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SOCIO-ECONOMIC CHARACTERISTICS AND PRESENT SCENARIO OF SHEEP FARMERS AT SHERPUR DISTRICT IN BANGLADESH

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ABSTRACT

This study was aimed to investigate the socio-economic characteristics and present scenario of farmers engaged in sheep production at Sherpur district in Bangladesh. Data were primarily collected with a pre-tested interview schedule from the local sheep farmers. Results showed that average family size, male and female ratio and age was 5.58, 3:10, and 45.23 year, respectively. Family size, land size and yearly livestock income was found significant ($P<0.01$). Most of the farmers belong to primary education (46.70%) and illiterate (30.00%). Maximum numbers of farmers belong to small holder (81.91 decimal of land). The average monthly income and expenditure of farmers was estimated BDT 10123.00 and 11476.00, respectively. The male partner was dominant over female partner in different decision-making process. The co-efficient of family size (-9843.99), land size (404.27) and yearly livestock income (1.02) was significantly different ($P<0.05$). It is implied that one unit increases of land size and yearly livestock income might help in increasing 404.27 and 1.02 unit in family yearly income, respectively whereas, one unit increase of family size, resulted 9843.99 unit decreases of yearly family income, considering all other variables constant. It is concluded that there is great opportunity to improve livelihood of the small farmers particularly increase family income through sheep farming in the study areas.

Keywords: Income generation, Land size, Present scenario, Sheep farmers, Socio-economic characteristics.

INTRODUCTION

Small ruminants play a vital role in the economy of Bangladesh. This is an integral component of agriculture in Bangladesh and makes diversified contributions to the

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growth and development in the agricultural sectors (Begum et al., 2007). About 3.537 million sheep heads are distributed throughout the country and the sheep is the 3rd largest livestock population in the country (DLS, 2019). Meat production is one of the most important targets to rear livestock and poultry as well as fulfilling the requirement of animal protein and livelihood improvement of poor farmers. Although the growth of livestock production is the second highest among all other sub-sector of agriculture in Bangladesh (BER, 2012), the increasing trends of meat consumption have already been evident in several Southeast Asian countries i.e., Indonesia, Malaysia, Philippines and Thailand (Skunmun et al., 2002). The requirement of meat per head per day is 120 g whereas, the availability is 124.99 g (DLS, 2019). Sheep is one of the most important contributors of this meat revolution in Bangladesh (Hashem et al., 2020; Sun et al., 2020). Sustainable meat production is the main objectives of DLS (Department of Livestock Services) to ensure animal protein security for building meritorious nation. Jamuna basin, Barind tract and coastal belt sheep have the great potentiality for profitable lamb production that might fulfil the meat requirement, livelihood improvement and sustainable earning option. Lacks of public awareness, misconception about sheep meat (lamb/mutton), and inadequate nutrition supplementation are the limiting factors for sheep farming in Bangladesh (Ahmed et al., 2017). Under traditional feeding systems, sheep are raised on harvested or fallow lands, roads, and canal sides and also grazed on aquatic weeds and grass in knee-deep water without any supplementation (Sultana et al., 2010). This traditional system of production causes reduced growth rate and poor reproductive performance, which in turn results in severe economic losses. Good nutrition and management play a vital role on sheep and other ruminant production (Sarkar et al., 2008; Rahman et al., 2013). Consumers are becoming more aware day by day of safety and quality food products consumed by them. Furthermore, as purchasing power of common people is increasing persistently, they are interested to consume safer products without bothering to pay more. So, the safe lamb/mutton production without any chemical and microbial residues is the demand of the day. However, the information related to sheep production by the farmers in Bangladesh is very limited. Limited attention has been paid in respect of popularize lamb/mutton for consumers in small scale farming. Detailed study is needed in different district of Bangladesh to know the socio- economic characteristics scenario of sheep farmers for sustainable earning option. Accordingly, an empirical study was undertaken among100 households to document the socio-economic characteristics and present scenario of sheep farmers at Sherpur district. In fact, the study was undertaken to know the socio-economic characteristics and present scenario of sheep farmers to explore the potentialities and identify the existing problems of sheep production and their solutions.

MATERIALS AND METHODS

Study area

The study was conducted in 24 villages at two Upazila namely Sherpur sadar and Nalitabari of Sherpur district. Farmers were randomly selected from each village. A structured interview schedule was carefully prepared and data were collected adopting face to face interview method from respondents. The practical observations of their responses were also applied for calculating of the results. After ending data collection, the collected data were digitalized coded, compiled, tabulated and analyzed.

Beneficiary selection process

The research team pays more attention on selecting the beneficiary. The research team sat together and consults with other relevant experts for developing the selection criteria. More importantly, comments and suggestions were made during inception meeting incorporated in developing the selection criteria. Among different selection criteria- manpower of households, farming experiences, economic status, tribal people, gender, available space for animal shelter, availability of grazing land and willingness to involve in lamb rearing were taken into account. An index value (each parameter has given the value and by summing them an index value was created) was developed based on above elements for every household. Moreover, an aggregate value was estimated for selecting the beneficiaries. In the first step, there were about 72 households (out of 100 households) found to be eligible for inclusion as research beneficiary. Due to research requirement throughout screening processes were made and finally selected 60 households for research intervention

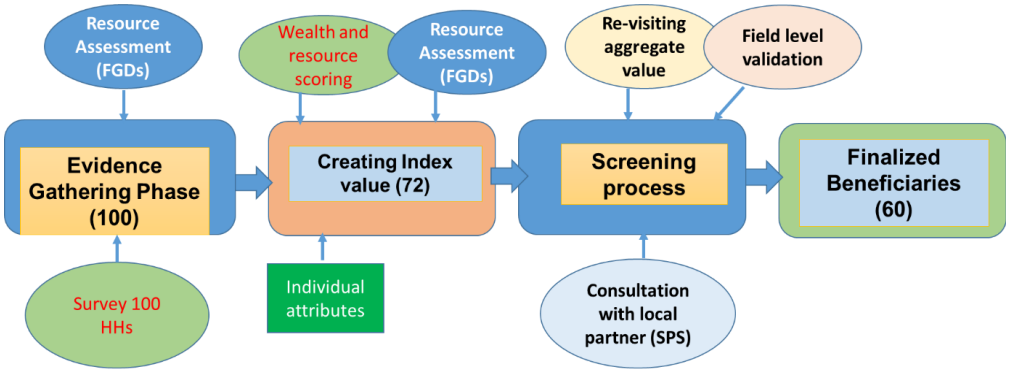

Figure 1. Beneficiaries selection process

Framing the sample

A detailed list of the sheep farmers was collected from each selected village. Afterwards, simple random sampling technique was used to select respondent

households to perform baseline survey. Accordingly, 60 households had been selected using simple random technique from the sampling frame (population) of 2000 households (HHs) from 24 working villages to conduct baseline survey for collecting specific information. Data were collected by trained enumerators. Collected data had been edited and entered into computer and analyzed using SPSS software by the research team. Both qualitative and quantitative data were collected from the selected respondents through structured pretested questionnaire. In fact, before finalizing the questionnaire, the questionnaires were pre-tested with five samples. These activities (pre-testing) help in refining the questionnaire as well as the help of the enumerators to familiar with the interview process. People in the Sherpur district did not keep written documents on various factors like income, expenditure, consumption, education, nutrition, water, sanitation and health etc. They replied various questions asked by the enumerators based on their memories. There could be happen some response errors. These errors were minimized by the repeating the questions and cross- checking with previous responses. Sometimes repeated visits were made to clarify the doubtful responses. In many cases, mobile communication was also performed with the respondents for authentication of the given information.

Statistical analysis

Data were tabulated and analyzed with descriptive statistical method by fulfilling the objectives of the study. SPSS- v-16 version computer software (SPSS, 2015) was applied for the statistical analysis of survey data.

RESULTS AND DISCUSSION

Socioeconomic characteristics of households

According to the collected data, the age of farmers ranged from 25 to 70 years. The respondents were classified into three categories like young age (up to 35 years), middle age (36-50 years), and old age (above 50 years) on the basis of their age are shown in Table 1. Sarker et al. (2017) showed the three categories of age group of farmers in their study. The collection of survey data was counted purely on the basis of present farmers during survey period. The findings indicate that the highest proportion (37%) of the farmers in the studied areas was in the middle-aged category compared to 28% to young aged and 35% to old aged category. These findings were not similar to Sarker et al. (2017) due to different location. Average age of respondents was 45.00 years which varied significantly among sub-districts. The results of this study were similar with the findings of Rahim et al. (2018) where they reported that average age was 46.00 years in their study which is almost similar to this present study. It was observed that young and middle-aged farmers (65%) were more active, energetic and enthusiastic in performing livestock related activities. Particularly the middle-aged farmers were well experienced and more acquainted with the sheep production. The household size of the farmers ranged from 2 to 10 numbers and the mean was 5.23. On the basis of their household size, the families

were divided into three categories like small family (up to 5), medium family (6-8) and large family (above 8 members) in Table 1. Data contained in Table 1 showed that the majority of the farmers family members were small (55%), medium (42%) and large (3%), respectively. These findings were not similar with the findings of (Sarker et al., 2017; Rahim et al., 2018). The average family size was 5.23 of the respondents in the studied area which was higher than that of the national average 4.9 (BBS, 2008). Average education of the respondents was reported as about four years of schooling with significant variations among sub-districts (Table 1). There were 30% household heads were absolutely illiterate and 70% households were educated among them 13.3, 8.3 and 1.7% passed SSC, HSC and BA, respectively. Among the respondents' households farming, housewives, businessmen, and having job holders were 90, 6.7, 1.7 and 1.7%, respectively (Table 1). These results were not in accordance with the findings of Sarke et al. (2017). It was found that only 13% members received training on different IGAs and 11farmers have access and exposure to institutional facilities. Hossain et al. (2018) stated that only 10% respondents received training on IGAs from Upazila Livestock Office (ULO) in their study. This result was not in accordance with the present study. The farmers needed training for their skill build up on sheep rearing in the study areas. Male and female ratio was 3:1 in the studied areas. Male and female had access and exposure to the institutional facilities 12 and 7%, respectively. Male and female needed to be more access and exposure to institutional facilities for their social status improvement in the study area and maintained gender balance. Among the respondents Muslim, Hindu and other races people were 63.00, 30.00 and 7.00%, respectively.

Table 1. Distribution of respondents according to age, family size, education, occupation and others

Parameters	Categories	No. of respondents	Percent of respondents
Age (Years)	Young aged (up to 32)	17	28.00
	Middle aged (36 to 50)	22	37.00
	Old aged (>50)	21	35.00
Family size (per HH members)	Small family (up to 5)	33	55.00
	Medium family (6-8)	25	42.00
	Large family (>8)	2	03.00
Education	BA	1	01.70
	HSC	4	06.70
	SSC	9	15.00
	Primary	28	46.70
	Illiterate	18	30.00

Parameters	Categories	No. of respondents	Percent of respondents
Occupation	Farming	54	90.00
	Housewife	04	06.70
	Business	01	01.70
	Service	01	01.70
Training received	Male	8	13.00
	Female	0	0.00
Access and exposure to institutional facilities	Male	7	12.00
	Female	4	07.00
Religion	Muslim	38	63.00
	Hindu	18	30.00
	Others	4	07.00
Sex	Male	45	
	Female	15	

HH-Household; BA-Bachelor of arts; SSC-Secondary School Certificate; HSC- Higher Secondary Certificate

Landholding farmers

Most of the people were marginal, poor and ultra-poor. They had very limited cultivable and homestead land. Average cultivable land was recorded as 83.31 decimal with significant variations between sub-districts. Similarly average homestead land was 29.58, own land 132.67, fodder land 17.14, rented in and rented out land 57.83 and 200.00, orchard land 32.32 and ponds land 46.36 decimal, respectively (Table 2). Sarker et al. (2017) stated that the total land of farmers was 750.00 decimal in their study which was not in accordance with the present study. Land size distribution of rural Bangladeshi livestock owners is more or less similar in the whole country. Landless or small farmers have an affinity to rear sheep or goat and medium or large farmers have an affinity to rear cattle and buffalo (Begum et al., 2007). Rahman et al. (2002) studied the socio-economic status of livestock farmers and found a similar land size, education level and income generating activities.

Table 2. Description of landholding farmers (Decimal)

Upazila	Cultivated Land	Own land	Homestead land	Fodder Land	Rented in land	Rented out land	Orchard land	Ponds land
	Decimal (ME ± SD)							
Sherpur Sadar	103.62 ± 10.18	166.07± 12.89	37.76 ± 6.14	0	65.00 ± 8.06	200 ± 0.00	35.62 ± 5.97	36.32 ± 6.03
Nalitabari	63.67 ± 7.98	98.04 ± 9.90	21.94 ± 4.68	17.14 ± 4.14	47.56 ± 6.90	0	27.70 ± 5.26	110.00 ± 10.49
Total	83.31 ± 9.13	132.67 ± 11.52	29.58 ± 5.44	17.14 ± 4.14	57.83 ± 7.61	200 ± 0.00	32.32 ± 5.69	46.36 ± 6.81

ME = Mean, SD = Standard deviation

Income and expenditure of households

Study reveals that 10 different sources of income in which crop sector contributed more income to the households and average yearly income from crop sector was BDT 34792.00 with significant variations (F=7.925) between sub-districts. The second important sector was cattle and average annual income earned from cattle sector was BDT 30633.00 with significant variation (F=0.015) between sub-sectors. Average lowest income generated from forestry was BDT 3775.00 with significant variations (F=2.715) between sub-sectors (Table 3). Kamal (2014) stated that income for the top 10% people was Taka 120000.00. Among the livestock sector, the sheep and buffalo accounted for nearly 46 and 32 %, respectively (Suresh et al., 2007). It was seen that as per distribution of asset and income, wealth accumulates faster as income rises. It was found that no income earned from sheep in the study area indicated that rural people in this area were not engaged in sheep farming. Selected farmers had no sheep during baseline survey. Lack of awareness about mutton/lamb consumption might be the possible cause. ANOVA on yearly family income was estimated. Independent variables were yearly livestock income, family size, age, land size, education, farm experiences and dependent variable was yearly family income. The output of the ANOVA analysis and there was statistically significant difference between the family income ($P<0.001$). The highest expenditure item for the households was food and the amount of annual expenditure on food was BDT 73740.00. The second and third important cost items were education and health and the amount of expenditures were BDT 23950.00 and 15000.00, respectively. Total annual expenditure was BDT 137720.00 (Table 3), which was higher than annual household's income BDT 121480. Hossain et al. (2019) showed that annual expenditure of farmers was BDT 83055.00 which was not in accordance with the present study.

Table 3. Income and expenditure of household

Item Income	SS	NB	Average	F Value	Item expenditure	SS Mean	NB Mean	Total Mean
Cattle	30200.00	31066.67	30633.33	0.015	Fish	19880.00	13040.00	16460.00
Goat	8900.00	10133.33	9516.67	0.319	Meat	13680.00	8040.00	10860.00
Chicken	7616.67	2690.00	5153.33	2.968	Rice	27400.00	15160.00	21280.00
Crops	55133.33	14450.00	34791.67	7.925	Vegetable	16800.00	2780.00	9790.00
Fish	18400.00	2766.67	10583.33	8.944	Flour	3580.00	3044.00	3312.00
Homestead gardening	3716.67	4236.67	3976.67	0.039	Onion/ garlic	4188.00	2256.00	3222.00
Forestry	6750.00	800.00	3775.00	2.715	Oil	5300.00	3764.00	4532.00
Service/ job	10833.33	0.00	5416.67	4.083	Spices	4040.00	2100.00	3070.00
Business	22466.67	3000.00	12733.33	2.204	Salt	1608.00	820.00	1214.00
Other sources	4800.00	5000.00	4900.00	0.001	Total Food	96476.00	51004.00	73740.00
Total income	168816.67	74143.33	121480.00	16.066	Education	34060.00	13840.00	23950.00
					Health	23520.00	6480.00	15000.00
					Clothing	20000.00	6920.00	13460.00
					Electricity	11284.00	1116.00	6200.00
					Fuel	10200.00	540.80	5370.40
					Total expenditure	195540.00	79900.00	137720.00

SS- Sherpur Sadar, NB- Nalitabari

Decision making process

It was found that male had shown dominancy in taking decision than female in all decision-making activities (Table 4) whereas, female have taken dominant decision over male on cleaning animal shed (59.33%), feeding animal (61%), bathing animal (60.58%) and collecting milk (62.83%). It was also found that male and female enjoyed their full participation only in their democratic rights (voting during election). Mekonnen and Asrese (2014) stated that out of 100% response rate, 15.5% women involved in all areas of decision, and 5.9% were in any of it. They also stated that 53.4% respondents made independent decisions on household purchases for daily needs. Empowering women through education and raising income generating activities might be helpful to improve the position of women household. Extension of household education level and male and female needed to be more actively participated in all decision-making item for woman empowerment in the study areas.

Table 4. Decision making activities of different household

	Decision/activities	Sex	Sherpur Sadar (%)	Nalitabari (%)	Total (%)
1.	Crop	Male	61.83	56.00	58.92
		Female	38.17	44.00	41.08
2.	Fish	Male	61.67	84.33	73.00
		Female	38.33	15.67	27.00
3.	Cleaning animal shed	Male	33.00	48.33	40.67
		Female	67.00	51.67	59.33
4.	Feeding animal	Male	30.00	48.00	39.00
		Female	70.00	52.00	61.00
5.	Treatment animal	Male	46.00	64.00	55.00
		Female	54.00	36.00	45.00
6.	Bathing animal	Male	24.17	54.67	39.42
		Female	75.83	45.33	60.58
7.	Collecting milk/wool	Male	20.33	54.00	37.17
		Female	79.67	46.00	62.83
8.	Selling animal	Male	61.83	83.67	72.75
		Female	38.17	16.33	27.25
9.	Utilized earn money	Male	71.67	69.33	70.50
		Female	28.33	30.67	29.50
10.	Buying/selling household asset	Male	58.00	96.00	77.00
		Female	42.00	04.00	23.00
11.	Buying food item	Male	51.00	96.67	73.83
		Female	49.00	03.33	26.17
12.	Buying non-food item	Male	51.50	86.33	68.92
		Female	48.50	13.67	31.08
13.	Buying/selling land	Male	67.83	100.00	83.92
		Female	32.17	0.00	16.08
14.	Buying farm equipment assets	Male	58.33	99.33	78.83
		Female	41.67	0.67	21.17
15.	Family planning	Male	50.33	60.33	55.33
		Female	49.67	39.67	44.67
16.	Children education	Male	51.33	70.00	60.67
		Female	48.67	30.00	39.33
17.	Medical treatment	Male	50.50	93.67	72.08
		Female	49.50	06.33	27.92
18.	Marriage of children/siblings	Male	50.00	64.33	57.17
		Female	50.00	35.67	42.83
19.	Voting in election	Male	50.00	50.00	50.00
		Female	50.00	50.00	50.00

Results of regression analysis

To estimate the influence of independent or explanatory variables over yearly income, linear regression model was fitted. A total 6 explanatory variables were found to close relation with yearly household income. Among 6 explanatory variables, 3 variables including family size, land size and livestock income estimated statistically significant. Age, education and farm experiences were observed positive association with income but statistically not significant. Suresh et al. (2007) reported that family size had positive linear with flock size and family size was positively correlated with livestock population possibly because the labor demand for livestock rearing can be meet from the higher family size. They also showed that age of farmers was not a significant factor with any of the livestock flock size. The co-efficient of land size was estimated 404.27 indicated that every unit increase in land size, 404.27 unit increases in yearly family income was predicted, holding all other variables constant. The co-efficient of yearly livestock income was estimated 1.02, which can be explained as every unit increase in yearly livestock income might contribute to 1.02 unit increase in yearly family income considering all other variables constant (Table 5). The co-efficient of age (139.79), education (1357.76) and farm experiences (461.20) was not significantly different. On the other hand, the co-efficient of family size (-9843.99), land size (404.27) and yearly livestock income (1.02) was significantly different where its p-value was 0.010, 0.000 and 0.000, respectively **(**Table 5).

Table 5. Regression co-efficient of yearly family income

Model	Unstandardized coefficients		Standardized Coefficients Beta	t	Significant
	Beta	SE			
Constant	31547.56	39277.36		0.803	0.425
Age	139.79	966.20	0.015	0.145	0.886
Education	1357.76	1932.79	0.058	0.702	0.485
Farm experiences	461.20	942.05	0.051	0.490	0.626
Family size	-9843.99	3668.15	-0.201	-2.684	0.010
Land size	404.27	44.94	0.684	8.994	0
Yearly livestock income	1.02	.212	0.340	4.818	0

Dependent Variable: Yearly family income, SE- Standard error

Aspiration and prospects of sheep farming

The responses regarding aspiration of sheep farming were recorded and ranked accordingly. Most of the respondents expect more income through rearing sheep followed by "no prejudice on sheep meat", available medicine and doctor supports and no problems of selling meat and live sheep etc. in which ranking was first, second and third, respectively (Table 6). Initial support for sheep farming practices would help to increase their income as well as socio-economic status in the study area. Respondents were demanded have needed some grazing facilities, lamb/mutton marketing facilities, management and treatment facilities and established modern slaughter house as a result thus sheep rearing practices would help to establish employment facilities as well as livelihood improvement of rural poor people (Table 6).

Table 6. Respondent's aspiration and prospects in the study areas

Aspiration and prospects	Beneficiary	
	Frequency	Ranked
Generate more income	56	1
No prejudice on sheep meat	55	2
Available medicine and doctor supports	52	3
No problems of selling meat and sheep	52	3
Enough grazing land	48	4
Better livelihoods option	46	5
Community sheep farming established	44	6
No risk of theft	44	6
Self-employment generation	42	7
Available water resources	35	8
Reduce poverty level	34	9
Others	24	10

Problems, constraints and solution related to sheep farming

Respondents were asked the extent of problems and constrains they face in rearing livestock and sheep based on pre-listed questions. There were nine listed questions and one open ended question. The index value of the problems and constraints are presented in Table 7. Among different problems, lack of improved breed reported as highest problem and then followed by high price of feed, lack of credit facilities and high interest rates, lack of medicine and low price of livestock and its by-products reported by beneficiary households (Table 7). It was apparent from the study that beneficiary respondents faced almost similar problems. Both beneficiary and non-

beneficiary households proposed similar solutions with a bit variation of weight. Hossain et al., (2018) found that lack of technical knowledge and training, pasture land and high cost of vitamin mineral supplementation of selected farmers in their studied areas. Bath et al. (2016) showed that average lack of information for famers, lack of training and lack of expert assistance were 9.70, 9.20 and 8.80, respectively. To overcome the problems, an open-ended question was asked to the respondents having their diverse options. A great number of variations recorded as they proposed different solutions. Their proposed solutions were listed in the beginning then categories and sub-categories and presented as follows. It was observed that requires high performance ram ranked was top by the beneficiary (Table 7). Solutions proposed by beneficiary were shown as per ranking wise addressing problems (Table 7). Needed of high-performance ram, ensure rationale price of products, and disease diagnostic facilities were first, second and third ranking, respectively by proposed suggestion of the farmers.

Table 7. Problems, constraints and solution related to sheep farming

Problem				Proposed solutions		
					Beneficiary	
Problem	Frequency		Valid Percent			
Problem of housing facilities	Not at all	31	51.70		Frequency	Ranked
	Moderate	23	38.30	High performance ram	58	1
	High	6	10.00	Ensure rationale price of products	55	2
	Total	60	100	Disease diagnostic facilities	49	3
Problem of management facilities	Not at all	28	46.70	Government should provide subsidy	48	4
	Moderate	24	40.00	Slaughter house	45	5
	High	8	13.30	Control market actors	44	6
	Total	60	100	More treatment facilities	43	7
	Not at all	0.00	0.00	Cooperative marketing system developed	35	8
Problem of sheep availability	Moderate	27	45.00	Male partners involvement	34	9
	High	33	55.00	Fellow land should be allocated among farmers	32	10
	Total	60	100	Local service providers	32	10
Problem of treatment facilities	Not at all	31	51.70	Needed better communication	32	10
	Moderate	7	11.70	Exposure visit	30	11

Problem				Proposed solutions	Beneficiary	
Problem	Frequency		Valid Percent			
Problem of housing facilities	Not at all	31	51.70		Frequency	Ranked
	Moderate	23	38.30	High performance ram	58	1
	High	6	10.00	Ensure rationale price of products	55	2
	Total	60	100	Disease diagnostic facilities	49	3
	High	22	36.70	Others	28	12
	Total	60	100			
Problem of high price of feed	Not at all	2	3.30			
	Moderate	31	51.70			
	High	27	45.00			
	Total	60	100			

CONCLUSIONS

Sheep farming plays a vital role in improving livelihoods of small farmers. It also contributes significantly to meet national meat requirements. Present study keep records the socio- economic characteristics of sheep farmers in Sherpur district. Farm size and livestock income were estimated significant association with total household income justify the importance of sheep farming. Study reveals that young, small and marginal farmers were involved more in sheep farming as means of their livelihoods. Despites their strong motivation of sheep farming, lack of improved breed, high price of feed, lack of credit facilities, medicine and marketing facilities, respectively obstructed smooth development of sheep farmers in the study location. Therefore, it was suggested to develop sheep production community thereby reduce existing challenges. It was recommended to organize and management related training by government and nongovernment organizations. Considering limited grazing land, *khas* and fallow land should be allocated as pasture land for sustainable development of sheep farmers in the study areas.

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