be introduced.

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