Economics of Women Involvement in Pineapple Production in Moulvibazar District, Bangladesh: Household Income and Decision Making Perspective

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Authors' contributions

Author BM designed, collected, analyzed, checked the data and prepared the draft manuscript. Authors BM, MB and MBP contributed to the literature search and data interpretation and reviewed the draft manuscript. Authors MB and JUA jointly coordinated, reviewed the draft manuscript and approved the final manuscript.

Original Research Article

ABSTRACT

Aims: The research was aimed to assess the economic involvement of female workers in pineapple production and their perception of household income and decision-making perspective in some selected areas of Moulvibazar district, Bangladesh.
Study Design: This article is about determining the female workers contribution to household income and is placed on empirical analysis. It estimated the income and decision-making power of female pineapple workers at the household level.
Place and Duration of Study: The study was carried out in the Sreemangal Upazila of Moulvibazar district of Bangladesh including three villages i.e. Mohajirabad, Doulochora, and Radhanagar as the female participation in pineapple work is comparatively high. The study period was the production period of pineapple from June to September 2020.
Methodology: In this study, simple random sampling was used to choose 200 respondents. Face-

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to-face interviews with pineapple female workers generated primary data, which was obtained using structured questionnaires. The socio-economic profile of the sampled respondent was determined using descriptive methods. To estimate the female workers contribution to family income and their perception of household decision-making, the Income-Expenditure model and 5-point Likert Scale were applied.

Results: The outcome of the research appeared that most of the respondents were belonging to middle age group which is considered an active working group and the average age of the sample respondents was approximately 40 years while the average family size was 6.37. The findings of the study showed that 82.50% were married and 56.50% had no formal education and almost 80.50% of sample respondents were only engaged in pineapple production. The sources of annual family income indicating that 35.76% of income came from female members of the households in which 26.64% where came from only the pineapple sector and the average annual contribution of female pineapple workers in household income was Tk. 23,373.00.

Conclusion: It has been concluded that in the study area female workers had a significant role in the participation of household income and also the perception of female workers was largely accepted in the case of household expenditure, buying and selling of family wealth, education of children, saving money, and receiving medical treatment.

ABBREVIATONS

BBS   **:**   Bangladesh Bureau of Statistics
GDP   **:**   Gross Domestic Product
et al.   **:**   Et alia (L.) and others
etc.   **:**   Etcetera
i.e.   **:**   That is
Tk.   **:**   Taka (Bangladeshi Currency)
%   **:**   Percentage
BDT   **:**   Bangladeshi currency in taka

1. INTRODUCTION

Bangladesh is a developing country, where half of its total population is female. So, their participation in economic activities is important for their family's and country's social and economic growth. In addition, the participation of the people, especially women, affects the speed of development in any country. Bangladesh is a traditional Muslim society where women have a domestic status. Women have long been stereotyped as obedient daughters, contented wives, and reliant mothers. However, according to a recent labor force study done by the Bangladesh Bureau of Statistics, engagement of women in economic activities is rising tremendously [1]. Vulnerability of women is highlighted by a World Bank study in Bangladesh, which illustrates their minor role in family decision-making, restricted access to and command over household resources (health and financial), low amounts of available resources, household work stress, lack of mobility, and insufficient experience and expertise [2]. They play a significant role in animal rearing, seed production, post-harvest handling, fisheries, energy and family management, and natural ecology preservation [3]. Rural women are undervalued in development efforts, despite their significant contribution to food production and household well-being [4]. However, Bangladesh is on the path of removing all types of obstacles to women's development by improving various facilities and at the same time, the participation of females in different working activities is remarkable nowadays. So, research in this field is very crucial to develop new knowledge about female contribution and the actual situation of women empowerment in the recent era. Agriculture is the Bangladeshi economy's single largest producing sector, accounting for 17% of total GDP this sector generated 47% of the entire workforce. As a result, agriculture plays a crucial role and is regarded as the most important economic sector [1]. The participation of females in pineapple production is on an average of 30% (approximately) but their contribution is not highlighted like as male workers [5].

Pineapple is becoming a major manufacturing product in numerous countries, and global demand for pineapple is rising rapidly. The scientific binomial name of this fruit is, *Ananas Comosus*, is derived from the word Tupinanas, which means "excellent fruit." It is one of the most influential commercial fruit crops in the world. Thailand is the world's top pineapple producer, represent for worldwide production, after by Brazil and Costa Rica [6]. After bananas

and citrus fruits, pineapple is the world's third most significant tropical fruit [7]. It is also a very popular fruit in Bangladesh, especially during the rainy season, because of its significant nutritional and economic benefits.

Among all of minor crops in Bangladesh, the pineapple is a prominent fruit crop. In Bangladesh, fruit production, notable pineapple, is continuously growing. According to a time-series study, pineapple is the fourth most important fruit in Bangladesh based on total growing yield per hectare [8]. Pineapples are commonly grown in Tangail, Chottagram, Rangamati, Dhaka, Bandarban, Sylhet, Khagrachari, Mymensingh, and Moulvibazar, among other districts in Bangladesh [1]. The future of pineapple cultivation in Bangladesh is bright because, even though the fruit is grown in roughly 90 countries around the world, pineapples from Bangladesh are much more moist and flavorful than those from other countries. These pineapples are assured to earn a lot of money in terms of exports if they are properly managed and marketed [9]. Pineapple has a large amount of moisture, glucose, starch content, ascorbate, and dietary fiber. As a result, pineapple can be used as a food additive to help maintain optimum health [10]. Pineapple is also high in potassium, calcium, carbs, vitamin C, moisture, and a variety of nutrients, and dietary fiber that helps in digestion and the repair of body weight a well good. A single pineapple provides more than 130% of the daily vitamin needs for humans. In addition, pineapple enhances eyesight, bone strength, dental hygiene, blood flow, and blood pressure regulation, as well as reduces cold and flu problems [8].

Many studies have been conducted on involvement of women in family income and decision-making aspects from different country perspectives. For example, Saleemi and Kofol [11] in their study on "Women's participation in household decisions and gender equality in children's education: Evidence from rural households in Pakistan", estimated that due to changes in women's involvement in family matters, household's percentage of education expenditures spent on girls has changed which is about 12.60% point higher proportion of expenditure than boys. Similarly, Pandey *et al.* [12] explored the involvement of women as domestic decision-makers in India, they discovered that position of women in society is an important indication of a socio-economic progress of that region. In addition, educational

attainment of women and employment position were found to be the most important determinants of their empowerment and participation in decision-making in all aspects of their household life. A study by Iji *et al.* [13] indicated that 97.41% of women in their research did not rely primarily on their partners' earnings. 63.70% of women used all of the money they earned to care for their houses. As a result, the study indicated that women who work in small enterprises make a considerable contribution to home income and family happiness. Another similar finding incorporated by Sariyev *et al.* [14] in Bhutan that was women who did not lack considerable engagement in home decision-making, the assessments suggested that the relationship between participation of women in decision-making and dietary habits is non-linear. Furthermore, Awan *et al.* [15] discovered that involvement of women in the formal and informal labor markets has attained remarkable national and worldwide significance. Moreover, Ismail *et al.* [16] in their study in Nigeria found that availability of women to essential economic resources, such as land (as proprietors), limited labor-saving equipment, food-processing appliances, financing, and farming inventions should be strengthened. Even though rural women play a prominent role in the sector, their contribution to agricultural productivity and rural development in Nigeria is woefully underappreciated.

Therefore, it is clear that female workers contain a significant portion of the total labor force but they get very limited working opportunities and are deprived in different ways. Despite their significant involvement to the household's income and well-being, they have minimal decision-making power. As a result, women's equal involvement in socio-economic operations is restricted due to a lack of ownership and control over production factors, which impedes the process of human advancement [17].

Very limited studies have been conducted on women's participation in household decision-makings in the case of Bangladesh. For example, Roy *et al.* [18] also measured the contribution of women to their household income, and analyze the pattern of women's participation in the decision-making process Mymensingh Sadar Upazila. According to their research, the findings average yearly contribution of female earnings is Tk. 42000 per year, or around 43.52% of total family earnings and decision-making of women is positively linked to participants' age, schooling, land size, earnings,

and profession. A study by Hasan *et al.* [19] analyzed the effect of pineapple production on pineapple growers' increasing income. Their research looks into the link between respondents chosen attributes and higher income from the unit of area. Furthermore, in her study of the effects of determinants on women's independence and decision-making power inside the household in rural areas, Sultana [20] found that men have more power in making family decisions simply because they are men; women are normally expected to follow out commands. She further noted that many believe male dominance is a natural state of things, which means that society has made men dominant, dominant and that men must work to support their families, whereas women are completely helpless in practically every sector and are completely reliant on men.

The above reviews and discussion indicated that there were a large number of studies conducted on women's financial contribution and participation in household decision-making. Only a little research on female laborers' engagement in pineapple production, contribution to the economy, and decision-making viewpoint have been undertaken, according to these literature evaluations. So, it is essential to conduct more studies that would be effective in assessing the economic contribution of females in the Moulvibazar district of Bangladesh. The research will help to identify and evaluating the nature and degree of female workers' contributions to home decision-making and their family income. Thus, the overall objective was to estimate the female workers involvement in household income and decision-making perspective in the Moulvibazar district, Bangladesh.

2. MATERIALS AND METHODS

2.1 Selection of the Study Area and Sample

The research was carried out in the Sreemangal Upazila of the Moulvibazar district of Bangladesh including three villages which are Mohajirabad, Doulochora, and Radhanagar as the female participation in pineapple work is comparatively high in these areas and the specific research analysis in this perspective is very scanty in this respective area of Bangladesh. Simple random sampling technique were employed to choose 200 respondents from the survey areas. Primary data were gathered by means of structured questionnaires through face-to-face interviews

with pineapple female workers from June to September 2020. Obtained information and data from questionnaires were coded and analyzed using SPSS software.

2.2 Analytical Techniques

The study was used both descriptive and analytical methods. The following analytical technique was used to estimate female workers income contribution and household decision-making in the survey area.

2.2.1 Estimation of female workers contribution to family income

Annual income is defined as a respondents and his or her family's total earnings from agricultural and non-agricultural (e.g., daily labor, business, corporation, etc.) sources over a year. The yearly salary was expressed in Taka [21]. The following equation was used to calculate income:

$$Y = \sum_{i=1}^{n} Ai + \sum_{i=1}^{n} Bi \qquad (i)$$

Where,

Y = Annual Income (Tk.)
Ai = Annual total income (male + female) from i^{th} activities
Bi = Annual total income (male + female) from i^{th} other activities
i = 1, 2, 3 ……………………………………n

2.2.2 Estimation of expenditure

$$E = Pai \sum_{i=1}^{n} Xi + Pbi \sum_{i=1}^{n} Yi \qquad (ii)$$

Where,

E = Expenditure
P_{ai} = Per unit price of with agricultural food product consumed (Tk. /Kg.)
X_i = Total amount of the ith food product consumed (Kg.)
P_{bi} = Per unit price of ith non-food product consumed (Tk. /year)
Y_i = Total amount of ith non-food product consumed (Kg.)

2.2.3 Dependency ratio

The dependency ratio is the ratio of the total population to the earning members.
Dependency ratio = Total population/ No. of income- earning members *(iii)*

2.2.4 Evaluating female perception in household decision-making

A 5-point Likert Scale was used to assess the perceptions of female workers of the household decision-making process. Only the favorable assessment against the 5-point scale was included in the ten statements. On a 5-point scale, each responder was asked to indicate how strongly they agree, disagree, neutralize, strongly agree disagree, and strongly disagree with each statement. These responses were given weights of 5, 4, 3, 2, and 1 in favor and 1, 2, 3, 4, and 5 in opposition. The total score of the respondents was calculated by adding the weighted responses to each of the ten statements. When respondents were asked about their opinions on various alternatives, their contribution to income was taken into account. A participant's total score was calculated by adding the weights for responses to all ten statements. The Perception Index (which varied from 10 to 50) was used to determine each respondent's perception score using the following formula [22]:

$$\text{Perception Index (PI)} = 5{\times}SA + 4{\times}A + 3{\times}N + 2{\times}DA + 1{\times}SDA \text{ (in favor)} \qquad (iv)$$

Where, total number of respondents (women) expressing their perception for the statement on household decision-making process as: SA = 'strongly agree'; A = 'agree'; N = 'neutral'; DA = 'disagree'; and SDA = 'strongly disagree'.

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of the Respondents

The socio-economic profile of the sampled female workers is constituted in Table 1. It is seen that the average household size of the respondents was 6.37 (whereas 50.80% of family members were male and 49.20% were female). In terms of religion, most of the respondents in the study area were Muslim (64.50%) whereas Hindu and Buddhist were 33.00% and 2.50%, respectively. The majority of the female workers (89.00%) were middle age group between the age range of 21 and 64 and the average age of the sample respondents was approximately 40 years which is considered an active and working group. 56.50% of the respondents were illiterate having no formal education whereas only 10.00% completed their secondary education. In the study area, 82.50% of the female workers were married indicating that they were getting married at their earlier stage of life and only 10.50% were single. A noticeable number of respondents lived in a nuclear family only with their parents due to financial crises which are about 67.00%.

Table 1. Percentage distribution of the respondents by socio-economic characteristics

Particulars	Percentage	Particulars	Percentage
Average Household Size (No.)	6.37 (Male: 50.80%; Female: 49.20%)		
Age categories		Pineapple work and livestock rearing	7.00
Below 20 years	10.50	**Marital status**	
21- 64 years	89.00	Single	10.50
Above 65 years	0.50	Married	82.50
Religion		**Divorced**	**3.00**
Islam	64.50	Widow	4.00
Hindu	33.00	**Occupational experience**	
Buddhist	2.50	Below 20 years	80.50
Family Type		**21 to 40 years**	**12.50**
Joint family	33.00	Above 41 years	7.00
Nuclear family	67.00	**Annual household income**	
Literacy level		**Below 1 Lac**	**83.50**
No formal education	56.50	1 Lakh to 2 Lac	11.50
Primary	33.50	Above 2 Lac	5.00
Secondary	10.00	**Annual household expenditure**	
Occupation status		**<1.5 Lac**	**42.50**
Pineapple work	80.50	1.5 Lac to 2 Lac	24.00
Pineapple work and poultry rearing	12.50	>2.5 Lac	33.50

Source: Authors estimation, (2021)

Three types of income diversification were found in the study area, where 80.50% of respondents were engaged with pineapple work whereas the other two types are related to the poultry and livestock rearing along with pineapple work. Approximately 83.50% of the respondents' annual income is below 1 lac only whereas the annual expenditure is below 1.5 lac which means that their expenditure ratio is greater than their income (Table 1).

3.2 Female Workers Contribution and Sources of Family Income

The household income is a measure of the combined incomes of all people sharing a particular household or place of residence. Average annual incomes earned by the households are shown in Table 2. In the sampled households, the average total annual income is estimated at Tk. 87,740.00, where 26.64% of total income comes from pineapple work, 18.12% from labor sale, 7.41% from livestock rearing, and 3.97% from poultry rearing. From the results below, we also found that agricultural labor has a greater contribution to income which is 28.29% and the lowest one is homestead farming which is 1.20%, respectively (Table 2). Our findings is consistent with the outcome of Roy *et al.* [18] where they estimated that the average annual contribution of women to household income was Tk. 42000 per year which was about 43.52% of the total household income. Another similar finding illustrates by Sumy *et al.* [23] about 52% of women earned BDT 12000-21000 per annum through small ruminant rearing which is in line with the present study. Sawhill and Guyot [24] also found that middle-class incomes have risen only modestly in recent decades, and most of any gains in their incomes are the result of more women going to work and earning higher wages. The outcomes of this research are also consistent with the summarization drawn by Bertrand *et al.* [25], and Budig and Hodges [26] who discovered that contribution of women's in household income in occupied a significant place to ensure economic development.

3.2.1 Annual income earned by family members

According to the findings, women's participation in farm and non-farm activities, as well as numerous household decision-making activities, has a stronger impact. It is also worth noting that women's increased participation in farm and non-farm activities, as well as their fair contribution to family income, contribute to their reputation as competent decision-makers. The overall annual household income, as shown in Table 3, was Tk. 87,740.00. The respondents contributed Tk. 23,373.00, considering that husband, other male and female family members were contributing Tk. 40,724.00, Tk. 15,637.00, and Tk. 8,006.00, respectively.

3.2.2 Consumption pattern and yearly expenditure of households

Household final consumption expenditure covers all purchases made by residents' households to meet their everyday needs: food, clothing, housing services (rent), energy, and transport, spending on health, leisure, and miscellaneous services. The findings of the study indicated that the distribution of expenditure on food and non-food categories was divided into nine categories including food, education, clothes, medical expenses, cattle rearing, poultry rearing, mobile expense, business expense, and house repairing expenses. The total annual average expenditure made by the households was estimated at Tk. 98,088.20 in which expenditure on food items was highest including Tk. 62,654.40 (63.88%) and the lowest one was house repairing cost Tk. 992.00 (1.01%) (Table 4). The research finding disclosed that poor people expend most of their incomes to fulfill their basic needs. If their income ever increases, they save it for future emergencies and also for the better future of their children.

3.2.3 Dependency ratio

The dependency ratio compares the number of dependents aged zero to fourteen and over 65 to the total population aged 15 to 64. It expresses how many family members are financially reliant on the earnings of other members of the family.

From the above Table 5, the number of households is 200, while the total number of family members is 1273 and the average number of family members per household is 6.37 which is derived from dividing the total family member by the total number of households. The average earning member per household is 3.37 which is derived from dividing the total earning members by the total number of households.

3.3 Evaluating Female Perception in Household Decision-Making

A 5-point Likert Scale technique was used to assess female perceptions of household decision-making, with ten statements added to measure perceptions (Table 6).

Table 2. Sources of annual family income of sample households

Sources	Amount (Tk.)	Percent of total annual income
Agriculture		
Pineapple labor	23373	26.64
Agricultural labor	24824	28.29
Daily labor	15900	18.12
Homestead farming	1055	1.20
Poultry rearing	3482	3.97
Livestock rearing	6498	7.41
Non-farm		
Business	6379	7.27
Housemaid	3469	3.95
Shop worker	2760	3.15
Total	87740	100

Source: Authors estimation, (2021)

Table 3. Annual incomes earned by the family members

Family members	Amount (Tk.)
Respondents	23373
Husbands	40724
Other male members	15637
Other female members	8006
Total annual household income	87740

Source: Authors estimation, (2021)

Table 4. Annual household expenditure of different food and non-food items of the respondents

Items	Amount (Tk./Years)	Percent of total expenditure
Food	62654.4	63.88
Education	7152	7.29
Clothing	1021.5	1.04
Medicare	4734	4.83
Cattle rearing	15762	16.07
Poultry rearing	1203.6	1.23
Mobile expense	2596.2	2.64
Business expense	1972.5	2.01
House repairing cost	992	1.01
Total	98088.2	100

Source: Authors estimation, (2021)

Table 5. Dependency ratio of sample households

No. of households	200
No. of family members	1273
Average family members per household	6.37
Earning members	673
Average earning member per household	3.37
Dependency ratio	1.89

Source: Authors estimation, (2021)

After computing each respondents total score, a basis for selecting elements for the final scale had to be established. This research was carried out using the Likert Scale analysis and Discriminative Power (DP) analysis methods.

Table 6. Female perception in household decision-making

Sl. No.	Statements	Strongly agree (5)	Agree (4)	Neutral (3)	Disagree (2)	Strongly disagree (1)	Total
1	Household expenditure	99	55	46	0	0	200
2	Purchase and selling of family wealth	84	76	10	30	0	200
3	Family planning	34	66	62	38	0	200
4	Education of children	63	57	61	19	0	200
5	Saving of money	71	61	31	22	15	200
6	Mortgage of family property	23	29	14	24	110	200
7	Receiving credit	72	32	33	49	14	200
8	Involvement in other earning activities	33	95	13	41	18	200
9	Marriage of son/daughter	47	35	48	19	51	200
10	Taking medical treatment	76	45	24	16	39	200

Source: Authors estimation, (2021)

Table 7. Computation of Discriminating Power (DP)

Items	Group	No. in group	Scale value					Weighted total (Q_1)	Weighted mean (Q_3)	DP = (Q_3- Q_1)
			5	4	3	2	1			
1.	High (top 25%) (Q_1)	50	19	15	16	0	0	203	4.06	0.22
	Low (bottom 25%) (Q_3)	50	26	12	12	0	0	214	4.28	
2.	High (top 25%) (Q_1)	50	12	36	0	2	0	208	4.16	0.84
	Low (bottom 25%) (Q_3)	50	50	0	0	0	0	250	5.00	
3.	High (top 25%) (Q_1)	50	12	0	3	18	17	122	2.44	1.12
	Low (bottom 25%) (Q_3)	50	2	24	24	0	0	178	3.56	
4.	High (top 25%) (Q_1)	50	20	19	5	6	0	203	4.06	0.44
	Low (bottom 25%) (Q_3)	50	25	25	0	0	0	225	4.50	
5.	High (top 25%) (Q_1)	50	4	15	12	4	15	139	2.78	1.72
	Low (bottom 25%) (Q_3)	50	25	25	0	0	0	225	4.50	
6.	High (top 25%) (Q_1)	50	0	0	0	0	50	250	5.00	-0.66
	Low (bottom 25%) (Q_3)	50	23	21	6	0	0	217	4.34	
7.	High (top 25%) (Q_1)	50	13	4	12	19	2	157	3.14	1.8
	Low (bottom 25%) (Q_3)	50	47	3	0	0	0	247	4.94	

Items	Group	No. in group	Scale value					Weighted total (Q_1)	Weighted mean (Q_3)	DP = (Q_3- Q_1)
			5	4	3	2	1			
8.	High (top 25%) (Q_1)	50	0	27	13	4	6	161	3.22	1.44
	Low (bottom 25%) (Q_3)	50	33	17	0	0	0	233	4.66	
9.	High (top 25%) (Q_1)	50	2	0	21	5	22	105	2.10	2.38
	Low (bottom 25%) (Q_3)	50	24	26	0	0	0	224	4.48	
10.	High (top 25%) (Q_1)	50	23	0	0	0	27	142	2.84	1.4
	Low (bottom 25%) (Q_3)	50	20	22	8	0	0	212	4.24	

Source: Authors estimation, (2021).

The present study explored that females took decisions based on expenditure, which appears to be highly satisfying factor. From Table 7, it can be seen that the weighted total and weighted mean for the high (25 percent) were 203 and 4.06, respectively. For low (25 percent) weighted total and weighted mean were 214 and 4.28, respectively. After calculation, it was depicted that the DP value was 0.22 meaning that in this statement female shows very less variation. In the case of purchasing and selling family wealth, education of children, saving of money, receiving credit, involvement in other earning activities of family members, and taking medical treatment female decision was considered and shows very low variation in decision making including 0.84, 0.44, 1.72, 1.8, 1.44, and 1.4 discriminative power, respectively. However, in the case of family planning, mortgage of property, and marriage of children female was given less priority in taking a decision and the value of discriminative power is 1.12, -0.66, and 2.38, respectively (Table 7). Roy *et al.* [18] in their study found that women played an important role in deciding on post-harvest activities, managing manufacturing operations, marketing grains, keeping chickens, goats, and livestock, and procuring agricultural supplies, among other things. Another similar finding Sariyev *et al.* [14] evaluated that females are not completely excluded from home decision-making. Females' opinions are given slightly greater weight than men's in a few decision-making sectors, such as crops grown, food purchases, harvest utilization, and use of crop production money. Mahmud *et al.* [27] also examined how non-farm sector growth has aided female labor force participation and educational attainment, as well as how women's decision-making roles in the home have improved through time. Furthermore, microcredit involvement is linked to females playing a larger role in household decision-making, especially in non-farm activities. Lassi *et al.* [28] estimated that in Pakistan, over half of the women are not empowered and do not contribute to family decision-making. It was also discovered that women's living area, wealth index, schooling, and access to mainstream media are all linked to their empowerment. Our findings are supported by the other relevant studies of Widman [29] and World Bank [30], which included that the bargaining and decision-making power of women depends on their economic conditions and property rights.

4. SUMMARY AND CONCLUSION

Women are very important parts of any country's economic development, and without their participation, development cannot take place properly. Females are worked as fuel to speed up the wheel of development. In today's world, women are working side-by-side with men and their participation is appreciated all over the world, not just in developed countries but also in developing ones. Instead of having different obstacles the participation of females in the study area is acknowledgeable and this satisfied the overall objective to examine the economics of women's involvement in pineapple production and their household decision-making perspective. The findings of the study revealed that most of the respondents belong to the active age group, family members were 6-10, most of the respondents were belong to the nuclear family, most of them engaged with pineapple work, and some engaged in rearing poultry and livestock and the involvement in the family earning was more than 40%. Females were also taking part in household decision-making perspectives. Female was given priority in case of household expenditure, purchase and selling of family wealth, education of children, saving of money, receiving credit, and taking medical treatment. So, in this context different non-government and government organizations should take some steps to ensure a fair wage rate, ensure proper medical treatment and provide training facilities in case of ensuring better performance of female workers in pineapple production.

CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. BBS (Statistical Yearbook for Bangladesh). Bangladesh Bureau of Statistics. Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka;2020.
2. Sebstad and Cohen. Microfinance, Risk Management, and Poverty. AIMS Paper, Management Systems International, Washington, D.C.; 2000.
3. Anon. Environmental Education Training Module in Agriculture. Graduate Training Institute, Bangladesh Agricultural University, and Food and Agriculture Organization;1995.
4. Murshid and Yasmeen. Women of the Coast. Gender status paper, Program Development Office for Integrated Coastal Zone Management Plan, Dhaka; 2004.
5. BBS (Statistical Yearbook for Bangladesh). Bangladesh Bureau of Statistics. Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh, Dhaka;2014.
6. Baruwa. Profitability and Constraints of Pineapple Production in Osun State, Nigeria. Journal of Horticultural Research. 2013;21(2):59-64.
7. Bartholomew, Paul, et al. The pineapple Botany, Production and Uses. University of Hawaii Manoa Honolulu, USA;2003.
8. Hossian, Abdulla. A Time Series Analysis for the Pineapple Production in Bangladesh. Jahangirnagar University Journal of Science. 2015;38(2):49-59.
9. Golam. Pineapple farming: Prospect high, The Independent (Daily News Paper). Sunday, 03 August;2014.
10. Hemalatha, Anbuselvi. Physicochemical constituents of pineapple pulp and waste. Journal of Chemical and Pharmaceutical Research. 2013;5(2):240.
11. Saleemi and Kofol. Women's participation in household decisions and gender equality in children's education: Evidence from rural households in Pakistan. Published by Elsevier Ltd. Centre for Development Research (ZEF), University of Bonn, Germany;2022
12. Pandey, Choubey, et al. The Involvement of Women as the Domestic Decision Maker: A Study of Patna Metropolitan City, Bihar, India;2021.
13. Iji, Ebong, et al. Women and Small Business: Contributing to Household income and Family wellbeing. Quantitative Economics and Management Studies. 2021;2(5).
14. Sariyev, Loos, et al. Women in household decision-making and implications for dietary quality in Bhutan. Published by Springer Ltd. Agricultural and Food Economics;2020.
15. Awan, Faridi, et al. "Factors Affecting Women Contribution in Household Budget in Urban Informal Sector: An Analysis". Global Journal of Human-Social Science: Economics. 2015;15(2):55-60.
16. Ismail, Rajeani, et al. The Role of Women in Household Decision-Making and their contribution to Agriculture and Rural Development in Nigeria. IOSR Journal of Humanities and Social Science. 2015;20(5):30-39.
17. Acharya. Efforts at Promotion of Women in Nepal. Tanka Prasad Acharya Foundation, Kathmandu; 2003.
18. Roy, Haque, et al. Contribution of Women to Household Income and Decision Making in Some Selected Areas of Mymensingh in Bangladesh. Journal of Progressive Agriculture. 2017;28(2): 120-129;.
19. Hasan Ali, et al. Impact of Pineapple Cultivation on the Increased Income of Pineapple Growers. A Scientific Journal of Krishi Foundation. 2010;8(2):50-56.
20. Sultana. Factors Effect on Women Autonomy and Decision-Making Power within the Household in Rural Communities. Journal of Social Sciences. 2010;7(1):18-22.
21. Rahman. Contribution of Female Agricultural Laborer to Family Income and Employment Generation in Selected Areas of Rangpur District. M.S. Thesis, Submitted to Dept. of Agricultural Economics, Bangladesh Agricultural University, Mymensingh. 2013;3-4.
22. Roy. The Roy Adaptation Model. Third Edition. New Jersey: Pearson Education, Inc;2009.
23. Sumy, Islam, et al. Role of women in household income through small ruminant rearing at Chattogram district of Bangladesh. Bangladesh Journal of Veterinary and Animal Sciences. 2020;8(2).
24. Sawhill and Guyot. Women's work boosts middle-class incomes but creates a family time squeeze that needs to be eased, Brookings institution;2020.
25. Bertrand, Kamenica, et al. Gender Identity and Relative Income within Households.

The Quarterly Journal of Economics. 2015;130(2):571–614.

26. Budig, Hodges. Differences in Disadvantage: Variation in the Motherhood Penalty across White Women's Earnings Distribution. American Sociological Review. 2010;75:705-728.

27. Mahmud, Awada, et al. Women Empowerment in Bangladesh: Household decisions under development of non-farm sectors and microfinance institutions (No. 154). JICA Research Institute; 2017.

28. Lassi, Ali, et al. Women's Participation in Household Decision Making and Justification of Wife Beating: A Secondary Data Analysis from Pakistan's Demographic and Health Survey. International Journal of Environmental Research and Public Health; 2021.

29. Widman. Intra-household bargaining over land rights in Madagascar. Paper presented at the World Bank Land and Poverty Conference;2012.

30. World Bank. Rights and participation – Citizens involvement in project supported by the World Bank. Washington, DC: World Bank;2008.

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