Determinants of Women's Health and Nutrition in Rural Haryana: A Socio-Spatial Analysis

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Abstract

Women's nutrition and health status is central to the quality of their lives and it is the key determinant for the survival of future generations to come. It is also a known fact that women are the main providers of informal health care to other members of the household. It is generally argued that economic growth and prosperity brings means of health care and nutrition within the reach of all sections of society. Haryana is one such state in the country which has attained distinction in food grains production and is ranked among top states in terms of availability of infrastructure. In this paper, an attempt has been made to study the women's nutrition and health status .in rural Haryana. The paper is based on primary data obtained from 16 villages spread over 8 districts in Haryana which represent 4 distinct groups in terms of similarities and differences in various health and demographic parameters. Nutritional status of women has been studied by their body mass index (BMI), while health status has been studied in preventive care. Determinants of women's nutrition have been discussed with reference to various socio economic characteristics of the households.

Introduction

All over world, women live longer than men, yet they experience poor health (World Bank, 1994). It is generally argued that there are essentially two different ways through which health conditions in any society improve. First, economic growth and employment in gainful activities, which means prosperity can bring the means of health care and nutrition within the reach of all sections of society. Secondly, specific support of food consumption, community health, medical care, basic education and awareness can transform the general health conditions. In some cases, it has been seen that these two processes — economic growth and public support — work independent of each other. For example, China, Sri Lanka, Cuba, Costa Rica and Jamaica have achieved remarkable improvements in health conditions even without much economic growth. There is also evidence to support the view that economic growth and the consequent rise of per capita GNP can contribute significantly to health achievements, especially when the growth process takes an employment-oriented participatory form.

Haryana is one such state in India, which has witnessed remarkable economic growth in the last 25 years. The state with 2 per cent of India's population (Census, 2011) has created a distinctive place as it contributes close to 3 per cent of India's national income. Haryana has shown an above average performance in all sectors and this is reflected in its high per capita income, availability of infrastructure, decline in the crude death rate, increase in life expectancy etc. With the Green Revolution, the state has attained a distinction in food production

HARYANA
LOCATION OF SAMPLE VILLAGES

SELECTED DISTRICTS IN
HEALTH INDICATOR ZONES
H I Z1
H I Z2
H I Z3
H I Z4

and with mounting public food stocks one expects that the dietary intake of the population in general has improved. Yet, it is shocking to find that maternal mortality rate in the state has increased from 162 (SRS 01-03) to 186 (SRS 04-06). Haryana along with Punjab, are the only two states which have shown an increase in MMR. Further, Haryana is one among 3 states where women's malnutrition has increased (Jose, 2008: 136). A large proportion of anemic women during child bearing stage (NFHS-II and III) reveals that either their special nutritional needs (such as iron), are not met or their nutritional status is compromised by unequal access to food and by heavy work demands. It may also be noted that in case of Haryana, majority of women are involved in various activities besides domestic chore and the economic value of contributions by women and children to household income exceed even male contribution (Bhatia and Singh, 1987). Hence in this context, it is utmost important to study the nutritional well being of adolescent girls and women. Nutritional deficiency (e.g. of iron, calcium, vitamins A, B and C) in the human body has been associated with a variety of adverse health conditions (Willett 1998). The importance of women's height and weight as anthropometric indicator of nutrition is also well established (Arnold et al: 2004, Jamison et al. 2003, WHO: 1995). Body mass index is a sensitive measure which captures the nutritional intake and her overall health. Low body weight can be used as a proxy to measure anemia if other testing methods are inaccessible (Ramaroo, 2001).

Several reviews have shown the vulnerability of women throughout their life cycle, but for social and biological reasons, women of the reproductive age are amongst the most vulnerable to malnutrition (Merchant and Kurtz: 1993, Tinker: 1995, UNACC/SCN: 1992). Many factors have been associated with malnutrition of women in the literature. These include the socioeconomic (e.g.,occupation, educational background and the standard of living); cultural (e.g., religion and caste); the demographic (e.g., age and marital status) and dietary characteristics (De Vasconcellos: 1994, Shetty and James: 1994, Griffiths and Bentley:2001, Monteiro et al.: 2004; Shukla et al:, 2002; Shetty: 2002, Radhakrishna and Ravi: 2004, Radhakrishna et al.: 2004, Roy et al: 2004).

Objective

In this context, present paper attempts to study the socio- spatial pattern of health and nutritional status of women in rural Haryana. It also attempts to study the determinants of women's nutrition in relation to socio-economic characteristics of the households.

Data Base and Methodology

The paper is based on primary data collected from household survey, carried out from July 2009 to December 2009. A total of 1440 households were surveyed which were spread over 16 villages in 8 districts of the state. For this primary survey, a multi stage sample was designed. At first stage, all the districts in the state were ranked on the basis of 4 health indicators. These health indicators were longevity of life, natural population growth (taken in terms of total fertility rate and crude birth rate) and infant mortality rate (IMR). On the basis of these indicators, 20 districts of state were grouped into quartiles. These

quartiles were named as Health Indicator Zones, HIZ1, HIZ2, HIZ3 and HIZ4 (Fig.1). Ironically, in each zone, there are districts of high agricultural productivity as well as the districts of low agricultural productivity, e.g. in Zone 1, one may find that out of 4 districts, Yamunanagar and Rewari are at different levels of agricultural development, but having similar health characteristics. In Zone 2, the districts are Kurukshetra, Kaithal , Ambala and Bhiwanai. The first three districts are agriculturally developed and are at same level of economic/ agricultural development, Bhiwani in south Haryana does not match them economically, due to low level of agricultural productivity. Similarly, in third and fourth zone, the districts show similar qualities. At the second stage, in each of these four zones, two districts were chosen, each representing as high and low agricultural productivity but with similar health characteristics. In all 8 districts were selected. From these 8 districts 2 villages, from each district were chosen. Hence in all, 16 villages were selected (Fig. 2). The selection of households was based on stratified random sampling method representing the social and economic structure of respective villages. . In all 1440 households were surveyed.

Nutrition status (the chronic energy malnutrition) of ever married women in reproductive age group (15 to 49 years) has been meassured through body mass index (herein after BMI). In literature, it is argued that food intake energy is a poor measure of nutritional status and due to complexities involved in arriving at the food energy intake norms, assessment of malnutrition based on outcomes rather than food energy intake is given prominence. The suggested outcome measures of malnutrition are anthropometric measures, (Body Mass Index), clinical signs of malnutrition and biochemical indicators. BMI is considered to have advantage over others since body measurements are sensitive to even minor level of malnutrition (Chatterjee: 1996). Low body weight can be used as a proxy to measure anemia if other testing methods are inaccessible (Ramaroo, 2001). For calculating BMI, following formula was used: BMI= Weight (kg). /stature (meter square). BMI was classified into 5 categories. These are: less than 16.5 kg per metre square. as severly thin, 16.5 to 18.5 moderately thin, 18.5 to 25.0 as normal; 25.0 to 30.0 kg per m sq. as overweight and more than 30 as Obese. This index excludes expectant mothers and women who gave birth during the two months preceding the survey. In all 2025 women (excluding expectant and nursing women) in 15 to 49 years were measured for BMI. The health status of women has also been measured in preventive care i.e. (i) ante-natal care of expectant mothers and (ii) care during child birth (institutional deliveries of women who gave birth during last one year period of survey). The socio spatial variations have been studied in terms of educational and caste status of households in various districts and in 4 distinct health indicator zones. The economic status of households has been measured by taking a proxy variable i.e. main occupation of the head of the household, which is classified as landless agricultural labourers, marginal and small farmers, medium cultivators, large and very large cultivators. Similarly the other occupations are self employed as petty shop keepers and in services. Determinants of women's nutrition have been extracted by applying Principal Component Method.

Nutritional Status of Women

Spatial Pattern of Women Nutrition: As discussed in methodology, BMI of less than 16.5 indicates severe chronic energy deficiency (CED) and shows too thin a stature. CED refers to an intake of energy less than the requirement for a period of several months or years. In the study, the BMI of 2025 ever married women in reproductive (15 to 49) age group was measured. The data (Table 1) reveals that about 20 percent women are moderately thin (BMI 16.5 to 18.5) and 8 percent were severely malnourished (BMI less than 18.5 m per square).It may also be noted that about 9 percent of women were overweight and obese. The spatial pattern shows district wise variations in BMI, where Mewat shows a very high proportion (40 percent) and a low of 19 percent in Jhajjar and Fatehabad districts as suffering from CED. Similarly in obesity, one finds that in Mewat where only 2 percent women were overweight, this proportion varies from 13 to 16 percent in northern districts (Yamunanagar, Kurukshetra) and in Fatehabad. Women malnutrition in terms of obesity and overweight is not a problem in southern districts of the state as only 2 to 3 percent women were falling in this category of malnourishment.

The spatial variation in terms of health indicator zones has been presented in Table 2. It may be noted that in all four zones CED remain as the major form of malnutrition as 28 percent women in all zones suffer from this form of malnutrition. The districts with better health and demographic indicators does not show a significant difference in women nutrition measured as BMI as compared to those zones which are showing relatively poor health and demographic conditions.

Women Nutrition vis-à-vis Social Status: It has been documented in various studies that caste is a socio economic determinant while studying inequities in any aspect of well being in Indian society. However, unlike the rest of north India, the caste hierarchy in rural Haryana are maintained and acknowledged in a moderate manner as this region has remained under the influence of *Arya Samaj Movement*. In the present study, all castes have been grouped into 4 major caste groups applying local social hierarchy of these castes. It is based on the criteria of a combination of ritual status, traditional occupational and hierarchical status it enjoys (Sinha and Rajeshwari, 1993). Each village, therefore, was unique and yet similar to others insofar as the region in which it is located.

Table 1 presents BMI of ever married women in 15 to 49 years, one finds that proportion of CED deficient women was 21.0 percent among upper caste women, while it was 33 percent in case of lower caste women. The situation is equally worse among artisan caste groups. The chi square value shows significant relationship between women's BMI and caste groups. The pattern needs further corroboration with economic status of the households as it may be noted that first two caste groups are the ones who own resources and hence enjoy better economic conditions. The question however is that even among these caste groups, the nutrition of women is a matter of great concern where about 20 to 25 percent are suffering from chronic energy deficiency.

Table 1: Nutritional Status (Body mass Index) of Women (15 to 49 years)

(Percent women with BMI)

Characteristics	Less than 16.5	16.5 to 18.5	18.5 to 24.9	25.0 to 29.9	30.0 to 35.0	Total	Chi Test
Health Indicator Zones							
HIZ1	9.62	20.69	60.07	7.44	2.18	551	P=0.329356 X^2=13.56 df=12 n=2025
HIZ2	7.60	20.08	63.35	6.04	2.92	513	
HIZ3	6.40	19.77	62.52	9.79	1.51	531	
HIZ4	6.94	22.22	62.04	7.18	1.62	432	
Caste Groups							
Upper	4.29	17.79	61.96	11.66	4.29	163	P=0.001808 $X^2$31.24434 df=12 n=2025
2nd Ranking	6.40	19.31	65.64	7.11	1.54	844	
Third ranking	6.49	21.82	60.26	8.57	2.86	385	
Lower Caste	10.95	22.38	58.22	6.73	1.72	639	
Eductional Status of HH							
Illiterate	8.19	22.15	61.08	7.17	1.41	781	p=0.242908 $X^2$28.41544 df=24 n=2025
Upto 5	6.10	18.29	64.63	9.76	1.22	82	
5 to 8	9.52	23.81	56.41	7.69	2.56	273	
8 to 10	8.46	22.06	58.46	8.82	2.21	272	
10 to 12	4.62	18.97	66.67	7.44	2.31	390	
12 to Graduate	10.16	14.06	65.63	7.81	2.34	128	
Graduate+	6.67	13.33	68.57	6.67	4.76	105	
Occupational Status of the HH							
Landless labourers	13.44	23.72	55.93	5.34	1.58	506	p=2.97E-07 $X^2$55.93755 df=20 n=2025
Marginal & small farmers	6.27	23.34	61.67	6.97	1.74	287	
Medium Farmers	6.93	20.79	65.35	6.93	0.00	101	
Large & Very Large Farmers	5.16	7.10	76.13	9.68	1.94	155	
Self Employed	5.94	22.57	59.86	8.55	3.09	421	
Services	5.41	18.74	64.50	9.01	2.34	555	
Total Women	*156*	*418*	*1254*	*155*	*42*	*2025*	
(percent)	**7.70**	**20.64**	**61.93**	**7.65**	**2.07**	**2025**	

Women Nutrition vis-à-vis Educational Status

In social determinants of health, education has been documented as major determining factor. Level of education has a great impact on access to health care for women and children. Studies have demonstrated that children of literate mothers had higher nutritional intakes than children of non literate mothers (Sen and Sengupta;1983). In the present study however, women's nutritional status has been studied vis-à-

vis educational status of the head of the household. This has been taken due to the fact that Haryana is deeply patriarchal society and women's nutritional intake largely depends on the prevalent social and cultural norms. Hence the educational status of the head of the household plays a detrimental role in overall dietary intake or nutrition and of unmarried adolescent girls and women in particular.

The statistics from Table 1 suggests that the proportion of CED of ever married women (15 to 49 years), decreases with increase in educational status of head of household. However, it may be noted that the significant increase is visible only when the head of household is having 10 or more years of schooling.

Women Nutrition vis-à-vis Economic/Occupational Status:

The conventional development theory and practice assume that if men's wages are increasing, all household members will be better off. However studies in South Asia have revealed that wealth is not the sole determining factor in well being and in minimizing gender discrimination.(Das Gupta,1987, Basu, 1993, Chen et.al, 1981). In the present paper, occupational status of the family has been taken as surrogate of economic status of the household. All 1440 households have been categorized into 4 main occupations: landless agricultural labourers, Cultivators, Self employed and employed in Services. Landless labourers are invariably the poorest households and thus can be considered as representing the lowest economic group. Cultivators are further divided as Marginal and small farmers (with less than 5 acres of land),

Medium farmers (with 5 to 10 acres of land), and large and very large farmers with more than 10 acres of land. The category of self employed is also divided into two groups with petty shop keepers and self employed with large business. The fourth category is of those households who have fixed monthly salary from services.

Women nutrition vis a-vis these categories has been studied and table 1 shows a clear association of malnourished women with economic or occupational groups. It is least among the large and very large farmers followed by salaried households. It may however be noted that in these categories the proportion of obese women is quite high. Hence in these groups, the nutritional concerns are of different nature. The findings may be related to overall nutritional intake statistics of NSSO, 61st round (2004-05). The report shows that except upper quintile, per capita intake of calorie is much below the norm in lower MPCE classes. It is shocking to find that in food surplus state the intake of calorie is lower than all India average. One may very well understand the state of women nutrition in lower quintile.

Health Status of Women

Ante Natal Care of Expectanat Mothers: Maternal health care package of antenatal care is the main programme of National Rural Health Mission to strengthen RCH care. ANC provided by a doctor, an ANM or other health professional comprises of physical checks, checking the position and the growth of foetus and giving TT injection at periodic intervals during the time of pregnancy. At least three check-ups are expected to complete the course of

ANC to safeguard women from pregnancy related complications.Haryana's progress in case of women care during and before child birth during the four year period between DLHS 2 (2002-04) to DLHS 3 (2007-08) has been mixed. Mothers having full ANCs has increased from 10.3 percent to 13.3 percent.

In case of sample study area, 185 women were expectant mothers. They were asked for the regular, partial or no care during this period. The statistics has been presented in Table 2. It shows that only in villages of YamunaNagar and Fatehabad districts, 11 and 14 percent expectant mothers had not taken any care. However it must be noted that full ANC was relatively low as compared to partial care during motherhood. Full ANC was highest in the villages of Rewari district with 73 percent women availing such care, followed by women in Jhajjar and Bhiwani villages (60 and 50 percent). In villages of Mewat district, none of 18 expectant mothers had taken full ANC, however all of them had taken partial care. ANC in relation to household characteristics has been presented in Table 2. As far as caste status and partail ANC is concerned, it does not show much inter caste variations. However, full ANC is least among lower caste women where its proportion is 27 percent. Women's care vis-à-vis educational and occupational status of the household also seems to be indifferent in the sample study area.

Institutional Deliveries

Institutional delivery and post-natal care is promoted as an objective of NRHM through the Janani Suraksha Yojana (JSY) to prevent maternal deaths all over India. As per DLHS survey of Haryana, institutional deliveries have increased from 26 percent in 1998-99 to 36 percent in 2002-04 and to 47 percent by 2007-08 The percentage of institutional delivery ranges from 14.8 percent in Mewat to 65 percent in Rewari. Percentage of safe delivery is 73.5 percent in Rewari and 16.3 percent in Mewat districts and in Sonipat, Ambala, Mahendragarh, Kurukshetra, Panchkula and Sirsa it ranges from 61 to 69.5 percent. In Hisar, Gurgaon, Karnal, Kaithal, Jhajjar, Fatehabad, Yamunanagar and Rohtak districts of Haryana safe delivery were more than 50 percent (IIPS, 2010). In Haryana, 4.6 percent of the deliveries which took place in institutions after January 1, 2004 have been provided with JSY financial assistance.

In the sample study area, a total of 428 women delivered babies preceding one year of survey. 47 percent of these were institutional deliveries. In another 6 percent cases, the help of ANM was sought. It may be noted that a whooping 46 percent births were conducted at home with the help of either family members or *traditional dai*. There are wide spatial variations ranging from 10 to 83 percent. It was least in case of Mewat. An interesting feature is that in Northern Haryana institutional deliveries were 60 to 63 percent, while it was highest in Rewari (83 percent). It may further be noted that in Jhajjar about 50 percent deliveries were in Govt hospitals followed by the districts of Rewari and Bhiwani (27 percent). It must be noted that such births do get financial support in Janani Suraksha Programme launched by Govt of Haryana. An institutional delivery in relation to household characteristics has been presented in Table 3. In case of health indicator zone 4, the performance of women health care is

Table 2: Ante Natal Care among Expectant Mothers

Categories	No care	Partial ANC	Full ANC	Total
Health Indicator Zones				
HIZ1	7.7	51.2	42.1	39
HIZ2	0.0	40.8	59.2	49
HIZ3	0.0	54.3	45.7	54
HIZ4	8.5	72.3	19.1	47
Caste Groups				
Upper	0.0	42.8	57.2	14
2nd Ranking	2.8	56.3	40.8	73
Third ranking	0.0	44.4	55.6	27
Lower Caste	7.1	65.7	27.1	71
Education status of Head of Household				
Illiterate	7.6	54.4	38.0	79
Upto 5	0.0	69.2	30.8	13
5 to 8	0.0	69.0	31.0	29
8 to 10	0.0	59.1	40.9	22
10 to 12	0.0	50.0	50.0	20
12 to Graduate	7.6	53.8	38.6	13
Graduate+	0.0	44.5	55.5	9
Occupational Categories				
Landless Labourers	6.9	69.0	24.1	56
Small&Marginal	3.6	57.1	39.3	28
Medium farmers	0.0	45.4	54.6	11
Large &Very Large Farmers	5.8	35.3	58.8	17
Self employed	2.9	62.8	34.3	35
Services	0.0	47.2	52.7	36
Districts				
Rewari	0.0	27.3	72.7	12
YamunaNagar	11.1	48.1	40.7	27
Kurukshetra	0.0	69.6	30.4	23
Bhiwani	0.0	50.0	50.0	26
Jhajjar	0.0	40.0	60.0	10
Kaithal	0.0	57.5	42.5	40
Fatehabad	13.8	525.2	31.0	29.0
Mewat	0.0	100.0	0.0	18
All Villages	**3.9**	**57.8**	**38.3**	**185**

very low - both during and after child birth. Table shows that in this zone out of 127 births, only 18 percent were institutional, while in all other three zones it ranged from 45 to 64 percent. As discussed earlier, the Govt of Haryana provide financial support to institutional deliveries (which are delivered at hospitals), even then the proportion is only 17 percent of all deliveries. In relation to educational status of the head of household, the data reveals that it does have an association with education as about 83 percent of these are institutional, when educational status of the head of household is Graduate and more. In case of illiterate head of the household, a high proportion of births (58 percent) are unsafe i.e. at home with the help of either family members or with *traditional dai*.

Determinants of Women's Nutrition

As discussed in the above sections, there are differentials in the levels of women malnutrition by socio-economic, demographic and other characteristics of the households. In this section, an attempt has been made to extract the major determinants of women's nutrition using Principal Component Analysis. Women in 15 to 49 years with18.5 to 25.0 kg per m² Body mass index have been taken as dependent variable (an indicator of women's nutrition). 19 variables have been taken as explanatory variables. These are related to economic conditions such as households below poverty line (BPL households), households who are landless and the main occupation is agricultural labour, households with salaried income. Similarly the indicators of better awareness are adult male literate in the household and adult female literate and exposure to print media in term of

household buying newspaper. The variables related to living conditions are: availability of sanitation facility in the household, access to safe drinking water, better drainage, pucca houses, good ventilation etc. The indicators of women status and autonomy are somewhat indirect which include the joint family households, sex ratio at birth. In joint families, the hold of patriarchy seems to be stronger, hence has been taken as proxy variable of women's status.

The results of PCA are presented in Table 4. In all 5 components are being extracted which explain 84 percent variation in women's nutrition. The first component explains about 40 percent variation in women's nutrition. The component may be named as economic factor, as it shows the major variables as households with salaried income, BPL households etc. It may also be noted that the adult male literate also figure in but invariably households with higher incomes are the ones where more number of adult males are educated. The second component is named as living condition of the households which explains 27 percent of variation in women's nutrition and both the components together explain about 58 percent of variation. The third component is named social determinants related to patriarchy. The fourth component is also social determinant and captures male dominance, where it is more women's nutrition is poor. The fifth extracted component is related to less discrimination in girl and boy child, captured indirectly in terms of child sex ratio shows better women's nutrition.

Summing Up: The present paper reveals a disquieting pattern of women's nutrition and health in the state of Haryana, which is economically developed,. The analysis also

Table 3: Care during Child Birth

Categories	At Home (Family members/ Dai)	Home with the help of ANM s	Private Hospital	Govt. Hospital	Total women (delivered)
Health Indicator Zones					
HIZ1	25.0	16.7	40.7	17.6	108
HIZ2	34.9	10.8	35.0	19.3	83
HIZ3	36.4	0.0	36.4	27.3	110
HIZ4	80.3	1.6	11.8	6.3	127
Caste Groups					
Upper Caste Group	14.8	3.7	63.0	18.5	27
2nd Ranking CG	48.2	6.4	30.2	15.1	172
3R CG (Artisan)	38.5	7.7	41.0	12.8	78
Lower Caste Group	53.6	7.3	17.9	21.2	151
Education status of Head of Household					
Illiterate	58.5	4.2	21.8	15.4	188
Upto 5	45.0	10.0	25.0	20.0	20
5 to 8	50.0	5.5	27.8	16.7	54
8 to 10	41.5	7.0	34.0	17.5	56
10 to 12	27.4	11.0	43.8	17.8	73
12 to Graduate	36.8	15.8	15.8	31.5	19
Graduate+	11.1	5.5	72.3	11.1	18
Occupational Categories					
Landless Labourers	60.0	44.4	17.8	17.7	135
Small&Marginal	44.4	6.3	41.3	7.9	63
Medium farmers	59.1	0.0	27.3	13.6	22
Large &V. Large Farmers	44.7	7.9	34.2	13.2	38
Self employed	40.2	7.6	33.7	18.5	92
Services	28.2	11.5	35.9	24.3	78
Districts					
Rewari	9.1	6.8	56.8	27.3	44
YamunaNagar	36.0	23.3	29.7	11.0	64
Kurukshetra	26.5	10.2	49.0	14.3	49
Bhiwani	47.0	11.8	14.7	26.5	34
Jhajjar	32.4	0.0	16.2	51.3	37
Kaithal	38.4	0.0	46.6	15.1	73
Fatehabad	68.0	0.0	23.4	8.5	47
Mewat	87.5	2.5	5.0	5.0	80
All Villages	**46.2**	**6.8**	**30.0**	**17.0**	**428**

Table 4: Rotated Component Matrix(a)

Variables	Component 1 Economy and awareness	2 Living conditions	3 Patriarchy	4 Male dominance	5 Women Status
women With Normal BMI	.220	-.025	.512	-.566	.226
Adult Male Literate	**.957**	.046	.016	.034	-.129
Salaried household	**.923**	.034	-.052	.070	-.139
Adult Literate (total)	**.871**	.408	-.055	.099	.130
Landless agricultural labourers	**-.838**	.223	.224	-.140	.024
Bought Newspaper	**.834**	.182	.168	.229	-.192
Adult Female literacy	**.729**	.547	.343	.008	.049
Smoke Chullah only	**-.853**	-.486	.033	.026	-.093
BPL Houses	**-.681**	.291	-.322	-.218	.059
With Toilet Facility	.122	**.952**	.082	.139	.024
Safe water supply (Tap)	.209	**.847**	.044	-.133	.161
Poor Hygiene/Cleanliness	-.214	**-.778**	-.120	-.073	-.468
No Drainage	.120	**-.818**	-.238	-.126	-.148
Kuttcha Houses	.177	**-.773**	.289	.337	-.189
Poor Ventilation	-.182	**-.769**	.178	-.080	.280
Hh with electricity	.433	**.748**	-.087	-.009	.382
Sex Ratio at Birth	-.275	.250	.083	.043	**.823**
Hh with joint family	.038	.285	**.665**	.083	.406
Male Drinking Daily	.164	.137	.134	**.879**	.160

highlights that CED malnutrition is high in all sample villages, which is spread over 8 districts in the state. It also shows that in zone 4 where other indicators of health) are poor, the nutritional levels of women are of great concern. Nutrition and health status vis-a-vi socio-economic characteristics however indicate that caste in itself is not a determining factor. At the same time it is also true that levels of CED malnutrition are relatively high among lower caste groups, which is largely due to the fact that majority of them are still landless labourers and hence this may be related to their poor economic status. However, the high levels of CED women in other economic categories point to prevalent insensitivities towards their nutritional needs. The analysis hence suggests that women remain the sufferers among sufferers.

The study also raises few questions which need further investigations. Though the state economy is growing at a rate of 7 to 8 percent per year, there is low growth in agriculture sector and in rural areas dependence on agriculture has not decreased. It needs further probing that is it the predominance of rice wheat crops and

decline in pulses, which is also responsible for low nutrition which was otherwise easily available in food to women. The heavy work demand of women and their food allocation within households do need further investigations.

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