NUTRITIONAL DIFFERENTIALS IN TWO DEMOGRAPHICALLY DISTINCT TATES IN INDIA

Introduction

Health of the people is the most important indicator of development of a nation, and nutrition is an important determinant of health. India has the highest incidence of childhood malnutrition in the world. Almost 30 babies in India are born with low birth weight and are doomed to adverse consequences, including degenerative diseases in later life. UNICEF and the World Food Programme (WFP) work together to strengthen and sustain the ability of households to meet their basic needs for food, care of children and women, health services, and water and sanitation. Proper nutrition is a powerful good: people who are well nourished are more likely to be healthy, productive and able to learn. Good nutrition benefits families, their communities and the world as a whole. Malnutrition is, by the same logic, devastating. It plays a part in more than a third of all child deaths in developing countries. It blunts the intellect, saps the productivity of everyone it touches and perpetuates poverty.

Widespread poverty resulting in chronic and persistent hunger is the biggest problem of the developing countries today. Poverty in turn, is closely linked to overall standard of living and whether the population can meet its basic needs such as access to food, housing, health care and education. The social and environmental context in which a child is raised affects his or her health and in turn the survival chances (Sastry, 1996) this inter – sectoral and inter – related cause of under nutrition operates at many levels from community at large to the household and children within the household. Under nutrition is often sighted as an important factor contributing to high morbidity and mortality among children in developing countries. Under nutrition during childhood can also affect growth potential and risk of morbidity & mortality in later years of life. Many studies have shown that severely malnourished children are at a greater risk of dying than healthy children. Between 20 and 75 percent of child deaths can be attributed directly to malnutrition in the less developing countries. If not death, chronic malnourishment leads to blindness, deformities and brain damage. Factors like maternal age, literacy status and work outside home delay the introduction of supplementary food even to later than 12 months of age. Therefore, nutrition education is essential for creating an awareness of desirable weaning practices among mothers to enhance the health status of children (Subbulaxmi et.al, 1990). Health environment contributes to around 20 percent reduction in child malnourishment in developing countries (Smith et. al, 2000). The determinants of infections in children with mild to moderate malnutrition are more closely related to the quality of environment than to the nutritional status of children. However, once the child becomes infected, the severity and duration of the episode will depend on the nutritional status (Martorell and Ho, 1984). Several recent studies have considered the relationship between community characteristics and child health measured most commonly by Anthropometrical indicators. Barrera (1990) found that in Philippines, environment cleanliness, water connections, toilet facilities and access to health care facilities were all significantly related to child health. The community level variables like community education and community hygiene also play an important role in reducing the risk of child deaths under 5 years of age. The incidence of child mortality was found to be directly related to having no modern toilet facility in Northeast India (Ladusingh and Singh, 2006). The household environment measured by factors such as source of drinking water and toilet facilities, is important determinant for survival of older children as well (Merrick 1985, Esrey & Habicht, 1986 and Woldemicael, 2000). These factors are important not only for their direct impact on child survival but they may also indicate the overall resource level of the child's family. Children from households with better economic conditions have better nutritional status in West Bengal. Also the different ethnic groups show variation with respect to nutritional status in Assam. (Som, Pal et.al, 2005).

Underlying Causes of Malnutrition

The main underlying preconditions that determine adequate nutrition are food, some times it's depend upon the source of cooking, health and care: the degree of an individual's or a household's access to these preconditions affect how well they are nourished. Food security exists when, at all times, everyone has access to and control over sufficient quantities and quality of food needed for an active and healthy life. For a household this means the ability to secure adequate food to meet the dietary requirements of all its members, either through their own production or through food purchases. but whenever you are cooking then you have to very careful about the source of cooking, Food production depends on a wide range of factors, including access to fertile land, availability of labour, appropriate seeds and tools and climatic conditions. Factors affecting food purchases include household income and assets as well as food availability and price in local markets. (Reference: Measuring and interpreting Malnutrition and Mortality (manual); WFP and CDC; 2005).

On an immediate level, malnutrition results from an imbalance between the required amount of nutrients by the body and the actual amount of nutrients introduced or absorbed by the body.

Health and Sanitation Environment

Access to good quality health services including affordability, safe water supplies, adequate sanitation and good housing are preconditions for adequate nutrition. Inadequate sanitation and hygiene is a major contributing factor for anaemia due to the link with intestinal worm infection. Health and nutrition are closely linked in a "malnutrition-infection cycle" in which diseases contribute to malnutrition, and malnutrition makes an individual more susceptible to disease. Malnutrition is the result of inadequate dietary intake, disease or both. Disease contributes through loss of appetite, malabsorption of nutrients, and loss of nutrients through diarrhea or vomiting. If the body's metabolism is altered the greater the risk is of malnutrition.

Social and Care Environment

The social and care environment within the household and local community also can directly influence malnutrition. Appropriate childcare, which includes infant and young child feeding practices, is an essential element of good nutrition and health. Cultural factors and resources such as Household structure (Nuclear and Joint families), income, time and knowledge also influence caring practices as well as attitudes to modern health services, source of water supplies and sanitation.

Need For the Study

One study has found to identify variables in the family and child subsystem which determine child health status in two selected rural areas of Karnataka, India. The multivariate approach stresses the importance of controlling for age as 0-12 and 13-36 months. The results show that some of the variables which explain the differences in weight for age are the direct influence of socioeconomic status and operate indirectly through morbidity and per capita expenditure on food (Ramprasad V; Kulkarni PM, 1985).

It is now widely recognized that while income poverty reduction is relatively easy, elimination of multiple deprivation is more difficult to achieve (Radhakrishna and Ray, 2005). NFHS-II reveals that 71 per cent of rural household do not have any toilet facility; 19 per cent villages do not have any health facility, and 51 per cent of villages do not have any drainage facility-either underground or open. The National Council of Applied Economic Research (NCAER) survey of human development in India has also revealed the same

picture - 50 per cent of the rural population suffer from 'capability-poverty'; 43 per cent of rural household have domestic lighting, only 25 per cent have access to tap water and mere 33 per cent can utilize public distribution facility (Shariff, 1999).

Under-nutrition is a major problem in every part of India but it is most prevalent in states of Bihar, Uttar Pradesh, Madhya Pradesh and Rajasthan, where more than half of the children are underweight and stunted. In addition to these four states, about half of children are underweight in Orissa, Maharashtra and West Bengal. Similarly, about half of children are stunted in Assam and Haryana. States with the lowest percentages of underweight and stunted children are Goa, Kerala, and all the small northeastern states except Tripura and Meghalaya (Arnold, Nangia and Kapila, 2004).

Uttar Pradesh is the fifth largest state of India in terms of area (238,566 km^2) and largest in terms of population (166,052,859). But the point of grief is its poor performance on all economic indicators. The NFHS II (1998-99) data indicates very high prevalence of malnutrition in the state. Therefore, for policy implications, it is essential to see the nutritional level of children and to understand the background variables which would explain high undernourishment of children.

Different rounds of NFHS and RCH (Reproductive and Child Health Survey) data sets provide information on the household's wealth status and malnutrition status of children. There have been various studies conducted by International Institute for Population Sciences (IIPS, Mumbai) on issues related to child nutrition and structure of households. They provide an opportunity for analyzing in structure of households and child and women malnutrition and check the strength of relationship between the two variables. This paper tries to address these issues.

Objective of the Study: To examine the differentials of nutritional level of children and women in reproductive age-group15-49 years by their household structure in both the state of India.

Data Methodology

The data used in this analysis are drawn from the nationally representative 2005-06 National Family Health Survey (NFHS-III) of 124385 ever-married women aged 15-49 years, 12,183 and 3566 women aged 15-49 in Orissa and Kerala and 5684 and 1017 child aged 0-60 months in Uttar Pradesh and Kerala for whom complete information is available with regards to health and households characteristics. We restrict our analysis to only those households that had children born in the 5 years prior to survey.

We measured child nutrition using two anthropometric measures: a child's height-for-age, and weight-for-height, both are expressed in standard deviations (Z-scores) from the median of the reference population, this being the commonly used US National Center for Health Statistics (NCHS) standard as recommended for use by the World Health Organization (WHO). The height-for-age Z-score measures the child's height according to age, this being an indicator that reflects the cumulative effects of growth deficiency and so is designed to measure long-term nutrition. The weight-for-height Z-score measures the child's weight according to height, where this indicator has been used to monitor the growth of children and is typically regarded as a measure of short term rather than long term health status. Both anthropometric measures are influenced by a number of factors including chronic insufficient women's Health, women's education, household facilities, and low socio-economic family status. However, these anthropometric measures are widely regarded by nutritionists as a reliable indicator of malnutrition. For women nutrition using body mass index (BMI), information on the height and weight of women age. The same scales and measuring

boards used to measure children were used for women. Women's height can be used to identify women at risk of having a difficult delivery, since small stature is often related to small pelvic size. The cutoff point height, below which women can be identified as nutritionally at risk, varies among populations, but it is usually considered to be in the range of 140-150 cm. BMI is defined as weight in kilograms divided by height in metres squared (kg/m2).This index excludes women who were pregnant at the time of the survey and women who gave birth during the two months preceding the survey. A cutoff point of 18.5 is used to define thinness or acute under nutrition and a BMI of 25 or above indicators overweight or obesity. Utilizing NFHS-III, information on background, socio-economic and health characteristics, such as religion, source of drinking water, source of cooking, residence, caste, the dependent variables are Nutritional status of women and children. Of the several variables used in this study, besides cross tabulations, a regression analysis is also done to understand the factors influencing nutritional status of women and children in Kerala and Uttar Pradesh.

Percentage of children under five years classified by nutritional status and selected background characteristics for India, 2005-06

Table 1 Shows that the nutritional status of children by selected background characteristics. In India, about 18 percent children are severely malnourished whereas 55 percent children are normal are belong to 25- 36 months. 67 percent children are normal whereas 10 percent children are underweight in urban area and 18 percent children are underweight in rural areas. Religion wise distribution are showing that less number of children are severe malnourished in Sikh as compared to Hindu and Muslim religion. In the caste distribution, 11 percent children are underweight and 66 percent children are normal in others category which are less number of underweight children. According to source of drinking water, those children are using piped as source of drinking water number of normal children is 69 percent and 10 percent children are under weight and those are using tube well as a source of drinking water, highest number of children are underweight. Biogas and LPG are available their number of normal children is higher than other source of cooking. Those children are belonging to non-nuclear household structure, they are 60 percent normal children and 14 percent children are severe malnourished whereas 18 percent children are underweight are belonging to nuclear household structure.

Percentage of children under five years classified by nutritional status and selected background characteristics for Uttar Pradesh, 2005-06

Table 2 Shows that the nutritional status of children by selected background characteristics. In UP, about 14 percent children are severely malnourished belong to 0-12 age group whereas 66 percent children are having normal status of nutrition. Highest percent of severe malnourished children are belonging to age-group 49-59. 13 percent children are severe malnourished is lowest in urban areas as compared to rural areas. Religion wise distribution is showing that highest percent of children are having underweight in Muslim as compared to other religions whereas highest percent of children are having normal status of

nutrition in Sikh religion than other. In caste, highest percent of children are having normal status of nutrition in others as compared to other categories and lowest numbers of children are belonging to OBC. Those children having source of drinking water such as piped, they are 68 percent normal children and 12 percent children are severe malnourished. Electricity and LPG, are available their highest number of children are normal status of nutrition in UP. 19 percent children are underweight those are belonging to nuclear household structure which are higher number as compared to Non-nuclear household structure.

Percentage of children under five years classified by nutritional status and selected background characteristics for Kerala, 2005-06

Table 3 shows that the nutritional status of children by selected background characteristics. In Kerala, about 5 percent children are severely malnourished belong to 13-24 age group whereas 88 percent children are normal are belong to 0-12 age group. 84 percent children are normal and 2 percent children are underweight in urban areas and 73 percent children are normal whereas 6 percent children are severe malnourished in rural areas. Religion wise distribution is showing that highest number of normal children and lowest numbers of underweight children are belonging to Christian religion. In caste, highest number of normal children in OBC as compared to other categories and lowest number of children are also belonging to OBC. those children having source of drinking water such as piped, they are 79 percent normal children and 4 percent children are severe malnourished. Electricity, Biogas and kerosene are available their highest number of children are normal in kerala. 3 percent children are underweight those are belonging to nuclear household structure which are lower number as compared to Non-nuclear household structure.

Relative risks ratios from multinomial logistic regression for weight-for-age (underweight) by selected background characteristics in India, 2005-06.

Table 4 reveals that children who belong to age–group **25-29** months are significantly 15 times more likely to severe malnourished as compared to children in **15-19** months in India. As compared to Hindu, Severe and Moderate malnourished are less likely to have underweight children in others category. Similarly, caste wise distribution shows that compared to SC, Severe and Moderate malnourished are less likely to have underweight children in other category. In according to water facilities, as compared to piped severe and malnourished are more likely to have underweight children in different source of water. Similarly, facilities of cooking, as compared to stove severe and moderate malnourished are less likely to have underweight children by chullah and open fire. According to household structure, non-nuclear households severe and moderate are less likely to have underweight children as compared to nuclear

structure.

Relative risks ratios from multinomial logistic regression for weight-for-age (underweight) by selected background characteristics in Uttar Pradesh, 2005-06

Table 5 reveals that children who belong to age–group **20-24** months are significantly 5 times more likely to severe and moderate malnourished as compared to children in **15-19** months in India. In rural areas are showing that more likely to severe and less likely to moderate malnourished to have underweight children as compared to urban areas. As compared to Hindu, Severe malnourished are more likely to have underweight children in Muslim. Similarly, caste wise distribution shows that as compared to SC, significantly 6 times severe malnourished are less likely to have underweight children in others category. Sources of drinking water are showing that as compared to piped, well are more likely to severe malnourished to have underweight children. in this way we can say that sources of cooking are revealing that other are more likely to moderate and severe malnourished to have underweight children and those children are belonging from non-nuclear household structure they are significantly less likely to severe and moderate malnourished as compared to nuclear household structure.

Relative risks ratios from multinomial logistic regression for weight-for-age (underweight) by selected background characteristics in Kerala, 2005-06

Table 6 reveals that children who belong to age–group **35-39** months are significantly 1 time more likely to severe malnourished and significantly 3 times like to moderate malnourished as compared to children in **15-19** months in India. In rural areas are showing that significantly 2 times more likely to severe and moderate malnourished to have underweight children as compared to urban areas. As compared to Hindu, Severe and Moderate malnourished are less likely to have underweight children in Christian religion. Similarly, caste wise distribution shows that compared to SC, Severe and Moderate malnourished are less likely to have underweight children in OBC and others category. Sources of drinking water are showing that as compared to piped less like to moderate malnourished to have underweight children. in this way we can say that sources of cooking are revealing that other are significantly 26 times more likely to moderare and significantly 14 times more likely to severe malnourished to have underweight children and those children are belonging from non-nuclear household structure they are less likely to severe and moderate malnourished as compared to nuclear household structure.

Table –7 India (Re-Women) reveals that women who belong to age–group **40-44** years are significantly

3 times less likely to moderate malnourished and significantly 12 times more likely to severe malnourished as compared to women in **15-19** years in India. Similarly, rural women are more likely to moderate and less likely to severe malnourished as compared to urban women. As compared to Hindu, Severe malnourished are more likely to have underweight women in other religion. Similarly, caste wise distribution shows that as compared to SC, Moderate malnourished are less likely to have underweight women in OBC and Other category. In this table, water facilities are showing that those women are using piped for drinking water as compared to this those women are using tube well they are more likely to moderate malnourished and those are using public tab they are significantly less likely to have underweight as compared to those women are using piped for drinking water. Similarly, those women are using chullah and open fire for a cooking purpose, significantly less likely to severe malnourished as compared to Stove. those women are belonging to non-nuclear household structure, they are significantly more like to severe malnourished as compared to those are belonging to Nuclear household structure.

Table –8 UP (Re-Women) reveals that women who belong to age–group **45-49** years are significantly 30 times more likely to severe malnourished as compared to women in **15-19** years in Uttar Pradesh. Similarly, rural women are more likely to moderate and significantly less likely to severe malnourished as compared to urban women. As compared to Hindu, Severe malnourished are more likely to have underweight women in Sikh religion in Uttar Pradesh. Caste wise distribution shows that as compared to SC, Moderate malnourished are less likely to have underweight women in other categories. In this table, water facilities are showing that those women are using piped for drinking water as compared to this those women are using spring they are less likely to moderate malnourished. Similarly, those women are using chullah for a cooking purpose, significantly less likely to severe malnourished and those are using open fire they are significantly less moderate malnourished as well, as compared to Stove. Those women are belonging to non-nuclear household structure, they are less like to moderate malnourished as compared to those are belonging to Nuclear household structure.

Table –9 Kerala (Re-Women) reveals that women who belong to age–group **45-49** years are significantly less likely to moderate malnourished and significantly 2 times more likely to severe malnourished as compared to women in **15-19** years in Kerala. Similarly, rural women are more likely to moderate and significantly less likely to severe malnourished as compared to urban women. As compared to Hindu, Severe malnourished are more likely to have underweight women in Muslim religion in Kerala. Caste wise distribution shows that as compared to SC, Moderate malnourished are more likely to have underweight women in ST category. In this table, water facilities are showing that those women are using piped for drinking water as compared to this those women are using tube well they are less likely to

moderate malnourished and those are using other they are significantly less likely to have underweight as compared to those women are using piped for drinking water. Similarly, those women are using chullah and open fire for a cooking purpose, significantly more likely to severe malnourished and moderate malnourished as well, as compared to Stove. Those women are belonging to non-nuclear household structure, they are less like to severe and moderate malnourished as compared to those are belonging to nuclear household structure.

Summary:

In weight –for –height Z- scores, 19 percent children are having underweight in age-group 13-24 and which is highest percentage in among all age- group in Uttar Pradesh. While 5 percent children are underweight in age group 13-24 and which is highest percentage in all among age-group in Kerala. In Uttar Pradesh, 13 percent children are severe malnourished in urban areas whereas 2 percent children are severe malnourished in urban areas in Kerala. Religion wise distribution are showing that in UP, highest percentage of children are severe malnourished in Muslim which is 18 percent while 6 percent children are severe malnourished in Hindu which is highest in among all religion in Kerala. Percentage of normal and underweight children is more and less similar in ST population in UP whereas percentage of normal children is double of severe malnourished children in Kerala. Source of drinking water is also playing a significant role for improve the nutritional status of children, such as those children are using spring for drinking water they are more severe malnourished as compared to other source of drinking in both state. In UP, those children are living in Nuclear household structure, they are more sever malnourished as compare to Non-nuclear household structure and those are living in non-nuclear household structure, they are more severe malnourished as compared to nuclear household structure in Kerala.

However, when we examined the anthropometric measures of children who were aged at least five year at the time of the survey, we saw that age group wise children had better height-for-weight Z-scores relative to UP children. Source of drinking water was shown to be an important predictor of particularly for UP children. The between region, and within country comparisons suggest that malnutrition has complex a etiology and only balanced strategy of development ensuring food, source of cooking are more prevalent in Kerala state.

Table 1: Percentage of children under five years classified by nutritional status and selected background characteristics for India, 2005-06.

India- Child				
Age 5-year groups		**Normal**	**Moderate**	**Severe**
	0-12	66.50	20.90	12.70
	13-24	56.00	26.80	17.20
	25-36	54.50	27.50	18.00
	37-48	54.00	29.00	17.00
	49-59	55.20	29.80	15.00
Type of place of residence				
	Urban	67.00	22.20	10.80
	Rural	54.00	28.30	17.70
Religion	**Hindu**	56.40	27.30	16.30
	Muslim	57.80	26.40	15.90
	Christian	69.60	21.10	9.30
	Sikh	78.30	14.00	7.70
	others	54.70	24.90	20.40
Caste	**SC**	51.70	29.60	18.70
	ST	45.10	29.80	25.10
	OBC	56.40	27.50	16.10
	OTHERS	66.20	22.60	11.20
Drinking Water				
	Piped	69.20	21.00	9.80
	Public Tab	59.40	26.70	13.90
	Tubewell	53.00	28.70	18.30
	Well	54.80	27.50	17.70
	Spring	54.00	27.40	18.70
	OTHERS	63.80	23.70	12.60
Food_Cooked	**Electicity**	65.20	22.00	12.80
	LPG	75.60	17.60	6.80
	Biogas	77.70	18.50	3.80
	Kerosene	60.60	26.70	12.70
	wood n Ag Crop	53.00	28.80	18.20
Household structure				
	Nuclear	54.20	27.90	18.00
	Non-nuclear	59.80	25.90	14.30

Table 2: Percentage of children under five years classified by nutritional status and selected background characteristics for Uttar Pradesh, 2005-06.

Age 5-year groups		**Normal**	**Moderate**	**Severe**
	0-12	66.30	19.90	13.80
	13-24	52.60	28.20	19.20
	25-36	53.80	27.00	19.20
	37-48	57.70	28.10	14.20
	49-59	55.50	28.40	16.10
Type of place of residence				
	Urban	65.00	22.20	12.80
	Rural	55.40	27.20	17.40
Religion	**Hindu**	56.90	26.90	16.20
	muslim	58.10	24.10	17.80
	Christian	50.00	50.00	0.00
	sikh	90.50	9.50	0.00
	others	0.00	100.00	0.00
Caste	**SC**	52.00	28.70	19.40
	ST	38.80	26.50	34.70
	OBC	55.70	27.10	17.20
	OTHERS	67.80	21.50	10.70
Drinking Water				
	Piped	68.30	20.20	11.50
	Public Tab	50.50	33.90	15.60
	Tubewell	56.80	26.70	16.60
	Well	52.60	26.60	20.80
	Spring	63.60	0.00	36.40
Food_Cooked	**Electicity**	76.50	11.80	11.80
	LPG	75.00	16.80	8.20
	Biogas	60.00	40.00	0.00
	Kerosene	54.00	30.20	15.90
	wood n Ag Crop	54.90	27.50	17.60
Household structure				
	Nuclear	51.80	29.10	19.10
	Non-nuclear	61.40	24.10	14.50

Table 3: Percentage of children under five years classified by nutritional status and selected background characteristics for Kerala, 2005-06.

Age 5-year groups		**Normal**	**Moderate**	**Severe**
	0-12	87.80	9.30	2.90
	13-24	73.80	20.80	5.40
	25-36	76.30	19.10	4.60
	37-48	77.00	18.20	4.80
	49-59	70.20	24.90	5.00
Type of place of residence				
	Urban	84.40	13.20	2.40
	Rural	73.30	21.10	5.60
Religion	**Hindu**	74.60	19.60	5.80
	Muslim	76.60	18.90	4.50
	Christian	85.60	13.60	0.80
	Sikh	0.00	100.00	0.00
	others			
Caste	**SC**	65.70	27.30	7.10
	ST	43.50	39.10	17.40
	OBC	80.50	15.50	4.00
	OTHERS	77.30	18.00	4.70
Drinking Water				
	Piped	78.90	17.30	3.80
	Public Tab	76.80	18.20	5.10
	Tubewell	80.00	16.70	3.30
	Well	76.80	18.50	4.70
	Spring	57.90	36.80	5.30
Food_Cooked	**Electicity**	100.00	0.00	0.00
	LPG	84.00	11.80	4.20
	Biogas	100.00	0.00	0.00
	Kerosene	100.00	0.00	0.00
	wood n Ag Crop	73.80	21.30	4.80
Household structure				
	Nuclear	73.70	23.00	3.30
	Non-nuclear	78.00	16.80	5.10

Table 4: Relative risks ratios from multinomial logistic regression for weight-for-age (underweight) by selected background characteristics in India, 2005-06.

		Moderate	Severe
Age 5-year groups	**0-12**		
	13-24	11.71***	11.76***
	25-36	13.1***	13.07***
	37-48	14.82***	11.99***
	49-59	14.85***	8.19***
Type of place of residence	**Urban**		
	Rural	1.07	1.17
Religion	**Hindu**		
	Muslim	1.48**	4.65***
	Christian	-5.05***	-6.64***
	Sikh	-6.56***	-4.66***
	others	-0.41*	1.93*
Caste	**SC**		
	ST	2.78***	8.01***
	OBC	-4.99***	-6.05***
	OTHERS	-11.15***	-13.81***
Drinking Water	**Piped**		
	Public Tab	1.74*	0.75
	Tubewell	5.73***	7.4***
	Well	2.76***	4.32***
	Spring	1.27***	2**
	Others	-0.1	0.07
Food_Cooked	**Stove**		
	Chullah	-1.58	-2.63***
	Open fire	-1.24	-2.84***
	Others	0.66	-0.23**
		1.15**	0.76
Household Structure	**Nuclear**		
	Non-nuclear	-4.61***	-8.96***

Table 5: Relative risks ratios from multinomial logistic regression for weight-for-age (underweight) by selected background characteristics in Uttar Pradesh, 2005-06 .

		Moderate	Severe
Age 5-year groups	**0-12**		
	13-24	5.53***	4.88
	25-36	4.81***	4.43***
	37-48	4.58***	1.39
	49-59	4.79***	2.62***
Type of place of residence	**Urban**		
	Rural	-0.07	0.5
Religion	**Hindu**		
	Muslim	-1.11	2.21**
	Christian	0.84	0***
	Sikh	-1.32	0***
	others	1.08	0***
Caste	**SC**		
	ST	0.47	2.38***
	OBC	-0.43	-1.55**
	OTHERS	-3.65	-5.81***
Drinking Water	**Piped**		
	Public Tab	1.4	0.37
	Tubewell	0.47	0.22
	Well	0.37	1.02**
	Spring	0***	1.61
	Others		
Food_Cooked	**Stove**		
	Chullah	0.51	-0.36*
	Open fire	1.32	0******
	Others	1.18	0.29
		1.21	0.49
Household Structure	**Nuclear**		
	Non-nuclear	-4.58***	-4.59***

Table 6: Relative risks ratios from multinomial logistic regression for weight-for-age (underweight) by selected background characteristics in Kerala, 2005-06.

		Moderate	Severe
Age 5-year groups	**0-12**		
	13-24	2.47***	1.34
	25-36	2.78***	1.05
	37-48	1.85*	0.97**
	49-59	3.13***	1.05
Type of place of residence	**Urban**		
	Rural	1.97**	2.24**
Religion	**Hindu**		
	Muslim	0.09	0.28
	Christian	-0.41*	-1.2**
	Sikh	.	0***
	others		
Caste	**SC**		
	ST	1.43	2.25***
	OBC	-2.16**	-1.31
	OTHERS	-1.42	-0.89
Drinking Water	**Piped**		
	Public Tab	-0.7	0.66
	Tubewell	-0.26	0.11
	Well	-0.88	0.47
	Spring	-0.26	0.15
	Others		
Food_Cooked	**Stove**	25.2***	15.14***
	Chullah	0***	0***
	Open fire	0***	0***
	Others	26.77***	14.7***
Household Structure	**Nuclear**		
	Non-nuclear	-2.08**	0.99**

Table 7 Relative risks ratios from multinomial logistic regression for nutritional status of women by selected background characteristics in India, 2005-06.

		Moderate	Severe
Age 5-year groups	**15-19**		
	20-24	0.18	4.33***
	25-29	-0.51	6.75***
	30-34	-0.17	9.14***
	35-39	-2.29**	10.34***
	40-44	-3.1***	11.54***
	45-49	-2.02**	12.08***
Type of place of residence			
	Urban		
	Rural	6.02***	-9.46***
Religion	**Hindu**		
	Muslim	1.33	4.74***
	Christian	-7.6***	2.56***
	sikh	-5.82***	10.84***
	others	-0.16	-2.44**
Caste	**SC**		
	ST	2.68***	-6.01***
	OBC	-6.42***	1.23
	OTHERS	-7.11***	4.09***
Drinking Water	**Piped**		
	Public Tab	1.08	-3.01***
	Tubewell	2.91***	-8.71***
	Well	1.98**	-1.87*
	Spring	-0.66	-2.24**
	Others	-2.1**	0.16
Food_Cooked	**Stove**		
	Chullah	4.91***	-3.65***
	Open fire	2.77***	-1.76*
	Others	2.07**	0.81
Household structure	**Nuclear**		
	Non-nuclear	-5.74***	2.5**

Table 8 Relative risks ratios from multinomial logistic regression for nutritional status of women by selected background characteristics in Uttar Pradesh, 2005-06.

		Moderate	Severe
Age 5-year groups	**15-19**		
	20-24	-1.33	23.13***
	25-29	-0.83	28.31***
	30-34	-0.14	29.9***
	35-39	-0.23	30.06***
	40-44	-0.23	30.94***
	45-49	-0.48	30.44***
Type of place of residence	**Urban**		
	Rural	0.24	-3.38***
Religion	**Hindu**		
	Muslim	-0.76	-0.99
	Christian	0	0
	Sikh	0.02	0.63*
	others		
Caste	**SC**		
	ST	-0.02	1.19
	OBC	-1.77	2.08**
	OTHERS	-2.47	3.5***
Drinking Water	**Piped**		
	Public Tab	0.78	0***
	Tubewell	0.68	-0.9
	Well	1.14	0.03
	Spring	-0.56	0***
	Others		
Food_Cooked	**Stove**		
	Chullah	0.25	-2.15**
	Open fire	-0.57*	0***
	Others	0.58	0***
Household structure	**Nuclear**		
	Non-nuclear	-4.34***	0.66

Table 9 Relative risks ratios from multinomial logistic regression for nutritional status of women by selected background characteristics in Kerala, 2005-06.

		Moderate	Severe
Age 5-year groups	**15-19**		
	20-24	-0.16	0.05
	25-29	-1.65	0.65
	30-34	-2.19**	1.97**
	35-39	-1.48**	2.2**
	40-44	-2.27**	1.96***
	45-49	-1.37**	2.84***
Type of place of residence	**Urban**		
	Rural	1.63	-1.81***
Religion	**Hindu**		
	Muslim	-0.41	4.41***
	Christian	-1.88***	-0.73
	Sikh	.	.
	others	0***	0***
Caste	**SC**		
	ST	2.73***	0.28
	OBC	1.02	0.71
	OTHERS	0.23	0.45
Drinking Water	**Piped**		
	Public Tab	0.44	-0.33
	Tubewell	-0.72**	-0.52
	Well	-0.17	-0.7
	Spring	-1.04	0.44
	Others	0.32	-14.92***
Food_Cooked	**Stove**		
	Chullah	12.53***	0.55
	Open fire	11.94***	0.27
	Others	.	.
Household structure	**Nuclear**		
	Non-nuclear	-0.77	-0.12

Appendix-I

Table 10 Percentage of women age-group 15-49 years classified by nutritional status and selected background characteristics for India, 2005-06.

Age 5-year groups		Thin	Moderate	Obesity
	15-19	42.10	54.70	3.20
	20-24	34.00	59.20	6.80
	25-29	28.80	58.30	12.90
	30-34	26.00	55.30	18.70
	35-39	22.90	53.20	23.90
	40-44	20.70	51.40	27.90
	45-49	20.30	49.90	29.80
Type of place of residence	Urban	22.50	54.00	23.50
	Rural	35.10	56.30	8.60
Religion	Hindu	31.70	53.60	14.70
	Muslim	29.80	52.80	17.40
	Christian	16.60	70.60	12.70
	Sikh	17.80	50.40	31.80
	others	21.20	64.40	14.50
Caste	SC	36.00	52.40	11.60
	ST	28.00	65.50	6.40
	OBC	32.00	54.00	13.90
	OTHERS	25.10	53.50	21.40
Highest educational level	No education	36.10	54.50	9.40
	Primary	29.70	56.50	13.80
	Secondary	27.40	55.40	17.20
	Higher	16.70	55.60	27.80
Drinking Water	Piped	22.10	53.60	24.30
	Public Tab	31.50	55.40	13.10
	Tubewell	36.80	53.40	9.80
	Well	33.10	56.30	10.60
	Spring	24.00	68.20	7.80
	Others	27.20	57.10	15.80
Food_Cooked	Stove	27.30	52.60	20.10
	Chullah	38.50	53.90	7.70
	Open fire	23.20	69.90	7.00
	Others	30.00	57.80	12.30
Household structure				
	Nuclear	29.90	54.20	15.90
	Non-nuclear	29.00	56.20	14.80

Appendix-II

Table 11 Percentage of women age-group 15-49 years classified by nutritional status and selected background characteristics for Uttar Pradesh, 2005-06.

		Thin	Moderate	Obesity
Age 5-year groups	**15-19**	41.00	56.90	2.10
	20-24	33.30	60.20	6.50
	25-29	28.60	57.90	13.50
	30-34	31.30	52.50	16.20
	35-39	26.80	50.60	22.60
	40-44	25.80	48.50	25.80
	45-49	24.30	45.30	30.40
Type of place of residence				
	Urban	23.50	52.20	24.30
	Rural	37.80	56.30	5.90
Religion	**Hindu**	32.30	54.70	13.00
	Muslim	30.80	55.00	14.20
	Christian	45.50	54.50	0.00
	Sikh	15.60	51.60	32.80
	others	20.80	37.70	41.50
Caste	**SC**	38.60	53.90	7.50
	ST	42.50	53.80	3.80
	OBC	33.40	56.20	10.40
	OTHERS	24.60	52.70	22.60
Highest educational level	**No education**	36.40	54.90	8.70
	Primary	30.50	57.10	12.30
	Secondary	30.40	54.90	14.70
	Higher	16.70	49.20	34.00
Drinking Water				
	Piped	20.60	49.90	29.50
	Public Tab	40.90	48.40	10.80
	Tubewell	34.40	55.40	10.20
	Well	41.30	53.50	5.30
	Spring	20.00	60.00	20.00
	Others	29.10	62.10	8.70
Food_Cooked	**Stove**	29.20	52.30	18.50
	Chullah	37.60	55.40	7.00
	Open fire	60.00	40.00	0.00
	Others	29.20	62.40	8.50
Household structure				
	Nuclear	34.50	51.80	13.80
	Non-nuclear	29.80	56.40	13.80

Appendix-III

Table 11 Percentage of women age-group 15-49 years classified by nutritional status and selected background characteristics for Kerala, 2005-06.

Kerala				
		Thin	**Moderate**	**Obesity**
Age 5-year groups	**15-19**	36.20	57.50	6.20
	20-24	28.20	56.50	15.30
	25-29	16.70	57.40	25.90
	30-34	11.90	52.60	35.50
	35-39	12.90	51.40	35.70
	40-44	9.60	51.00	39.40
	45-49	9.40	47.40	43.20
Type of place of residence				
	Urban	15.10	51.70	33.20
	Rural	19.50	54.60	25.90
Religion	**Hindu**	19.90	55.00	25.10
	Muslim	15.60	51.30	33.10
	Christian	14.30	52.90	32.90
	others	66.70	16.70	16.70
Caste	**SC**	22.10	58.60	19.30
	ST	42.30	42.30	15.40
	OBC	17.40	53.00	29.60
	OTHERS	17.60	53.20	29.20
Highest educational level	**No education**	17.40	56.10	26.50
	Primary	17.40	56.10	26.50
	Secondary	18.80	52.90	28.30
	Higher	15.60	54.60	29.80
Drinking Water				
	Piped	13.50	53.60	32.90
	Public Tab	23.60	51.70	24.60
	Tubewell	19.10	48.90	31.90
	Well	17.40	54.40	28.20
	Spring	31.80	51.50	16.70
	Others	15.50	51.80	32.60
Food Cooked	**Stove**	14.30	57.10	28.60
	Chullah	21.30	53.40	25.20
	Open fire	18.10	58.50	23.40
	Others	15.10	51.90	33.00
Household structure				
	Nuclear	19.20	52.20	28.60
	Non-nuclear	17.10	55.10	27.80