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Socio- Personal Profile of Women Affecting Water and Forest Management in Micro Watershed Areas in Nainital district of Uttarakhand

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Abstract:
The water and forest management in hills welbeing is prime need of the hilly areas for sustainable lively hood of the residents. The well developed and managed water and forest in hills is directly related to the socio-personal development of the village women. Hence, the present study was conducted in Nainital district of Uttarakhand to study the socio-personal and psychological economical profile of women in the study area and their role in the management of water and forest. The study results revealed that the majority of the respondents were middle to old aged, general cast, joint family, had medium family size, primary to middle level of formal education, engaged in 2-3 occupations, above poverty line, rearing milk and meat livestocks. Half of the respondents (50 per cent) had 'high' level of fatalism whereas 37.33 per cent had 'medium' level of fatalism. The respondents had medium participation in water and high participation in forest management activities. With water management activities, age and occupation while with forest management activities, occupation had significant positive correlation.

Keywords: *Socio-Personal, Psychological, Profile, water and forest management*

1. Introduction

Forests are considered as the second most important natural resource after water. Production function of the forest enhances economic benefits for the community, while the protection and regulation functions are for ecological betterment and climate regulation respectively. Forests are the key components of biodiversity that represent the foundation of ecosystems and that, through the services they provide, affect human well-being. These include provisioning services such as food, water, timber, and fiber; regulating services such as the regulation of climate, floods, disease, wastes, and water quality; cultural services such as recreation, aesthetic enjoyment, and spiritual fulfillment; and supporting services such as soil formation, photosynthesis, and nutrient cycling. It has estimated that one quarter of the world's poor population directly or indirectly depends on forests for their livelihoods (WB/DFID 2006). Forest commons are crucial for delivering multiple outcomes such as livelihoods, carbon sequestration and biodiversity conservation (Chhatre & Agrawal 2008). Therefore, it has now become an integral part for managing natural resources through the active involvement of local people. The women in hills of any country are key persons for promoting economic growth and technological change. The socio-*personal* and psychological profiles of the women pertaining to demography, means of production and investment, income and expenditure pattern of people living in a particular location strongly influence their responses to technological changes and participation in development schemes. However, lack of authentic information on the socio- personal and psychological condition of the target group is one of the serious impediments in the successful implementation of developmental programmes. In water and forest management sector, several micro and macro level socio-personal and psychological surveys had been conducted by various agencies and research workers in different regions of our country to study one or the other problem of the village communities (Abramovitz and Roberta,1992; Awasthi, et al., 2001; Madhu and Khanna, 1991; Rajas,1989; Raju, et al.,2004; Rana, et al., ; Samal and Dhyani, 2006 and Shree, 2002). However, information on the systematic attempts to carry out similar studies on hill women farmers, particularly in Uttarakhand hills, is meager. The appearance of women activities in the management of water and forest is directly related to the socio-personal and psychological characters of the society. Hence, the present study was conducted to study the socio-personal and psychological profile of hill women, who are is traditionally managing water and forest since long, and their role in the management of these resources.

2. Research Methodology

Present study was conducted during 2010 and 2013 in micro watershed areas of Nainital district of Uttarakhand for its importance in water and forest management. Out of 38 villages in *Dhari* and *Okhalkanda* blocks, 08 villages were selected randomly using simple random sampling without replacement. From these eight villages a sample of 150 women farmers was selected following stratified random sampling method (Best and Kahn, 2010). For collecting information, the semi structured interview schedule was developed. The 'Exploratory Research Design' was used for the study. The interview was conducted personally by the investigator with the women farmers individually at household level. The head women members from selected families were interviewed for the study as respondents. The profile traits of the respondents i.e. age, family type and size, education, occupation, income, fatalism-scienticism and involvement in water and forest conservation activities were studied. The appropriate statistical tools were used to draw meaningful conclusions.

3. Results and Discussion

3.1. Socio-Personal Profile of the Respondents

3.1.1. Age

Age is considered an important variable in terms of experience and responsibility. The issue of age cannot be approached with cultural preconceptions regarding the role and need of a particular age group. However, it plays an important role in determining the level of economic and social participation towards targeted interventions. In the study area maximum respondents (43.33 per cent) were of old age (above 51 years) followed by 40.67 per cent respondents of middle age group (29-51 years). Least number of respondents (16 per cent) was found to be in young age group (Table 1)**.** In hills young ones use to go outside for service or study and middle or old aged people are generally engaged in subsistence farming**.** This factor might have led to a higher percentage of old/middle aged respondents in the study area. Nashine *et al.,* (2004) observed 62.5 per cent women respondents up to age group of 35 years. Bishnoi and Ahmed (2006) also reported most farm women belonging to age group of 25 to 60 years. It showed that water and forest management is majorly handled by the middle to old aged shoulders with enthusing and longevity as a livelihood option for their families. There was need to promote awareness among younger. The study indicates that the Uttarakhand Diversified Watershed Project in the study area could attract majority of women for the management of water and forest.

3.1.2. Cast

The personal observation of the author during interview was though, the SC/ST were less in number than general cast but all were found jointly involved in managing water and forest as if it is their own property. Ten hectares of forest with water sources are being managed by these people under the project. The study area is dominated by general caste category (81.33 per cent) followed by SC/ST (12.67 per cent). Least respondents (6 per cent) were of OBC category (Table 1). OBC in the hills are generally engaged in business and for that they have migrated to lower elevations leading to least percentage. These findings corroborate with the observations of Pathak (2003) who reported majority of hill women belonged to general caste.

Variables	Categories	Number	Percentage
Age Mean= 40.17, SD= 11.32	Young (less than 29 years)	24	16.00
	Middle (between29-51 years)	61	40.67
	Old (above 51 years)	65	43.33
Caste	General	122	81.33
	OBC	9	6.00
	SC/ST	19	12.67
Family type	Nuclear	36	24
	Joint	114	76
Family size Mean= 6.60, SD= 2.54	Small (less than 4)	8	5.33
	Medium (between 4-11)	136	90.67
	Large (above 11)	6	4.00
Marital status	Married	148	98.67
	Others (widow)	2	1.33
Fatalism- scienticism Mean=18, SD = 4	Low (up to 14)	19	12.67
	Medium (between 14 to 22)	56	37.33
	High (above 22)	75	50.00

Table1: Personal profile of the hill women

3.1.3. Family Type and Size

A close perusal of Table 1 informs us that majority of the respondents (76 per cent) in the study area belonged to joint family followed by nuclear family (24%). Traditionally in hills the family type remained as joint, which still exists except in a few cases. It was

observed by the researcher that general caste was the most prevalent one. Most of the respondents belonged to same family but are separated into independent units. These results are in conformity with the observation made by Goel and Singh (2003)**.** In contrast to this finding Kumar and Bhardwaj (2005) observed 55.36 per cent respondent belonging to nuclear family and 44.64 per cent to joint family in Kumaun division of Uttarakhand. This might be due to difference in place of study and temporal factor.

The absolute number of members in the household sharing the same economic unit is family size. Majority of the respondents (90.67 per cent) have a medium family size (4-11 members). The small family size (< 4 members) was of only 5.33 per cent respondents. Least respondents (04 per cent) were having large family size (> 11 members). The size of family on an average was large (four to > eleven members). This might be due to the fact that 76 per cent respondents are living in joint family (table1). Goel and Singh (2003) also observed large family size (six to ten members) as common in village as reported by 56 per cent respondents. Majority of respondents are in medium family residing jointly indicates that they have to maintain the livelihood of more than 4 members with available resources and opportunities. The size of the family has a direct influence on the expenditure and income pattern of the family. As the maintenance of water and forest resources is labor intensive activity, the family size has more influence on the water and forest management.

3.1.4. Marital Status

Nearly all women (98.67 per cent) were married only two of them were widow. This might be due to majority of the women belonged to higher age group i.e. 29 years and above. Charian and Vats (2011) also observed maximum number of married women. Yadav (2008) conducted study in Nainital district and pointed that majority of the women were married followed by unmarried and other category (Table 1).

3.1.5. Fatalism- Scienticism

A close perusal of Table 1 reveals that half of the respondents (50 per cent) had 'high' level of fatalism whereas 37.33 percent had 'medium' level of fatalism and only 12.67 per cent had 'low' level of fatalism. Investigator during her field observation observed that respondents had great faith in metaphysical and supernatural powers and majority of them believed in curing disease through *mantras* and *tantras* rather than consulting a doctor. This indicates that material part of their culture is changing gradually but non-material aspect of culture is still lagging behind. Some other social and psychological factors might have also contributed to higher level of fatalism in that society. The findings are in line with the results of Mishra (2003) and Verma (2008)**.** The study indicates a high level of fatalism among the respondents which means the respondents are much careful about their traditional ways of managing livelihood. They strongly believe in divine powers and thus worship trees and water sources. This belief leads to protect the forest and water.

3.2. Economic and Educational Status

3.2.1. Occupation

With respect to number of occupations more than two third of respondents' families (82 per cent) were having two to three occupations in the study area (Table 2). Least number of respondents' family (8.67 per cent) was found engaged in single occupation. Only 9.33 per cent respondents' families were having more than three occupations. Agriculture and dairying are the traditional activities of the respondents and the business has been introduced by the UDWDP personnel which has raised the income of the respondents. This factor might have led to majority of respondents' family having two to three occupations. Senger (2003) observed maximum respondents having two to four occupations in the watershed area of Bastar. Such findings might be due to lack of sufficient earnings from a single source like agriculture and thus respondents opted for other allied activities like collection and selling of minor forest products, labour etc.

3.2.2. Livestock Rearing

Since in the study area livestock rearing is the traditional system and to feed the livestock, fodder is essential. Depending upon rearing of live stock, fodder requirement and sources are maintained. A close review of Table 2 indicated that more than two third of respondents (88.07 per cent and 76.67 per cent respectively) rear cow and buffalo while goat is reared by 62 per cent respondents and hen by half of the respondents (52.67 per cent). These livestocks are mainly reared for income generation from milk and meat. For meeting the fodder requirement of cow, buffalo and goat, the respondents collect/grow various fodders from different sources (cultivated and forest). To rear hen feed is used, for which respondents grow oat, jowar etc. grains. The study indicates that the residents of the study area are engaged in different income generating activities which are mostly dependent on natural resources like water and forest. Thus they have concerted efforts in managing water and forest mainly for minor forest products for themselves and for their livestock.

3.2.3. Income

Income and employment are the deciding factors determining the living standard of the people in a community. Equal distribution of income across the society further enhances the social harmony among different sections. With the inception of UDWDP in the study area in 2005, various business opportunities have been developed. Also Farmer's Federation has been opened by the agency which leads small produce of the farmers to be sold at a premium price.

This has led to annual income of the respondents above poverty line as is indicated by 52.67 per cent respondents are falling in this category (Table 2)**.** About 16 to 26 per cent respondents were in very poor income category, and only 4.67 per cent respondents were in very-very poor category. Since adoption of new technologies, leading to enhanced income is adopted by few persons in the beginning (innovators) and at later stages (laggards) every resident adopt it. This may be an explanation of the existence of poor and very poor respondents in the study area. Devi and Rayalu (2003) observed family income of Rs. 5000 to 20000 as responded by majority of respondents. The results of the present study indicates that majority of the respondents are above the poverty line which might be due to the engagement in various income generating occupations (Table 2). Poor in the area are to the extent of 47.34 % who mostly depend on the agriculture and livestock rearing. Thus, almost all the respondents are dependent on the water and forest resources and it becomes their prime duty to manage these resources in a sustainable manner.

Sl.No.	Categories	No. of respondents	Percentage
Occupation			
1	Single occupation	13	8.67
2	2-3 occupations	123	82
3	More than 3 occupations	14	9.33
Livestock			
1	Cow	133	88.67
2	Buffalo	115	76.67
3	Goat	93	62
4	Hen	79	52.67
Annual income			
1	Destitute (below Rs. 7124/year)	Nil	Nil
2	Very-very poor (Rs. 7124-Rs. 11008/ year)	7	4.67
3	Very poor (Rs. 11008-Rs. 15096/ year)	40	26.67
4	Poor (Rs. 15096-Rs. 20128/ year)	24	16.00
5	Above poverty line (Rs. 20128 and above)	79	52.67
Educational status			
1	Illiterate	20	13.33
2	Can read and write only	6	4.00
3	Primary level	46	30.67
4	Middle level	48	32.0
5	High school level	9	6.00
6	Intermediate	15	10.00
7	Graduate and above	6	4.00

Table 2: Distribution of respondents according to economic and educational categories

3.2.4. Education

Education represents both the scope of the productive opportunities open to the household and its ability to deal with the management practices. An important socioeconomic factor is education which deals with understanding and adopting water and forest management technologies by the respondents. The present study reveals that 30.67 percent of the respondents had formal education up to primary level followed by middle school (32.0%), Intermediate (10%), High school (6%) graduation and above (4.00%) .The percentage of illiterates was 13.33 (Table 2). This illiteracy might be due to the fact that the respondents were school dropout or large family may compel them to adopt the livelihood to earn the money as a profitable enterprise to fulfill all the needs of the family. It shows that on an average 82.67 per cent respondents were literate and rest were illiterate. The high percentage of literacy in the study area might be due to educational institutions, mainly the public sector at the doorstep of the respondents. Chaurasia (1991) and Goyal and Singh (2003) observed high literacy rate among women respondents. These findings suggest that primary to middle level of education of respondents mainly take part in the water and forest management.

3.3. Participation in Water and Forest Conservation Activities

As is indicated in the Table 3**,** the extent of participation in water conservation activities was medium (four to seven activities) by nearly two third of the respondents (73.33 per cent). High participation (> seven activities) was found to be nearly one fourth of the respondents and low participation (up to four activities) opined by two per cent respondents. Majority of respondents (54 to 100 per cent) participate mainly in four activities like crop cultivation, animal husbandry, application of surface mulch and construction of water conservation tanks (Table3). Thus extent of participation of respondents in majority was for four to seven activities. This necessitates for public extension system to give high priority and allocate more resources to educate farmers how to use low cost sustainable natural water resource management practice (Swanson and Rajalahti, 2010). Higher percentage of involvement in forest conservation activities is evident from the extent of respondents' participation in these activities as more than

S.No.	Category	No. of respondents	Percentage
Water conservation activities			
1.	Low (participation up to 4 activities)	4	2.67
2.	Medium (participation in 4 to 7 activities)	110	73.33
3.	High (participation above 7 activities)	36	24
Forest conservation activities			
1.	Low participation	6	4
2.	Medium participation	46	30.67
3.	High participation	98	65.33

Table 3: Distribution of respondents according to extent of participation in water and forest conservation activities

half of the respondents (65.33 per cent) had high level of participation mainly in activities like replanting, fodder and fuelwood collection, dependency on non-timber forest products etc. Respondents having medium level of participation were 30.67 per cent and very few of the respondents (04 per cent) had low level of participation. Majority of respondents have medium to high participation in water and forest conservation activities which indicates the respondents are directly linked with water and forest conservation activities in the study area.

3.4. Correlation Studies

The study shows significant positive correlation between participation in water management & occupation (r = 0.958) and between participation in forest management & age (r = 0.873). Though occupation & age as well as family size & annual income were positively correlated but this was not significant (Table 4). There existed significant negative relationship between participation in forest management & occupation (r = -0.067). More than two third of respondents' families (Table 2) were having two to three occupations in the study area and the majority of women were engaged in raring livestock for trade (Table 2) and agriculture for

Correlation between	Correlation coefficient (r)
Occupation &Age	0.429
Participation in Water management & age	0.670
Participation in forest management & age	0.873
Family size & annual income	0.044
Participation in Water management &Occupation	0.958
Participation in forest management & Occupation	-0.067

Table 4: Correlation study

subsistence farming. Since these economic activities require more water, the significant positive association between participation in water management & occupation may have occure.The area is dominated with middle to old aged women (1), thus majority of aged women's participation in water and forest management might have led to significant positive correlation between water/ forest management and age.

4. Conclusion

The management of water and forest will be much beneficial provided socioeconomic aspects are deeply considered. Majority of the respondents were middle to old aged belonging to general cast, living in joint family, had medium family size, primary to middle level of formal education, engaged in 2-3 occupations, above poverty line, rearing milk and meat livestock. Half of the respondents had 'high' level of fatalism whereas 37.33 per cent had 'medium' level of fatalism. The respondents had medium participation in water and high participation in forest management activities. In water management activities, age and occupation while in forest management activities, occupation had significant positive correlation. In planning, designing and successful implementation of any developmental project, the socioeconomic and psychological profiles of the local residents must be considered. Therefore, there is need for policy makers and private sectors to develop policies aimed at increasing rural farmer's educational attainment through better access to technical information, extension and training. Skill training, provision of marketing and business development services will increase household income and agricultural productivity. With increasing income and as changes occur in the educational status of women farmers, the opportunity cost of their time in raising children increases. This will also reduce the high dependency ratio in most households.

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