

Associative Analysis of Socio-Economic and Nutritional Status of Adult females in the Hill Rural Areas of Uttarakhand: A study of Pauri, Tehri and Rudraprayag districts

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ABSTRACT

Hill rural areas of Uttarakhand state are not only economically under developed but also are far behind in the social development process. The impact of this under development is more on the higher vulnerable sections of the population which are Females of these areas. Amidst huge problems and migration from these regions the females of these regions have actively participated in the economic activities in these regions which further include their daily domestic chores. Females of these regions even after playing an important role in the economy of these regions are suffering from various problems which have restricted their path towards their empowerment. The major among these problems is the problem of health which not only affects their economic participation but also restricts their overall development in the present century. The health problems of these women not only adversely affects their family routines but also disrupts the economy of these households as these women are also actively engaged in various economic activities for earning livelihoods for their families. The present study analyses the nutritional status of adult females in these regions as this section of the females are not only over burdened with the domestic work pressure but are also largely engaged in the outdoor economic activities. The present further study reveals the association of the socio-economic status of the females of this age group with their nutritional status.

Key words: *Nutritional status, Socio-Economic, Hill Rural areas*

Introduction

Long awaited development of poorly developed and marked by hilly settings of Uttarakhand region was given an inspirational dream of development, growth and prosperity, when this region was given a state status as it was

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carved out from Uttarpradesh as 27th state of the country. The inspirational and new-fangled dream after more than one and half a decade seems to just surface as a day dream instead of reality. The dream may have materialized for a few sections but these sections of the state neither represents the hilly regions nor ever observed the hardships of its inhabitants. Hilly region which are the soul of the state and for whom the state was constituted have failed to feel the winds of development in the 21st century. The concept that 'Area makes poverty worse' completely symbolises the hill rural regions of Uttarakhand state. The hill rural regions of Uttarakhand absorb the same aspect of 'Area Deprivation' which mainly arises due the various forms of problems emerging from the different dimensions of inaccessibility it suffers from. The area not only enhances the problems of the economically deprived section of the community but also makes the life of socially weaker and marginalised sections of the community. Females and children's are some of the socially weaker and more vulnerable sections of the population residing in these deprived regions.

The tough natural and geographical settings of these regions have indirectly enacted in way of the growth of employment opportunities in these regions as they are not conducive for industrial development. This has always led to the problem of lack of Employment opportunities in these regions which is further been accentuated by the poor infrastructural development of these regions. Agriculture and the allied activities are the only source of living to small extent and a source of subsistence to a large extent for the residents of these backward areas. The severe negligence of the small scale and cottage industries along with poor accessibility to resources and market for the industries in these regions has further accentuated the problem of unemployment. Among these adversities the women of these regions have played a significant role which not only confides to the boundaries of domestic chores but in recent years have out shored to such an extent that they have become the back bone of the economy of these regions. The increased participation of women in agriculture and other income generating activities has given a new life to the subduing economy of these far flung regions. The increased participation of women in the economy of these regions which is largely brought out by the increased migration of the youths, have not only started the rebuilding of the economy but also simultaneously acting as a source of women empowerment in these regions. This is further reflected in the growing literacy rate, awareness level, and political participation of women in these regions. (Kandari, 2013).

The Problem

Amidst severe work pressure, be it domestic or outside the household periphery the females of hilly rural areas of Uttarakhand survive in most

tough and harsh working and living environment. Though the role of women is very important and crucial in a hill economy, yet they are the invisible workers and forced to live a tougher life. The economy of these regions which is largely based on agriculture for subsistence is depended on the contribution and participation of females of these regions. The work pressure and responsibility on these females in such deprived regions significantly enhance amidst the scenario of male migration from these regions. Further the social and old dogma which still persists in these regions inhibits the social and economic freedom of the females of these regions. Among these problems and limitations the major thing which remain ignored and often treated secondly is the health of this section of population in these regions. Unlike the plain areas, the women participate in all the agricultural operations and also trek longer hilly areas to fetch much needed fuel, fodder and water. The heavy work carried out by females often leads to bone and muscle problems and also affect their reproductive health in these areas. The insufficient and low nutritious diet of females leads to problem of anemia in them which is very common problem in these areas. The low and poor diet is due to the existence of social and old male centric customs which do not allow females to have their meals before male members of the family. Thus their daily diet depends on the left over meals which often are low in nutrition as major part of nutritious diet is consumed by males already. Lack of health facilities and problems like domestic violence, poor sanitation, and poor awareness level aggravates the health problems of females in these regions. Upadhyay (2011) reported that nutritional status as well as nutritional knowledge of hill women is unsatisfactory and needs interventions.

Objectives of the Study

Keeping in perspective the heavy work burden on the adult females mainly falling in the age group of 18 to 35 years in the hill rural areas of these regions and the socio-economic problems faced by them the present study has focused on determining the nutritional status of the females of these regions. Further the study has analyzed the association/correlation of the nutritional status of the females of this age group with their socio-economic status.

Research Methodology and Study Area

The present work was conducted in the three hill districts of Uttarakhand, which are Pauri Garhwal, Tehri Garhwal and Rudraprayag. Pauri Garhwal is one of the largest districts among all three and comprises of 15 development blocks. The study was also conducted in the hill rural areas of the adjoining two districts which are Rudraprayag and Tehri Garhwal district. The geographical features of the both the districts is almost similar to Pauri

Garhwal district and mainly comprises of the hill regions which are inhabited by the majority of population of the districts. Rudraprayag district comprises of three blocks and Tehri Garhwal district comprises of nine development blocks.

A total of 511 adult females were randomly selected from the three districts. All the selected females belong to the age group of 18 to 35 years.

Assessment criteria

The nutritional status of adults was assessed based on Body Mass Index (BMI), which is a ratio of Weight in kg to square of height in metres. The adults were categorized into different nutritional grades according to James classification as follows:

Table 1
James classification of nutritional grades as per BMI

<i>BMI</i>	<i>Nutritional Grade</i>
< 16.0	III degree CED
16.0 - 17.0	II degree CED
17.0 - 18.5	I degree CED
18.5 - 20.0	Low Normal
20.0 - 25.0	Normal

CED: Chronic Energy Deficiency

Research Findings

Following are the results of the study in which the relationship between separate socio-economic indicators/variables and nutritional status of females has been depicted.

Nutritional status of Adults (18 years to 35 years)

18 to 35 years age among the females represents the critical age when they have to not only face many gender specific health issues but also have to shoulder the burden of their families' domestic chores and in many cases the responsibilities of the economic security of their respective families. Amidst these issues the females often forgets to take care of their own health and diet which is largely ignored by the other members as in the Indian society she is epitome to be the care taker of others. Heavy work pressures mainly when they have to carry out the income generating activities put serious repercussions on her health. The situation is more often made worse for the females by the social structure of the society which is largely gender biased.

The following table depicts the nutritional status of the females in these hilly rural regions of the three districts of the state.

Table 2
Nutritional status of adult females

		<i>Frequency</i>	<i>Valid Percent</i>
Valid	III Degree CED	43	8.4
	II Degree CED	48	9.4
	I Degree CED	71	13.9
	Low Normal	107	20.9
	Normal	242	47.4
	Total	511	100.0

The analysis of the nutritional status of the adult females as per their age distribution depicts that about 47 percent of the adult females in these regions have normal nutritional status while about 53 percent of the adult females suffer from different levels of malnutrition in these deprived regions. The table shows that about 21 percent of the females have mild level of nutritional deficit while about 13.9 percent of females suffer from Grade-I level of malnutrition levels. As per the BMI standards only 8.4 percent of the females in these regions suffer from Grade-III level of malnutrition.

Nutritional status and Education

The following table depicts the distribution of the nutritional status of the adult females and their nutritional status deducted on the basis of their BMI status.

Table 3
Distribution of nutritional status of adult females as per their educational status

		<i>BMI_st</i>					<i>Total</i>
		<i>III Degree CED</i>	<i>II Degree CED</i>	<i>I Degree CED</i>	<i>Low Normal</i>	<i>Normal</i>	
Education Illiterate	Count	12	7	4	1	1	25
	% within Edu	48.0%	28.0%	16.0%	4.0%	4.0%	100.0%
	% within BMI_st	27.9%	14.6%	5.6%	.9%	.4%	4.9%
Upto 5th	Count	10	7	3	6	19	45
	% within Edu	22.2%	15.6%	6.7%	13.3%	42.2%	100.0%
	% within BMI_st	23.3%	14.6%	4.2%	5.6%	7.9%	8.8%
Uptp 8th	Count	10	9	7	10	28	64
	% within Edu	15.6%	14.1%	10.9%	15.6%	43.8%	100.0%
	% within BMI_st	23.3%	18.8%	9.9%	9.3%	11.6%	12.5%
Uptp 10th	Count	3	8	19	19	51	100
	% within Edu	3.0%	8.0%	19.0%	19.0%	51.0%	100.0%
	% within BMI_st	7.0%	16.7%	26.8%	17.8%	21.1%	19.6%
Uptp 12th	Count	4	9	22	35	41	111
	% within Edu	3.6%	8.1%	19.8%	31.5%	36.9%	100.0%
	% within BMI_st	9.3%	18.8%	31.0%	32.7%	16.9%	21.7%

contd. table 3

		BMI_st					
		III Degree CED	II Degree CED	I Degree CED	Low Normal	Normal	Total
Graduation and Above	Count	4	8	16	36	102	166
	% within Edu	2.4%	4.8%	9.6%	21.7%	61.4%	100.0%
	% within BMI_st	9.3%	16.7%	22.5%	33.6%	42.1%	32.5%
Total	Count	43	48	71	107	242	511
	% within Edu	8.4%	9.4%	13.9%	20.9%	47.4%	100.0%
	% within BMI_st	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: (Primary survey Jan-Aug, 2016)

The observations indicate that there is a presence of correlation between the educational status and the nutritional status of the adult females in the hilly rural regions of the three districts of the Uttarakhand state. The analysis of the percentage of adult females having Normal nutritional status shows that their percentage in this category increases with their educational levels. Even the same trend is noticed in the case of the low normal level of nutritional status among the adult females. The results of the statistical test to validate the correlation between the educational status and nutritional status are as follows.

Correlations				
			BMI_st	Education
Spearman's rho	BMI_st	Correlation Coefficient	1.000	.286**
		Sig. (2-tailed)	.	.000
		N	511	511
	Education	Correlation Coefficient	.286**	1.000
		Sig. (2-tailed)	.000	.
		N	511	511

** . Correlation is significant at the 0.01 level (2-tailed).

Result: The study shows that there is an existence of low degree of positive correlation between the educational status and nutritional status among the females of the hilly rural regions of the state. This help was to validate the fact that education has a positive impact on the nutrition and health of the females even among these deprived and underdeveloped regions.

Nutritional status and Income status

Economic factors directly affects the consumption pattern apart from influencing the living conditions which has direct repercussions on the overall nutritional and health status of the household members. The impact of such

low economic status is larger on the females as they are more vulnerable group in the families. To study such impact it is important to analyze the association between the two variables the income level which reflects the economic status and the nutritional status. The table provided below depicts such distribution of the two variables.

Table 4
Distribution of nutritional status of adult females as per their family income level

		BMI _{st}					
		III Degree CED	II Degree CED	I Degree CED	Low Normal	Normal	Total
Income Upto 1000	Count	3	1	3	2	9	18
	% within Inc	16.7%	5.6%	16.7%	11.1%	50.0%	100.0%
	% within BMI	7.0%	2.1%	4.2%	1.9%	3.7%	3.5%
1001 to 2000	Count	0	3	4	3	9	19
	% within Inc	.0%	15.8%	21.1%	15.8%	47.4%	100.0%
	% within BMI	.0%	6.3%	5.6%	2.8%	3.7%	3.7%
2001 to 3000	Count	9	8	10	11	26	64
	% within Inc	14.1%	12.5%	15.6%	17.2%	40.6%	100.0%
	% within BMI	20.9%	16.7%	14.1%	10.3%	10.7%	12.5%
3001 to 4000	Count	0	3	5	6	9	23
	% within Inc	.0%	13.0%	21.7%	26.1%	39.1%	100.0%
	% within BMI	.0%	6.3%	7.0%	5.6%	3.7%	4.5%
4001 to 5000	Count	3	3	5	15	20	46
	% within Inc	6.5%	6.5%	10.9%	32.6%	43.5%	100.0%
	% within BMI	7.0%	6.3%	7.0%	14.0%	8.3%	9.0%
5001 to 6000	Count	6	7	10	8	17	48
	% within Inc	12.5%	14.6%	20.8%	16.7%	35.4%	100.0%
	% within BMI	14.0%	14.6%	14.1%	7.5%	7.0%	9.4%
Above 6000	Count	22	23	34	62	152	293
	% within Inc	7.5%	7.8%	11.6%	21.2%	51.9%	100.0%
	% within BMI	51.2%	47.9%	47.9%	57.9%	62.8%	57.3%
Total	Count	43	48	71	107	242	511
	% within Inc	8.4%	9.4%	13.9%	20.9%	47.4%	100.0%
	% within BMI	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: (Primary survey Jan-Aug, 2016)

The overall analysis of the above table depicts that level of income has a positive impact on the health status of the adult females. The observation reflects that majority of the adult females having normal health status belongs to the families having higher income groups. The table shows that about 51.9 percent of the adult females belonging to families having income level of Rs. 6000 and above has normal health status. The study further shows within the

households having income level of Rs. 6000 and above i.e. having relatively higher income, about 72.4 percent of the adult females have normal nutritional status, 21.2 percent have low normal nutritional status, 13.9 percent are suffering from I Degree of chronic energy deficiency and only 8.4 percent are suffering from III Degree level of malnutrition while this percentage is maximum among the lower income group of families having income levels less than Rs. 1000.

The examination of the association between the income and nutritional status confirms the association between the two variables; results are shown in the table ahead.

Correlations				
			BMI_st	Income
Spearman's rho	BMI_st	Correlation Coefficient	1.000	.103*
		Sig. (2-tailed)	.	.020
		N	511	511
	Income	Correlation Coefficient	.103*	1.000
		Sig. (2-tailed)	.020	.
		N	511	511

*. Correlation is significant at the 0.05 level (2-tailed).

Result: The study depicts that although the correlation between the two variables i.e. the income level and nutritional level is positive but it is significantly low. This leads us to state that as the income levels of the families' increases the nutritional status of their adult female's increases to a smaller margin.

Nutritional status and house type

The following table depicts the distribution of the nutritional status of the adult females as per the type of house in which they resides.

The study shows that distribution of the nutritional status of adult females residing in different categories of house is almost similar with very little variability which indicates the lack of association between the two variables. The table shows that within *kuccha* house 52.9 percent of the adult females have normal nutritional status this percentage is 38.9 in case of semi-*kuccha* houses and 50.3 percent in case of the *Puccha* houses. The data further shows that within *kuccha* house 18.6 percent of the adult females have low normal nutritional status this percentage is 22.8 in case of semi-*kuccha* houses and 20.5 percent in case of the *Puccha* houses. This indicates low variability in nutritional status among different types of houses indicating poor or no association between them.

Table 5
Distribution of nutritional status of adult females as per their house type

		<i>BMI_st</i>					
		<i>III Degree CED</i>	<i>II Degree CED</i>	<i>I Degree CED</i>	<i>Low Normal</i>	<i>Normal</i>	<i>Total</i>
<i>House_ Type</i>	<i>Kuccha</i> Count	7	6	7	13	37	70
	% within <i>House_T</i>	10.0%	8.6%	10.0%	18.6%	52.9%	100.0%
	% within <i>BMI_st</i>	16.3%	12.5%	9.9%	12.1%	15.3%	13.7%
<i>Semi-Kuccha</i>	Count	12	19	26	34	58	149
	% within <i>House_T</i>	8.1%	12.8%	17.4%	22.8%	38.9%	100.0%
	% within <i>BMI_st</i>	27.9%	39.6%	36.6%	31.8%	24.0%	29.2%
<i>Puccha</i>	Count	24	23	38	60	147	292
	% within <i>House_T</i>	8.2%	7.9%	13.0%	20.5%	50.3%	100.0%
	% within <i>BMI_st</i>	55.8%	47.9%	53.5%	56.1%	60.7%	57.1%
Total	Count	43	48	71	107	242	511
	% within <i>House_T</i>	8.4%	9.4%	13.9%	20.9%	47.4%	100.0%
	% within <i>BMI_st</i>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: (Primary survey Jan-Aug, 2016)

The statistical test also confirms the absence of the correlation between the two variables; results of the test are as follows.

Chi-Square Tests

	<i>Value</i>	<i>df</i>	<i>Asymp. Sig. (2-sided)</i>
Pearson Chi-Square	8.776 ^a	8	.362
Likelihood Ratio	8.729	8	.366
Linear-by-Linear Association	.661	1	.416
N of Valid Cases	511		

a. 0 cells (.0%) have expected count less than 5.

Result: The study depicts that there is no association between the type of house and the nutritional status of the adult females in these hilly rural regions of the state.

Nutritional status and Caste status

Caste a major social factor in underdeveloped societies like India (mainly in rural areas) largely influences the overall status of females in not only the entire society but also in their respective families. Hilly rural areas of

Uttarakhand depict such socially backward states which are surrounded by strong prevalence of traditional practices and customs where there is dominant position of gender, caste and creed. To study the impact of the caste structure on the health of the females in these deprived regions of the state the following table depicts the distribution of nutritional status of females as per their caste status.

Table 6
Distribution of nutritional status of adult females as per their caste status

			<i>BMI_st</i>					
			<i>III Degree CED</i>	<i>II Degree CED</i>	<i>I Degree CED</i>	<i>Low Normal</i>	<i>Normal</i>	<i>Total</i>
Caste	General	Count	20	35	47	79	186	367
		% within Caste	5.4%	9.5%	12.8%	21.5%	50.7%	100.0%
		% within BMI_st	46.5%	72.9%	66.2%	73.8%	76.9%	71.8%
	SC	Count	14	11	22	24	47	118
		% within Caste	11.9%	9.3%	18.6%	20.3%	39.8%	100.0%
		% within BMI_st	32.6%	22.9%	31.0%	22.4%	19.4%	23.1%
	OBC	Count	9	2	2	4	9	26
		% within Caste	34.6%	7.7%	7.7%	15.4%	34.6%	100.0%
		% within BMI_st	20.9%	4.2%	2.8%	3.7%	3.7%	5.1%
Total	Count	43	48	71	107	242	511	
	% within Caste	8.4%	9.4%	13.9%	20.9%	47.4%	100.0%	
	% within BMI_st	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

Source: (Primary survey Jan-Aug, 2016)

The observation of the caste structure and nutritional status shows that major percentages of adult females having normal nutritional status belong to General caste category. The table shows that about 50.7 percent of females within General caste category have normal nutritional status while this percentage is 34.6 percent in case of the females belonging to the OBC and 39.8 percent belonging to the Scheduled caste category. The higher level of CED is present among the OBC and SC categories females relatively to that of the females of the General caste category.

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.374 ^a	8	.000
Likelihood Ratio	24.519	8	.002
Linear-by-Linear Association	16.576	1	.000
N of Valid Cases	511		

a. 3 cells (20.0%) have expected count less than 5.

Result: The study of the statistical tests indicates that there is a significant association between the caste status and nutritional status of adult females. Hence we can validate the fact that caste structure has an influence on the nutritional status of adult females in the hill rural regions of the state thus confirming the fact that lower caste category household females are more vulnerable to observe low nutritional and health status in these regions.

Nutritional status and family size

Various studies validate the fact that larger family size or the existence of joint family system has negative correlation with the nutritional status of the females. This is due to the reason that larger family size put severe strains on the dietary distribution due to various economic reasons and also due to the probability of greater negligence of female health in such families. The following table shows the distribution of the nutritional status among the different families.

Table 7
Distribution of nutritional status of adult females as per their family size

		BMI_st						
		III Degree CED	II Degree CED	I Degree CED	Low Normal	Normal	Total	
Members_Number	1	Count	0	0	0	1	2	3
		% within Members_	.0%	.0%	.0%	33.3%	66.7%	100.0%
		% within BMI_st	.0%	.0%	.0%	.9%	.8%	.6%
	2	Count	1	4	6	7	10	28
		% within Members	3.6%	14.3%	21.4%	25.0%	35.7%	100.0%
		% within BMI_st	2.3%	8.3%	8.5%	6.5%	4.1%	5.5%
3	Count	3	6	5	7	35	56	
	% within Members_	5.4%	10.7%	8.9%	12.5%	62.5%	100.0%	
	% within BMI_st	7.0%	12.5%	7.0%	6.5%	14.5%	11.0%	

contd. table 7

		BMI_st					
		III Degree CED	II Degree CED	I Degree CED	Low Normal	Normal	Total
4	Count	7	7	16	29	61	120
	% within Members_	5.8%	5.8%	13.3%	24.2%	50.8%	100.0%
	% within BMI_st	16.3%	14.6%	22.5%	27.1%	25.2%	23.5%
5	Count	16	14	24	22	63	139
	% within Members_	11.5%	10.1%	17.3%	15.8%	45.3%	100.0%
	% within BMI_st	37.2%	29.2%	33.8%	20.6%	26.0%	27.2%
6	Count	7	8	12	15	38	80
	% within Members	8.8%	10.0%	15.0%	18.8%	47.5%	100.0%
	% within BMI_st	16.3%	16.7%	16.9%	14.0%	15.7%	15.7%
Above 6	Count	9	9	8	26	33	85
	% within Members	10.6%	10.6%	9.4%	30.6%	38.8%	100.0%
	% within BMI_st	20.9%	18.8%	11.3%	24.3%	13.6%	16.6%
Total	Count	43	48	71	107	242	511
	% within Members_	8.4%	9.4%	13.9%	20.9%	47.4%	100.0%
	% within BMI_st	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: (Primary survey Jan-Aug, 2016)

The study reveals that maximum percentage of different level of malnutrition among the adult females is largely observed in the case of bigger families i.e. joint families. The data shows that among the females residing in the families having members above 6, 10.6 percent of the adult females are suffering from Grade-III level of CED while this percent is only 3.2 in case of family of 2 members and 5.4 percent in the case of the family size of 3 members. But the study further shows that percentage of adult females suffering from Grade-II and Grade-I level of malnutrition are less within the households having small family size. To study this association the data was passed through the statistical test. Following are the results of the statistical tests used to validate the observations.

Correlations				
			<i>BMI_st</i>	<i>Members_</i> <i>Number</i>
Spearman's rho	BMI_st	Correlation Coefficient	1.000	-.085
		Sig. (2-tailed)	.	.056
		N	511	511
	Members_Number	Correlation Coefficient	-.085	1.000
		Sig. (2-tailed)	.056	.
		N	511	511

Result: The study shows that although the tests show negative relationship between the two variables but the tests also confirms that the correlation between the two is not significant. This leads to us to reject the validation that family size has major influence on the nutritional status of adult females in these regions of the state.

Conclusion and Suggestions

The study shows that about 50 percent of the adult females in the hill rural region are suffering from different levels of nutritional deficiencies. This reflects a major concern for not only the families of these females but also to the economy of these regions which is largely shouldered upon by them. The study shows that educational status and income has positive correlation with the nutritional status which depicts the significance of better educational levels and higher income levels for attaining good nutritional status of females. Caste has also shown an association with the nutritional status of the females. The study has shown that females belonging to socially demarcated lower caste groups have relatively poorer nutritional status than the females of the upper caste groups. The study has further reveals that type of house and family size has no influence on the nutritional and health status of females in these regions.

In the study it was identified that majority of the females in the hill rural areas are engaged in agricultural activities. This involvement of females is along with the heavy work they have to carry out in their domestic household boundaries and also in outer environment which ranges from fetching water from far flung areas to fetching wood and fodder from forests for cooking and animal husbandry respectively. These activities not only drain out lot more calories and major nutrients from their body but also put severe strain on their physical and mental health.

Keeping these aspects in considerations the study suggests following target groups as per priority for policy framing and their targeted implications.

High priority target groups

- Females belonging to Lower income groups (Income level less than Rs. 6000)
- Females having Lower educational status (illiterate or education up to 5th standard)
- Adult females of Scheduled caste families (18 to 35 years age group)
- Females engaged in agricultural activities and working as casual labour
- Females engaged in fetching water, wood, fodder from far flung areas

The attainment of good nutritional and health status of females in these regions is a major and hard task as these regions are still surrounded by many social customs and taboos which make it a gender biased society. In the present time or so the females have started to play more active role in the economic arena moving out from their domestic boundaries. This is a positive aspect not only for them but also for these regions which are degrading out rapidly due to heavy migration, mainly of the male youths from these regions. The improvement of the health status of females will not only act as a push factor towards enhancing the significance of females in these areas but will also overall pave a greater opportunity for their complete empowerment thus acting as a long term remedy for resurrecting overall development of these regions.

References

- A Report of the Expert Group of the Indian Council of Medical Research, (2009), Nutrient Requirements and Recommended Dietary Allowances for Indians, National Institute of nutrition, Hyderabad.
- Dighe, Anita (2008), Women's Empowerment at the Local Level (WELL) - a study undertaken in the state of Uttarakhand, Commissioned by the Commonwealth of Learning, West Hastings Street, Vancour, Canada.
- Dutta Anuradha (2009), Health and Nutritional status of the People of the Himalayas, International Book Distributors, Dehradun, Uttarakhand.
- Gopalan C, Shastri B V R, Balasubramanian S C (2009), Nutritive value of Indian foods, National Institute of Nutrition, ICMR, Hyderabad.
- Kandari, Prashant (2013), Migration pattern and the increasing participation of females in the economy of hill rural areas: A study of Pauri district in Uttarakhand, *IOSR Journal of Humanities and Social Science*, Dec, Vol-17, I-5, p 27-33.
- Upadhyay, S. Kumar, A. R. Raghuvanshi, R. S and Singh, B. B. (2011), Nutritional Status and Knowledge of Hill Women on Anemia: Effect of Various Socio-demographic factors. *Journal of Human Ecology*, 33(1):29-34
- Uttarakhand Socio-Economic Mirror (2009), Quarterly Bulletin by the Directorate of Economics & Statistics, Government of Uttarakhand, Vol. 1, No. 1, 2016.