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Socio-Economic Profile of Sheep Rearing Community in Bandipora District of Jammu and Kashmir

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ABSTRACT

A survey was conducted to study the socio-economic condition of sheep rearing community in Bandipora district of Kashmir. The district was divided into low-lying (Sonawari), medium altitude (Bandipora) and High altitude (Gurez) regions. Multi-stage random sampling was done in which 20% villages were selected from each region in the first stage through proportionate random sampling and 20 respondents from each selected village in second stage through simple random sampling. A total of 480 respondents (Sonawari=200, Bandipora=160, Gurez=120) from 24 villages were considered for the survey. It was observed that majority of the sheep rearers (59.79%) were illiterate with proportion of such respondents being significantly higher ($p<0.05$) in Gurez (68.33%) than Sonawari (54.0%) region. Majority (65.8%) of sheep rearers in the district were having medium size families (5-8 members) with an average family size of 6.60±0.129 with majority (86.7%) of the families being nuclear type. Overall district figure indicates that agriculture as primary and sheep farming as sub-occupation represents the source of livelihood of majority of sheep rearers in Sonawari region (67% vs 62%) and the district as a whole (36.9% vs 39.17%). Majority (49.38%) of sheep rearers in the district were falling in the income group of 11,000-20,000 Rs/month with proportion of such respondents being significantly higher ($p<0.05$) in Sonawari (57.5%) and Bandipora (51.88%) than Gurez (32.5%) region. The average land holding per household of sheep rearers in terms of irrigated, non-irrigated (rainfed) and total land was 5.92±0.395, 5.30±0.311 and 11.21±0.572 kanals, respectively. The average land holding/household (irrigated) was significantly higher ($p<0.05$) in Sonawari (10.28±0.734kanals) than Bandipora (4.56±0.504) and Gurez region (0.44±0.124). There was comparatively higher proportion (30.63%) of sheep rearers with a sheep rearing experience of 10-15 years followed by those with an experience of above 20 years (24.17%). Majority (66.88%) of the sheep rearing households involved participation of atleast one woman in various sheep farming activities. It is concluded that sheep rearing is an important secondary occupation in the district involving significant women participation but is primarily in the hands of poor and illiterate people with low income and marginal land holding.

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1. Introduction

Livestock sector is an indispensable component of human living which supports the livelihood of 70% of the rural poor globally (Ali, 2007). About 73% of rural India owns livestock and this sector provides employment to 22.45million people directly or indirectly. Livestock sector alone contributes nearly 25.6% of value of output at current prices of total value of output in Agriculture, Fisheries & Forestry sector. The overall contribution of Livestock sector during 2012-13 in total GDP was nearly 4.11% (19th livestock census, 2012). The state of Jammu and Kashmir, situated between 320 17′ N and 360 58′ N latitudes and 730 26′E and 800 30′ E longitudes, constitutes the northern most extremity of India. The economy of Jammu and Kashmir is agriculture dependent with about 73% of the population living in rural areas being associated with agriculture and allied sectors including livestock (Economic survey, 2014-2015). Small ruminant's production being less capital-intensive is an important income generating option because of its low land requirement, low initial investment and low operational costs (Birthal and Ali, 2005). In particular, sheep play an important role in the hilly and other inaccessible areas where it is difficult for other livestock to thrive and contribute to the income of poor communities. Keeping up with the constraints in such regions, sheep and goats sustain food and economic security (Khan *et al.*, 2013). The state is rich in natural fodder resources in the form of pastures, orchards, aquatic vegetation *etc*. (Tomar and Sharma, 2002). Bandipora district is the second most important district in Kashmir province in terms of sheep population. The hilly areas of the district are rich in lush green alpine pastures making it ideal for sheep rearing. The Traditional sheep rearers (Gujjars/ Bhakarwals/ Chopans) from neighbouring areas of the same and other districts migrate their sheep flocks to highland pastures located in forests of Gurez region from early June and return back before the winter sets in (mid august). These lush green forests in Gurez and elsewhere in the state of Jammu and Kashmir serve as the most important support land for livestock of the state (Wani *et al.*, 2014). Study has shown that certain socio-economic variables such as income, years of rearing experience and educational level have direct impact on small ruminant production (Fakoya and Oloruntoba, 2009). As suchpoor socio-economic status and low level of literacy among the sheep farmers could be reflected in the management practices they follow. As a consequence of low income and less land holding, farmers are discouraged to invest in this sector and rely on subsistence based farming. Study of the socio-economic profile of sheep farmers will help in identifying the critical points wherein specific interventions can be suggested.

2. Materials and Methods

The study was conducted in Bandipora district of Jammu and Kashmir. The district is located at 34°64'N latitude and 74°96'E longitude with a total area of 398 km^2 and is situated at an average height of 1701 meters above mean sea level (Lone *et al.*, 2013). The district is bounded by Kupwara district in the west, Baramulla district in the south and Kargil, Srinagar and Ganderbal districts in the east. Thedistrict has three distinct geographic regions namely Sonawari, Bandipora (town) and Gurez. These three regions differ in terms of the altitude with Sonawari region being at the lowest altitude followed by Bandipora and Gurez. Sonawari region is the most populous of the regions with 52 villages and situated at approximately 30 km towards north of the state summer capital *i.e.* Srinagar. It is located at 34°14′N and 74°38′E with an average elevation of 1557 meters (5108 feet). Bandipora is the second most populous region with 42 villages and Bandipora town is situated on the banks of Wullar lake approximately 50 km from Srinagar and 20 km from Sonawari at an altitude of 1578m above mean sea level. Gurez region is the least populous of the three regions and situated at the northern extremity bordering Pakistan. It is a valley located in the Himalayas about 84 km from Bandipora town and 134 km from Srinagar. At about 8000 feet (2,400 m) above sea level, Gurez valley is surrounded by snow-capped mountains on all sides and represents the traditional sheep rearing belt of the district. A survey was undertaken by face to face interview of sheep rearers in the district. An overall multi-stage sampling approach was followed in which 20% villages from each of the three regions were randomly selected in the first stage and from each of the selected villages, 20 respondents (sheep rearers) were randomly selected in the second stage. Based on this sampling design, a total of 480 respondents *i.e.* 200 from Sonawari, 160 from Bandipora town and 120 from Gurez valley were considered for the survey. Information on various socio-economic aspects was sought from these respondents on the basis of a questionnaire. The data obtained was analysed used standard statistical procedures (Snedecor and Cochran, 1994). Simple averages and percentages were calculated to interpret the results. However, z-test was utilized to compare proportions.

3. Results and Discussion

The results of the survey indicate that majority (86.7%) of the families were nuclear type wherein majority (65.8%) were having medium size families with 5-8 members.

Table 1. Details of family, education level and sheep rearing experience

Parameter	Variant	Sonawari (n=200)	Bandipora (n=160)	Gurez (n=120)	Overall (N=480)
Family Size	Small (<5)	35 (17.5)	25 (15.63)	27 (22.5)	87 (18.1)
	Medium (5-8)	125 (62.5)	113 (70.63)	78 (65)	316 (65.8)
	Large (>8)	40 (20)	22 (13.75)	15 (12.5)	77 (16.0)
Family Type	Nuclear	168 (84)	142 (88.75)	106 (88.3)	416 (86.7)
	Joint	32 (16)	18 (11.25)	14 (11.7)	64 (13.3)
Av. family size*	-	7.02 ±0.231[a]	6.49 ± 0.206[ab]	6.08 ± 0.198[b]	6.60±0.129
Education of family head	Illiterate	108[b] (54)	97[ab] (60.63)	82[a] (68.33)	287 (59.79)
	Primary	17 (8.5)	8 (5)	11 (9.17)	36 (7.5)
	Middle	45[a] (22.5)	39[a] (24.38)	16[b] (13.33)	100 (20.83)
	High School	25 (12.5)	15 (9.38)	10 (8.33)	50 (10.42)
	Graduate	5 (2.5)	1 (0.63)	1 (0.83)	7 (1.46)
Sheep rearing experience (Years)	<5 year	6[b] (3)	13[a] (8.13)	4[ab] (3.33)	23 (4.79)
	5-10 Year	35[b] (17.5)	53[a] (33.13)	12[b] (10)	100 (20.83)
	10-15 Year	76[a] (38)	31[c] (19.38)	40[b] (33.33)	147 (30.63)
	15-20 Year	47[a] (23.5)	24[b] (15)	23[a] (19.17)	94 (19.58)
	>20 Year	36[b] (18)	39[b] (24.38)	41[a] (34.17)	116 (24.17)

Figures in parenthesis are percentages of column totals. Values with different superscripts between regions within a row are significant at $p<0.05$

The average family size was significantly higher ($p<0.05$) in Sonawari (7.02 ± 0.231) than Gurez (6.08 ± 0.198). Contrary to present findings, a similar study revealed joint family system to be the dominant settlement among sheep rearers in Rajasthan (Suresh *et al.,* 2008). Joint and large size families suit the agrarian societies with large landing holding so as to prevent division of land and have a large work force in hand for agricultural operations. However, in the present case much of the study area was hilly in nature making it unsuitable for agricultural operations and hence land holding/household was quite low. Smaller land holding as revealed in the present study could thus possibly be the possible reason behind predominantly nuclear and small size families among sheep rearers in the district. The results indicate that average land holding per household of sheep rearers in terms of irrigated, non-irrigated and total land was 5.92±0.395,30±0.311 and 11.21±0.572 kanals, res pectively. The total land holding/household (irrigated plus non-irrigated) was significantly higher ($p<0.05$) in Sonawari (16.24±1.145 kanals) than elsewhere in the district. Contrary to these findings, a similar study among sheep rearers in Rajasthan reported higher land holdings (Kumar *et al.*, 2013). It is clear from the average land holdings that cent percent of the sheep rearers were falling in the category of marginal farmers. As such these sheep rearers heavily depended on common property resources (CPR) like community pastures, vegetation around the banks of water bodies, barren and uncultivable lands besides alpine pastures in highland areas for grazing their flocks. These CPRs constitute the most important input for livestock production and subsistence for the poor (Wani *et al.*, 2014).

Marginal land holding of sheep rearers in the district could possibly be attributed to hilly nature of a larger part of the district especially Gurez region, making it unsuitable for agriculture. Overall district figure indicates agriculture as primary and sheep farming as sub-occupation representing the source of livelihood of majority of sheep rearers in Sonawari region (67% vs 62%) and the district as a whole (36.9% vs 39.17%). However, in Bandipora region a combination of sheep farming as primary and agriculture as sub-occupation (40% vs 60%) and in Gurez a combination of livestock rearing asprimary and agriculture as sub-occupation (34.2% vs 45%) represented the major sources of livelihood of sheep rearers. Similar findings were reported by earlier studies among sheep rearers in Rajasthan (Rao *et al.,* 2013) and Andhra Pradesh (Rajanna *et al.,* 2012). Almost whole of Gurez valley and certain areas of the Bandipora region are in hilly terrains wherein land is not suitable for agricultural operations which is further potentiated by heavy snowfall during winters. However, presence of abundant highland pastures besides ability of sheep to sustain and perform under such harsh climate makes sheep farming a viable alternative for securing livelihood in the region. This could be the possible explanation for larger proportion of respondents having livestock rearing (sheep and other livestock species) as primary occupation. In the present study, majority (49.38%) of sheep rearers in the district were falling in the income group of Rs11,000-20,000/month with proportion of such respondents being significantly higher ($p<0.05$) in Sonawari (57.5%) and Bandipora (51.88%) than Gurez (32.5%) region.

Region-wise comparisons also indicate that Gurez region had a significantly higher ($p<0.05$) proportion of sheep rearers (51.67%) falling in lower income group (<10,000 Rs/month) than elsewhere in the district. Results similar to those in present study were reported earlier among sheep rearers in Tamil Nadu (Thilakar and Krishnaraj, 2010). In Sonawari region, the primary occupation of majority of sheep rearers was agriculture who had proportionally more land holding than Gurez wherein homegrown fodders were utilized by animals thus reducing the cost of feeding. However, in Gurez and parts of Bandipora region, major part of the earnings of sheep rearers was spent on purchase of feeds/fodders for sheep which considerably affected their overall income. Further, Gurez valley a hilly terrain remains cut off from the rest of the state for a considerable part of the year thus other sources of earning livelihood are very less in the region. Majority of the sheep rearers (59.79%) were illiterate with proportion of such respondents being significantly higher ($p<0.05$) in Gurez (68.33%) than Sonawari (54.0%) region.

The results also indicate that there was higher percentage of sheep rearers who had studied upto middle standard only (20.83%) with proportion of such respondents being significantly higher ($p<0.05$) in Sonawari (22.5%) and Bandipora (24.38%) than Gurez (13.33%) region. Earlier studies in this regard also revealed lower level of literacy among sheep rearers in Karnataka (Ramesh and Meena, 2012) and Rajasthan (Suresh *et al,* 2008). The low level of literacy among sheep rearers could possibly be due to the fact that people with better education shift to services sector and other lucrative professions leaving sheep farming in the hands of the less educated lot. This could further be potentiated by lesser avenues for education in certain areas of the district which remain inaccessible for a considerable part of the year owing to hilly nature and harsh winters therein. The results indicate that there was comparatively higher proportion (30.63%) of sheep rearers with a sheep rearing experience of 10-15 years followed by those with an experience of above 20 years (24.17%). However, the proportion of sheep rearers with an experience of above 20 years was significantly higher ($p<0.05$) in Gurez (34.17%) than elsewhere in the district. An earlier study in this regard revealed similar sheep rearing experience among sheep rearers in Tamil Nadu (Thilakar and Krishnaraj, 2010). Gurez valley represents the traditional sheep rearing belt in the district with abundance of natural pastures making it ideal for sheep production. Further hilly nature of the land besides harsh winters makes the region unsuitable for agriculture. Thus livestock rearing in general and sheep rearing in particular have always been better options for securing livelihood in the region. As a result, people in this region have been associated with sheep rearing since ages. This could be a possible explanation for higher proportion of sheep rearers with more than 20 year experience in sheep rearing in Gurez region. Majority (66.88%) of the sheep rearing households involved participation of atleast one woman in various sheep farming activities although the region-wise comparisons were statistically insignificant. The winters are severe in the district and as such animals have to be kept indoors for atleast 4 months a year (6 months in Gurez). It is during this period that most of the sheep rearing related activities like feeding, watering *etc.* which do not require much experience are carried out by the womenfolk. In the spring months also, women participate in cutting of green fodders besides feeding and watering of the animals in the morning and evening while men take the animals for grazing during the day. However, during summer months the participation of women in sheep rearing activities is negligible as most of the sheep flocks migrate to highland pastures during this time. On an average a sheep rearer in the district was maintaining a flock of 33.60 ± 0.791 sheep consisting of 26.99 ± 0.641 ewes, 0.43 ± 0.040 rams, 1.8763 ± 0.072 male and 4.31 ± 0.108 female lambs.

Table 2. Other socio-economic characteristics of sheep rearers

Parameter	Category	Sonawari (n=200)	Bandipora (n=160)	Gurez (n=120)	Overall (N=480)
Primary occupation	Agriculture	134[a] (67)	42[b] (26.25)	1[c] (0.83)	**177 (36.90)**
	Sheep Farming	26[b] (13)	64[a] (40)	22[b] (18.3)	112 (23.3)
	Agri+ sheep	1[b] (0.5)	0[b] (0)	10[a] (8.3)	11 (2.3)
	Govt. Service	17[b] (8.5)	13[b] (8.1)	35[a] (29.2)	65 (13.5)
	Livestock	7[c] (3.5)	34[b] (21.3)	41[a] (34.2)	82 (17.1)
	Agri+ Livestock	0[b] (0)	0[b] (0)	7[a] (5.8)	7 (1.5)
	Others	15 (7.5)	7 (4.4)	11 (9.2)	33 (6.9)
Income group (Rs/month)	< 10000 Rs	68[b] (34)	62[b] (38.75)	62[a] (51.67)	192 (40)
	11000-20000 Rs	115[a] (57.5)	83[a] (51.88)	39[b] (32.5)	237 (49.38)
	21000-30000 Rs	16 (8)	14 (8.75)	14 (11.67)	44 (9.17)
	>30000 Rs	1[b] (0.5)	1[b] (0.63)	5[a] (4.17)	7 (1.46)
Land holding (Kanals)	Irrigated	10.28±0.734[a]	4.56±0.504[b]	0.44±0.124[c]	5.92±0.395
	Non-irrigated	5.95±0.54[a]	2.78±0.44[b]	7.56±0.54[a]	5.30±0.31
	Total	16.24±1.15[a]	7.34±0.63[b]	8.00±0.57[b]	11.21±0.57
Av. flock size*	-	37.23 ±1.28[a]	31.60 ± 1.49[b]	30.22 ±1.09[b]	33.60 ± 0.79
Women participation/ household	One woman involved (A)	139 (69.5)	105 (65.63)	77 (64.17)	321 (66.88)
	Two Women involved (B)	4 (2)	3 (1.88)	3 (2.5)	10 (2.08)
	Total (A+B)	143 (71.5)	108 (67.5)	80 (66.67)	331 (68.96)
	Not involved	57 (28.5)	52 (32.5)	40 (33.33)	149 (31.04)

Figures in parenthesis are percentages of column totals. Values with different superscripts between regions within a row are significant at $p<0.05$

Contrary to these findings, a similar study in this regard reported higher average flock size among sheep rearers in Rajasthan (Swarnkar& Singh, 2010). It is also evident from the results that the average flock size/household was significantly higher ($p<0.05$) in Sonawari than elsewhere in the district. Low flock size/household in the traditional sheep rearing belt of Gurez could be attributed to feed/fodder shortage in winter, increasing trend of migration to urban areas besides shifting to other more remunerative avenues like Govt. services in general and defense services in particular. An earlier study in Gurez in this regard has revealed similar findings (Khan *et al.*, 2013).

Conclusion

Sheep farming in the hilly district of Bandipora of Jammu and Kashmir is primarily in the hands people who are mostly illiterate, economically weak, have marginal land holding, have mostly nuclear type and medium sized families and have sheep farming mostly as their secondary occupation with agriculture dominating as their main occupation. Steps need to be taken up to improve their socio-economic status and encourage them towards sheep rearing.

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