NNMB Technical Report No:18

NATIONAL NUTRITION MONITORING BUREAU

REPORT OF SECOND REPEAT SURVEY - RURAL

NATIONAL INSTITUTE OF NUTRITION
Indian Council of Medical Research
HYDERABAD - 500 007, INDIA
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(1996-97)

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NATIONAL NUTRITION MONITORING BUREAU

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CONTENTS

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SUMMARY

The National Nutrition Monitoring Bureau (NNMB) had carried out the first repeat survey during 1988-90 in the same villages, which were surveyed during 1975-79 to assess time trends, if any, in diet and nutritional status of rural population. The results indicated that there was reduction in the prevalence of 'moderate' and 'severe' degree of malnutrition (<75% weight for age of NCHS) in preschool children, with a concomitant increase in the proportion with 'normal' and 'mild' degree malnutrition. But, there was no perceptible change in the dietary intakes. A second repeat survey was undertaken during 1996-1997 to assess whether the time trends observed during the first repeat survey actually persisted and were really true. The diet and nutrition surveys were conducted in the same villages, which were covered earlier both during the years 1975-79 and 1988-90. In this survey, 120 villages in 8 districts in each State were surveyed. Of these, 90 villages were from those, which were covered both in 1975-79 and 1988-90, while the remaining 30 villages formed a new set. From each of the selected villages, 20 households (HHs) were chosen by adopting 'cluster sampling method'. Thus in each State, a total of 2400 HHs were targeted for survey. A total of 6,551 households were covered for dietary assessment and about 60,601 individuals from 13,426 HHs for anthropometry and clinical survey. A household schedule was administered to obtain demographic and socio-economic data. In each village, all the 20 selected HHs, were covered for nutrition assessment. Anthropometric measurements like height, weight, arm circumference and fat fold at triceps was taken on all the available members of the 20 households. These subjects were also clinically examined for the presence of different nutritional deficiency signs. Among the ten households (every alternate HH) selected for dietary assessment, one day weighment diet survey was conducted in 5 HHs and 24 hour recall method of diet survey in the rest. In the present report, the results pertaining to the States of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Orissa and Gujarat are presented.

Cereals and millets formed the bulk of the dietaries. Consumption of pulses was less than RDI in all States except in the State of Karnataka (43 g). The consumption of green leafy vegetables formed only 17-27% of RDI in different States, with an average for all the States of about 15 g. The deficit in the intake of other vegetables ranged from 3-50 percent of RDI. Except in the State of Gujarat, the intakes of milk were less than the recommended level of 150 ml. in all the States. In none of the States, the intakes of sugar and jaggery were adequate. The intakes of protein, energy, vitamin A, Thiamin and riboflavin were less than the RDI in almost all States. Calcium intakes were above the RDI (400 mg) in all the States except in Orissa. In the case of iron, the deficit in intakes, as per the revised values, ranged from 20 to 67 percent. For the first time, folate content of the diets was also assessed, the consumption of which was less than RDI of 200 mg in all the States, except Gujarat. The deficiency ranged from 17 percent in Maharashtra to 36 percent in Tamil Nadu. The proportion of HHs with energy inadequacy was 48%. The proportion of HHs consuming micronutrients less than the RDA was maximum with respect to iron (94%) followed by riboflavin (87%), vitamin A (88%), folic acid (79%) and thiamin (59%).

The consumption of cereals and millets and pulses was lower than that in the previous two surveys, in all the States. A gradual increase was, however,

noticed in green leafy vegetable consumption between 1975-79 and 1996-97. A gradual decline was noticed in the consumption of other vegetables between 1975-79 and 1996-97. Increasing trend in milk intakes was observed only in Kerala (+75 g), Tamil Nadu (+ 9g) and Karnataka (+5g) as compared to that of 1975-79, while a decreasing trend was observed in the rest of the States of Andhra Pradesh (-22g), Maharashtra (-17 g), Gujarat (-23 g) and Orissa (-26 g). A Marginal change was observed in the intakes of fats and oils (1975-79: 14 g; 1996-97: 12 g). There was a decreasing trend in protein, energy, iron and calcium intakes, in general, between 1975-79 and 1996-97. Increased intakes of vitamin A were noticed in 1988-90 (282 µg) and 1996-97 (300 µg) as compared to 1975-79 (246 g). There was a gradual increase in the intake of riboflavin (+0.09 mg), while there was a decreasing trend in thiamin intake in all the States between 1975-79 and 1996-97.

In the case of individuals the average consumption of most of the foodstuffs, except roots and tubers was below the RDA. The consumption of qualitative foods such as green leafy vegetables, milk & milk products and sugar and jaggery was found to be grossly deficient particularly among preschool children and adolescents. The intake of all the nutrients, except protein and folic acid (4-6 years) was below the RDI. The extent of deficit in the intake of vitamin A was high (67%) in 1-3 years. The extent of deficit in the intake of iron was about 17-41% and 22-43% among 13-15 years and 16-17 years respectively.

Among pregnant and lactating women the average intake of all the nutrients was lower than the RDI. The extent of deficit in the intake of important micronutrients such as vitamin A, calcium and iron among these women ranged between 11 and 70%.

A comparison of the socio-economic profile of the HHs surveyed in all the three surveys indicated that, in general, there was marginal improvement in the type of dwelling and occupational status of the Head of the HHs. The proportion of HHs with monthly per capita income of less than Rs.30/- showed a significant decline. The average per capita income per month increased by about Rs.33/-. However, the proportion of the HHs having no land increased from about 30% to about 41% between 1975-79 and 1996-97, while there was reduction in the proportion of HHs with more than 5 acres.

Only 7% of the preschool children had one or the other clinical signs of PEM, or vitamin A and B-complex deficiencies. The proportion of children without any deficiency signs showed a gradual increase from 80.7% in 1975-79 to 93% in 1996-97. There was a decreasing trend in all the above mentioned clinical deficiency signs from 1975-79 to 1996-97. In the case of weight for age, in general, there was a declining trend in the proportion of severely malnourished children (<60% of NCHS) from 15 percent in 1975-79 to 6.2 percent in 1996-97, with concomitant increase in normal children from 5.9 percent in 1975-79 to 8.9% in 1996-97. There were no significant differences in the prevalence of under nutrition between boys and girls. The percentage of stunting decreased from 78.6 in 1975-79 to 57.8 in 1996-97, with a three fold increase in the percentage of better nourished children (>Mean -1SD). There was no change in the percentage of wasting from 18.1 in 1975-79 to 18.5 in 1996-1997. The percentage of underweight children with weights less than median-2SD of NCHS standards declined from 86.5 in 1975-79 to 62.3 in 1996-97. The decrease in the proportion of children with severe underweight (<Median-3 SD) appeared to be much higher (-24.5%) as compared to moderate

undernutrition (-1.7%). At least two thirds of school age children were undernourished. Among the adults, the prevalence of chronic energy deficiency (CED) was 46% in males and 48% in females. There was a decreasing trend in the prevalence of chronic energy deficiency in both the sexes. The extent of CED declined from about 56% in 1975-79 to 46% in 1996-97. An increasing trend was observed in the proportion of 'normals', over weight and obese adults between 1975-79 and 1988-90.

Inspite of no positive changes in the dietary status, there was improvement in the nutritional status of preschool children (1-5 years) in terms of reduction in severe malnutrition (<60% weight for age) and stunting (low height for age). Since both height and weight recorded concomitant changes, the percentage of 'wasting' (low weight for height) was similar between the survey periods. There was also reduction in the prevalence of clinical malnutrition like kwashiorkor, marasmus, vitamin A deficiency and B-complex deficiency in preschool children. It was interesting to note that in the State of Kerala, there was increasing trend in the intakes of all the nutrients, while in the other States, in general, there was a decreasing trend. This was reflected in the overall improvement in the mean weights and heights of individuals in different age groups in both sexes. It is not clear as to how far the development in this State, with similar economic status, particularly with respect to social changes like female literacy is responsible for these changes. This requires to be studied in depth.

The land holding status over the past about 20 years indicates fragmentation of land holding size, indirectly leading to increase in food insecurity. An appraisal of the changes in some of the socio-economic factors indicates that, by and large, the improvement was only marginal. In fact, the proportion of landless seems to have increased in the sample studied. This, perhaps, explains as to reasons for no changes in the dietary pattern in the States surveyed during the past 2 decades. The improvement in nutritional status despite no perceptible change in overall intakes at the household level may be due to changes in non-nutritional factors, such as improved water supply, reduction in infections, nutrition interventions and better health care.

1. INTRODUCTION

The Indian Council of Medical Research established National Nutrition Monitoring Bureau (NNMB) in 1972 in the States of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Madhya Pradesh, Orissa, West Bengal and Uttar Pradesh. The Bureau has been carrying out regularly annual diet and nutrition surveys for the past twenty-six years and the results are published in annual reports. These results have recently been compiled ***'25 Years of National Nutrition Monitoring Bureau'***[1] The Bureau had carried out repeat surveys during 1988-90[2] in the same villages, which were surveyed during 1975-79, in order to assess time trends, if any, in diet and nutritional status of rural population. The salient findings of the survey are given below:

a) The overall consumption of foods and nutrients at the household level by the population surveyed was similar to that observed in 1988-90 and 1975-79.
b) The prevalence of 'moderate' and 'severe' degree undernutrition (<75% weight for age of NCHS standards) among preschool children showed reduction, with a concomitant increase in the proportion of 'normal' children and in the prevalence of 'mild' degree undernutrition.

Recognizing the fact that it was not appropriate to conclude about time-trends based on surveys at two points, a second repeat survey was undertaken. It was felt that a minimum of three points of time would be required to assess the time-trends in the nutrition situation in different States. Hence, a second repeat survey was undertaken during the years 1996 and 1997 to assess whether the time trends observed during the first repeat survey actually persisted and were really true.

2. MATERIAL AND METHODS

The second repeat survey was carried out in the States of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat and Orissa. The survey could not be carried out in West Bengal, due to administrative problems, while the coverage in Madhya Pradesh and Uttar Pradesh was partial due to frequent turn over of staff.

2.1. SAMPLING DESIGN

2.1.1. Selection of villages

In the first repeat survey, carried out during 1988-90, in each State, about, 100-120 villages were surveyed. Of these, 75% were those covered during 1975-79, while the remaining 25% were a new set of villages. A similar sampling procedure was adopted for the second repeat survey, covering 120 villages in each State. Of these, 90 villages were from those, covered both in 1975-79 and 1988-90, while the remaining 30 villages were new. In each State, the villages were selected from 8 districts representing different geographic locations of the State. Thus, ninety villages were covered at all the three points of time and the 30 villages covered for the first time.

2.1.2. Selection of households

From each of the selected villages, 20 households (HHs) were selected by adopting 'cluster sampling method'. For this purpose, the main village and its hamlets (if any) were divided into 5 natural clusters, consisting of groups of

houses/streets/mohallas/areas, of which included one cluster inhabited by SC/ST community. From each of the selected clusters, 4 consecutive households were surveyed; by selecting the random start the first household. If the number of households in a given cluster was too large, the cluster was further divided into sub-areas, and one sub area was selected randomly for covering 4 HHs. Thus, in each State, a total of 2400 HHs were targeted for survey.

2.2 INVESTIGATIONS

The following investigations were carried out in the selected HHs.

2.2.1. Household Particulars

Demographic and socio-economic particulars of all the household members such as age, sex, occupation, literacy level, family income, possession of agricultural land and live stock, type of dwelling etc. were collected, by administering an household schedule.

2.2.2 Nutrition Assessment

In each village, all the 20 selected HHs, were covered for nutrition assessment. Anthropometric measurements like height, weight, arm circumference and fat fold at triceps were taken on all the available members of the households, using standard equipment and procedures[3]. They were also examined for the presence of clinical signs of nutritional deficiencies.

2.2.3. Diet Survey

Diet survey was conducted in every alternate HH (10 HHs) covered for nutrition assessment. While one day weighment diet survey was conducted in 5 HHs to assess intakes at the household level, 24-hour recall method of diet survey[4] was conducted in the rest, to assess individual intakes. The following Table presents the number of HHs covered for different investigations in each selected village.

Method of Survey	No. of HHs covered
Anthropometry & Clinical Examination	20
Household diet survey	5
Individual dietary	5

2.3 ANALYSIS

2.3.1 Food and Nutrient Intake

2.3.1.1 *Households*

The daily intake of different foods and nutrients were computed per Consumption Unit (CU). *One CU represents the calorie requirements of* a *reference man aged 20-39 years, weighing 60 kg, doing sedentary work.* The calorie coefficients for the other individuals among the HH were calculated proportionately on the basis of energy requirements as recommended by ICMR (1990)[5], considering the age, sex, physiological status and activity pattern. In

each State, the average daily intake of various foods and nutrients per CU was calculated. The nutrient intakes were calculated using the values given in Nutritive Value of Indian Foods[6]. The food intakes were compared with the levels recommended in balanced diets for Indians (1981)[7.] whereas the average intakes of nutrients were compared with the levels suggested in Nutrient requirements and Recommended Dietary Allowances for Indians (1990)[5].

2.3.1.1.1 *Protein Calorie Adequacy Status*

The households were categorised according to their protein/calorie adequacy status[8] by adopting the procedure given below.

The protein and energy requirement curves are assumed to follow a Gaussian distribution, with a coefficient of variation of 15%. The Expert Committee of Indian Council of Medical Research (ICMR) has suggested the actual requirements for energy as the recommended allowances. On the other hand, in the case of protein, the recommended "allowance" corresponded to Mean + 2 SD of the requirement. Hence, the level of 2400 Kcal for energy and 42 grams for protein (RDI, 1981) were taken as the mean requirements for comparison during 1975-79 and 1988-90. To determine whether a particular household was consuming "adequate" amount of protein or energy, Mean-2SE was used as the cut-off, taking the total number of CU in the household as the sample size to calculate the SE. If in a given household, the average daily intake of protein or energy (per CU) was found to be equal to or above this cut-off level, the household was considered as consuming adequate amount of that nutrient.

2.3.1.2 *Individuals*

The average daily food and nutrient intakes of different physiological groups in the households surveyed were computed. These were compared with RDI suggested by the ICMR Expert Committee[5,6] (Annexures - A1.1 to A1.4)

2.3.2. Anthropometry

Mean heights and weights were calculated according to age and sex. The distance charts for height and weights were compared at all the three points of surveys, as well as with those of the National Centre for Health Statistics (NCHS) standards[9].

2.3.2.1 *Preschool Children*

2.3.2.1.1 *Gomez Classification*

The body weights of preschool children were expressed as percent of NCHS standards and the children were graded into different categories of nutritional status using Gomez classification[10].

2.3.2.1.2 *SD Classification*

Large scale national surveys like National Family Health Survey (1993)[11] have been using Standard Deviation classification[12] for assessing undernutrition. Therefore, for the purpose of comparison, the percent distribution of preschool children was carried out using NCHS reference values for weight for age to assess undernutrition, 'height for age', to assess the extent of stunting; and 'weight for height' to determine the prevalence of wasting was provided. Details of the SD

classification are given below:

Cut-off level	Nutritional Status		
	Weight for age	**Height for age**	**Weight for Height**
Above Median-2SD	Normal	Normal	Normal
Median-2SD to Median-3SD	Moderate undernutrition	Moderate stunting	Moderate wasting
Below Median -3SD	Severe undernutrition	Severe stunting	Severe wasting

2.3.2.2. *School age Children and Adolescents*

The nutritional status of the school age children and adolescents was assessed by categorizing them into various grades of nutritional status using the same cut-off levels for weight as adopted in Gomez classification for preschool children.

2.3.2.3. *Adults*

The nutritional status of the adults, was assessed based on Body Mass Index(BMI), which is a ratio of weight in kg and square of height in meters. The adults were grouped into different nutritional grades using the James' classification[13].

BMI	**Nutrition Grade**
< 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
25.0 - 30.0	Over weight/I degree Obesity
≥30.0	II Degree Obesity

CED: Chronic Energy Deficiency

3. RESULTS

3.1. SAMPLE COVERED

The details of the sample covered are provided in **Table-1.** A total of 6,551 households (HHs) (weighment: 3,357 and oral: 3,194) were covered for dietary assessment. About 60,601 individuals from 13,426 HHs were covered for clinical examination and anthropometry. In the States of Kerala, Karnataka, Andhra Pradesh, Orissa and Maharashtra, the coverage could be considered complete (>90% target), while in the States of Gujarat and Tamil Nadu, the coverage was about 50 percent. In the State of Madhya Pradesh, the coverage was less than 50%. In the present report, the results pertaining to the States of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Orissa and Gujarat only are presented.

Table 1 PARTICULARS OF COVERAGE

State	No. of villages surveyed			Households*			Nutrition Assessment (Individuals)
	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997	1996-1997
Kerala	106	91	119	979	835	1180	8,864
Tamil Nadu	110	96	54	978	865	530	5,813
Karnataka	167	126	112	999	783	1020	12,606
Andhra Pradesh	136	119	115	1017	908	1142	9,545
Maharashtra	126	128	85	615	837	824	6,883
Gujarat	120	116	83	697	711	791	4,866
Madhya Pradesh	55	50	36	234	255	-	-
Orissa	98	156	109	524	824	1064	12,024
Pooled	918	882	713	6497	6018	6,551	60,601

* Covered for diet survey

COVERAGE

DIET SURVEY

- **Households: 6,551**
- **Individuals: 14,391**

ANTHROPOMETRY & CLINICAL EXAMINATION

- **Individuals: 60,601**

3.2 HOUSEHOLD FOOD AND NUTRIENT INTAKE

3.2.1 Food Consumption

The State wise average consumption of foodstuffs (g/CU/day) is presented and compared with that of 1975-79 and 1988-90 in **Table-2.**

3.2.1.1 *Cereals and Millets*

Cereals and millets formed the bulk of the dietaries. The average intake ranged from a low of 352 g in Kerala to a high of 538 g in Orissa. Though, in general, the present level of consumption of cereals and millets was lower than that of the previous two surveys (1975-79 and 1988-90) in all the States, the extent of reduction was more than 50 g, only in the States of Gujarat and Karnataka, as compared to the 1988-90 survey.

3.2.1.2 *Pulses*

Consumption of pulses was less than RDI in all States except in the State of Karnataka (41 g). The deficiency in pulse intake ranged from about 15 percent of RDI in Gujarat to 57 percent in Kerala. However, the changes between the first repeat survey and the current survey were marginal in all the States ranging from (-11 g in Orissa to +2 g. in Tamil Nadu and Gujarat). At the aggregate level, a gradual, but marginal decline in the intake of pulses, was noticed between 1975-79 (34 g) and 1996-97 (27 g).

3.2.1.3 *Green Leafy Vegetables*

The consumption of green leafy vegetables was much below the suggested level of 40 g in all the States surveyed, except in Orissa (47 g) The intakes ranged from as low as 17% in Gujarat to 25% of RDI in Kerala and Tamil Nadu. The data pooled for all the States revealed that the average intake increased from 8 g from 1975-79 and 9 g in 1988-90 to 15 g in 1996-97.

3.2.1.4 *Other Vegetables*

Consumption of other vegetables was better than that of green leafy vegetables in all the States. The consumption was above the suggested levels of 60 g in the States of Kerala and Orissa. The deficit in the intake of other vegetables ranged from 12 percent of RDI in Gujarat to around 53 percent in the States of Andhra Pradesh and Karnataka. A marginal decline in the consumption of other vegetables was observed between 1975-79 (54 g) and 1996-97 (47 g).

3.2.1.5 *Roots & Tubers*

The intakes of roots and tubers were less than the suggested level of 50 g in all the States except in Kerala and Orissa. The consumption levels decreased by more than 20% from 56 g in 1975-79 to 44 g in 1996-97.

3.2.1.6 *Milk & Milk Products*

Except in the State of Gujarat (157 g), the intakes were less than the recommended level of 150 ml in all the States ranging from a low 12 g in Orissa to 122 g in Kerala. Increasing trend in milk intakes was observed in Kerala (+75 g), Tamil Nadu (+ 9g) and Karnataka (+5g) as compared to that of 1975-79. On the other hand, a decreasing trend was observed in the States of Andhra Pradesh (-22g), Maharashtra (-17 g), Gujarat (-27 g) and Orissa (-26 g).

3.2.1.7 *Fats & Oils*

The intakes were less than the suggested 20 g (1975-79: 14 g; 1996-97: 12 g) in all the States. Marginal variations were observed in the intakes of fats & oils, ranging from -2 g in Tamil Nadu to +5 g in Kerala between 1975-79 and 1996-97.

3.2.1.8 *Sugar & Jaggery*

In the States of Karnataka, Maharashtra and Gujarat, the consumption of sugar and jaggery was comparable to the suggested value of 30 g, whereas in the other States, the intakes were less than the RDI, the deficit ranging from 24 g in Orissa to 4 g in Kerala.

Table 2 AVERAGE CONSUMPTION OF FOODSTUFFS (g/CU/Day)

Food stuufs	Year	Kerala	Tamil Nadu	Kama -taka	Andhra Pradesh	Maha- rashtra	Gujarat	Orissa	Pooled	RDA
Cereals & Millets	1975-79	341	490	682	568	502	452	*_	505	460
	1988-90	369	406	548	534	463	493	540	469	
	1996-97	352	407	458	496	443	431	538	450	
Pulses	1975-79	14	32	60	31	37	30	-	34	40
	1988-90	18	27	50	28	36	32	32	32	
	1996-97	17	28	41	30	33	34	21	27	
Green Leafy Vegs.	1975-79	4	9	6	6	15	8	-	8	40
	1988-90	9	12	10	7	13	4	25	9	
	1996-97	10	10	8	9	9	7	47	15	
Other vegetables	1975-79	81	63	33	39	50	58	-	54	60
	1988-90	65	53	22	40	55	60	69	49	
	1996-97	63	41	27	28	52	53	64	47	
Roots & Tubers	1975-79	135	58	26	25	20	37	-	56	50
	1988-90	63	40	31	29	32	52	68	41	
	1996-97	60	48	31	21	29	44	71	44	
Milk & Milk prodts.	1975-79	47	79	78	98	92	180	-	116	150
	1988-90	87	69	91	82	85	139	38	92	
	1996-97	122	88	83	76	75	157	12	86	
Fats & oils	1975-79	4	12	7	13	13	17	-	14	20
	1988-90	14	9	8	13	15	21	7	13	
	1996-97	9	10	10	12	16	19	8	12	
Sugar & Jaggery	1975-79	19	20	31	9	31	29	-	23	30
	1988-90	32	24	30	21	33	35	5	29	
	1996-97	26	20	29	10	30	30	6	21	

* Orissa unit was established later

FOOD CONSUMPTION

- **Cereals are the major staple food in all the states.**
- **Millets are consumed in Gujarat, Karnataka and Maharashtra**
- **Woefully inadequate consumption pulses, GLV, vegetables and milk**

3.2.2. Nutrient Intakes

The average nutrient intakes observed during the three survey periods are presented in **Table-3** and are compared with RDI values suggested by the Expert Committee of ICMR (1990). The frequency distributions of HHs according to intake of the major nutrients as per cent of RDI (1996-97) are presented in **Tables-4.1 to 4.10.**

Table 3 AVERAGE CONSUMPTION OF NUTRIENTS (CU/day)

Nutrients	Year	Kerala	Tamil Nadu	Karna-taka	Andhra Pradesh	Maha-rashtra	Gujarat	Orissa	Pooled	RDA
Protein (g)	1975-79	46.4	54.8	79.3	59.8	64.5	64.2	-	61.5	
	1988-90	52.9	45.6	65.4	55.7	61.7	69.3	52.4	58.4	**60**
	1996-97	56.4	46.4	53.3	51.6	56.1	61.5	49.2	53.7	
Energy (Kcal)	1975-79	1978	2275	2932	2447	2300	2162	-	2349	
	1988-90	2140	1871	2431	2340	2211	2375	2285	2283	**2425**
	1996-97	2106	1896	2108	2161	2089	2105	2177	2108	
Calcium (mg)	1975-79	507	552	946	565	512	551	-	606	
	1988-90	608	472	869	432	461	550	346	565	**400**
	1996-97	728	451	764	418	555	530	313	521	
Iron (mg)	1975-79	20.8	26.6	46.3	27.8	33.5	25.9	-	30.2	
	1988-90	22.0	21.4	35.6	25.8	29.6	29.0	26.1	27.2	
	1996-97	22.1 (12.8)	20.4 (9.0)	28.2 (17.3)	23.4 (10.4)	26.9 (17.6)	23.6 (22.5)	26.9 (10.2)	24.9 (14.2)	**28**
Vitamin A (µg)	1975-79	176	211	242	264	313	272	-	246	
	1988-90	297	240	269	286	311	286	417	282	**600**
	1996-97	274	250	229	278	220	277	526	300	
Thiamin (mg)	1975-79	0.72	0.89	2.42	1.06	1.77	1.90	-	1.46	
	1988-90	0.72	0.70	1.86	0.98	1.67	2.08	0.8	1.33	**1.20**
	1996-97	0.90	0.80	1.50	0.90	1.60	1.70	0.9	1.20	
Riboflavin (mg)	1975-79	0.72	0.79	1.19	0.79	0.98	1.08	-	0.81	
	1988-90	0.74	0.60	1.01	0.72	0.94	1.22	0.6	0.87	**1.40**
	1996-97	1.00	0.80	1.00	0.90	0.90	1.20	0.8	0.9	
Niacin (mg)	1975-79	11.5	12.5	17.8	14.5	16.8	15.3	-	14.7	
	1988-90	11.8	10.5	14.6	14.4	16.3	17.3	13.3	14.2	**16**
	1996-97	12.1	10.5	11.5	12.8	15.3	13.1	13.1	12.7	
	1975-79	67	42	23	29	36	35	-	39	
Vit. C (mg)	1988-90	47	39	26	36	37	36	56	37	**40**
	1996-97	52	37	25	33	32	33	66	40	
Folic acid (µg)*	1996-97	136	125	155	129	166	211	156	153	**200**

Values in the parentheses indicate the revised iron values

-: Data not available for 1975-79,1988-90

3.2.2.1 *Protein*

The average intake of protein was less than the RDI (60 g) in all the States except in Gujarat (61.5 g). The intakes ranged from 77% in Tamil Nadu to 94% in Kerala. A decreasing trend in protein intakes was observed in all the States between 1975-79 and 1996-97, except in Kerala where there was an increase of about 10 g. On the average, about 70% of HHs were consuming proteins less than the recommended level.

Table 4.1 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILY INTAKE OF PROTEIN AS % OF RDI

Per Cent of RDI		States							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled N=3357
		n=592	n=270	n=560	n=576	n=411	n=404	n=544	
Protein	10-20	.0	.0	.0	.0	.0	.0	.2	.0
	20-30	.3	.0	.0	.3	.0	.2	.2	.2
	30-40	1.4	3.3	.2	.7	1.0	.7	.9	10
	40-50	2.7	8.9	1.1	4.3	2.9	3.0	3.7	3.4
	50-60	6.8	12.2	6.1	10.2	7.5	4.5	10.3	8.1
	60-70	10.6	18.1	13.9	15.5	12.9	5.9	17.3	13.4
	70-80	13.9	20.7	16.8	15.8	10.7	11.9	20.4	15.7
	80-90	14.2	14.8	18.4	15.5	12.2	13.6	16.5	15.2
	90-100	13.3	8.5	15.0	13.5	14.1	12.6	10.7	12.8
	>= 100	36.8	13.3	28.6	24.1	38.7	47.5	19.9	30.1

3.2.2.2 *Energy*

The energy intakes were less than RDI in all the States. The energy deficit varied from 10% in Andhra Pradesh and Orissa to 23% in Gujarat. The consumption levels tended to decrease over the period. The overall extent of reduction in the energy intake was 241 kcals, which ranged from 57 kcal in Gujarat to 824 kcal in Karnataka. In the State of Kerala, however, the intake increased by about 127 kcals. For all the States, about 75% of the HHs the energy intakes were less than the recommended levels.

Table 4.2 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILY INTAKE of ENERGY AS % OF RDI

Per Cent of RDI		States							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled N=3357
		n=592	n=270	n=560	n=576	n=411	n=404	n=544	
Energy	20-30	.0	.0	.0	.5	.0	.5	.2	.2
	30-40	.0	1.1	.2	.2	.0	1.2	.2	.3
	40-50	1.7	7.0	1.3	2.1	1.0	4.5	1.7	2.4
	50-60	5.6	10.0	4.8	4.2	5.4	6.7	4.6	5.5
	60-70	13.5	17.8	11.3	13.2	11.9	13.9	10.3	12.7
	70-80	19.9	19.6	22.7	19.1	22.9	15.3	18.2	19.7
	80-90	19.8	20.4	20.5	17.2	19.7	16.3	19.9	19.1
	90-100	14.9	12.2	12.9	14.8	18.5	14.1	17.1	15.0
	>=100	24.7	11.9	26.4	28.8	20.7	27.5	27.9	25.0

3.2.2.3. *Calcium*

The mean calcium intakes were above the RDI (400 mg/CU/day) in all the States except Orissa, where it was 313 mg. There was a reduction of about 85 mg in the intake of calcium over the period, which ranged from 33 mg in Orissa to 182 mg in Karnataka. However, the intake of calcium improved by about 221 mg in Kerala. About 50% of HHs in general, were consuming calcium in amounts less than the RDI.

Table 4.3 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILY INTAKE OF CALCIUM AS % OF RDI

Per Cent of RDI		State							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled
Calcium	<10	.0	.0	.0	.0	.0	.2	.0	.0
	10-20	.0	.7	.0	.3	.0	.2	4.6	.9
	20-30	1.2	4.8	.7	1.6	2.2	1.5	13.4	3.6
	30-40	2.2	7.0	1.8	5.0	7.1	4.5	11.8	5.4
	40-50	2.2	6.3	4.3	10.4	9.5	7.9	10.1	7.1
	50-60	2.0	6.7	6.8	10.4	13.4	7.7	5.7	7.3
	60-70	2.9	6.7	7.3	10.4	16.3	5.7	8.3	8.1
	70-80	3.9	7.8	6.4	8.0	8.5	7.2	6.1	6.6
	80-90	3.7	5.9	3.9	7.8	7.3	5.0	7.7	5.9
	90-100	3.5	6.3	3.9	6.3	7.3	4.5	6.4	5.3
	>= 100	78.4	47.8	64.8	39.8	28.5	55.7	25.9	49.7

3.2.2.4. *Iron*

Recently, there has been revision in the iron content of different foods, due to improvements in the procedures of iron estimation. The 'revised' iron values are in general less than the 'old values'. In the present report, data was analysed, using both the values to facilitate comparison with earlier data base. As per the revised values, the intakes are below the RDI in all the States in the current survey. The extent of deficit ranged from 20% in Gujarat to 68% in Tamil Nadu.

Barring the States of Orissa and Kerala, there was decrease in the intake levels of iron, ranging from 9% in Gujarat to 39% in Karnataka (as per old values). The intake levels remained unchanged in the States of Kerala and Orissa. It may be mentioned here, that in almost all the households (94%) the average intakes (new values) were less than the recommended level of 28 mg/CU/day. More than half of the HHs were consuming less than 50% of RDI of iron.

Table 4..4 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILYINTAKE OF IRON AS % OF RDI

Per Cent of RDI		State							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled
Iron	10-20	.0	.0	.0	.0	.0	.5	.0	.1
	20-30	.2	.0	.0	.3	.0	1.0	.4	.3
	30-40	1.2	4.4	.2	.7	.7	3.7	.4	1.3
	40-50	4.7	6.3	1.4	4.5	3.2	5.9	2.8	3.9
	50-60	12.5	18.9	4.3	13.4	8.0	8.2	7.4	9.9
	60-70	21.5	19.3	8.0	15.1	11.7	16.3	11.9	14.6
	70-80	17.6	22.2	10.5	16.7	11.2	16.1	13.8	15.0
	80-90	14.5	11.5	11.3	15.6	10.7	10.9	14.7	13.0
	90-100	11.5	7.8	17.1	11.6	12.2	11.4	11.4	12.2
	>= 100	16.4	9.6	47.1	22.0	42.3	26.0	37.3	29.7

3.2.2.5 *Vitamin A*

In all the States, vitamin A intake was below the recommended 600 µg/CU/day. The deficiency varied from a low 12% in Orissa to a high 63% of RDI in Maharashtra. In about 86% of HHs, the intake of vitamin 'A' was less than RDI. A marginal increase of about 54 µg on an average was observed over the periods (1975-79: 246 µg; 1996-97: 300 µg). Barring the States of Karnataka (-13 µg) and Maharashtra (-93 µg), the intake of vitamin A increased in the other States over the period ranging from +5 µg in Gujarat to +109 µg in Orissa. When all the States were considered together, almost three fourths of the HHs consumed less than 300 µg per CU (50% of RDI).

Table 4.5 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILY INTAKE OF 'VITAMIN A' AS % OF RDI

Per Cent of RDI		State							
		Kerala	Tamilnadu	Kamataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled
Vitamin A	<10	5.9	7.4	3.2	6.6	8.0	6.4	31.6	10.2
	10-20	23.6	29.3	27.9	27.4	31.6	16.1	15.4	24.2
	20-30	22.1	21.9	33.4	21.9	27.0	23.3	4.0	21.7
	30-40	14.9	11.9	14.5	13.7	12.7	15.8	1.7	12.1
	40-50	8.1	6.3	5.5	9.4	3.6	11.1	.7	6.4
	50-60	4.1	3.7	2.7	4.2	2.2	5.0	1.5	3.3
	60-70	3.9	3.7	2.5	2.6	1.5	4.5	.6	2.7
	70-80	1.5	2.6	1.4	2.3	2.2	4.7	1.1	2.1
	80-90	2.4	3.0	1.6	.7	2.9	3.0	2.2	2.1
	90-100	1.7	1.1	.9	1.2	1.0	1.2	2.0	1.3
	>=100	11.8	9.3	6.4	10.1	7.3	8.9	39.2	13.9

3.2.2.6 *Thiamin*

The intake of thiamin ranged from a low 0.8 mg in Tamil Nadu to a high 1.70 mg in Gujarat. It was less than the RDI in all the States except the States of Karnataka, Maharashtra and Gujarat. Except in Kerala, a decreasing trend was observed in the consumption in various States. Though, in general, the intake was satisfactory (1.25 mg), in about 59% of the HHs, the intakes were below the RDI of 1.2 mg.

Table 4.6 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILY INTAKE OF THIAMIN AS % OF RDI

Per Cent of RDI		State							
		Kerala	Tamilnadu	Kamataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled
Thiamin	10-20	.0	.0	.0	.2	.0	.0	.0	.0
	20-30	.5	1.9	.0	.7	.0	.0	1.1	.5
	30-40	2.7	4.8	.4	2.1	1.2	.0	2.9	1.9
	40-50	9.1	15.2	2.7	5.7	1.9	.5	7.0	5.7
	50-60	28.9	34.8	6.6	30.0	12.2	2.0	30.1	20.8
	60-70	12.2	13.7	3.6	13.0	2.9	2.0	15.4	9.2
	70-80	13.0	11.1	5.0	13.2	3.6	4.2	13.1	9.4
	80-90	6.4	6.3	3.4	8.7	4.1	4.5	9.6	6.3
	90-100	7.3	4.4	5.2	6.4	2.2	5.7	6.6	5.6
	>=100	19.9	7.8	73.2	20.0	71.8	81.2	142	40.6

3.2.2.7. *Riboflavin*

In all the States, riboflavin intake was less than RDI of 1.4 mg/CU/day. The deficiency ranged from 14 percent in the State of Gujarat to 43 percent in Tamil Nadu and Orissa. An overall increase in the intake of riboflavin (+0.09 mg) was observed during the period from 1975-79 to 1996-97. The States like Maharashtra and Karnataka showed a reduction in the intakes (-0.08 and -0.19 mg respectively), while the other States recorded an increase ranging from 0.01 mg in Tamil Nadu to 0.28 in Kerala. Nearly 87% of the HHs were observed to be consuming inadequate amounts of riboflavin (less than RDI).

Table 4.7 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILY INTAKE OF RIBOFLAVIN AS % OF RDI

Per Cent of RDI		State							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled
Riboflavin	<10	.0	.0	.0	.0	.0	.0	.2	.0
	10-20	.0	.0	.0	.0	.0	.2	.0	.0
	20-30	2.0	6.7	1.6	2.4	2.7	2.7	2.6	2.7
	30-40	6.1	11.1	5.7	8.2	7.3	4.5	9.2	7.2
	40-50	9.0	14.1	9.3	12.0	12.9	6.7	13.6	10.9
	50-60	23.1	26.3	22.5	30.9	36.3	20.5	34.6	27.8
	60-70	9.3	16.3	13.8	10.9	12.9	7.2	14.5	11.9
	70-80	20.6	9.3	20.0	19.4	14.4	15.1	15.1	17.1
	80-90	8.1	6.3	8.6	5.7	3.2	4.2	4.0	5.9
	90-100	3.9	2.2	6.3	3.0	3.2	6.2	2.4	3.9
	>= 100	17.9	7.8	12.3	7.5	7.3	32.7	3.9	12.6

3.2.2.8 *Niacin*

In all the States, the intake of niacin was below the suggested level of 16.0 mg. The deficiency ranged from 4 % in Maharashtra to 34 % in Tamil Nadu. There was a gradual decrease in the intake of niacin in all the States, except Kerala (2.6 mg). About 81% of HHs were consuming less than the recommended levels of niacin.

Table 4.8 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILY INTAKE OF NIACIN AS % OF RDI

Per Cent of RDI		State							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled
Niacin	10-20	.2	.0	.0	.0	.0	.0	.0	.0
	20-30	.2	.4	.2	.5	.0	.7	.4	.3
	30-40	2.5	5.9	1.8	1.6	1.0	2.5	1.1	2.1
	40-50	5.7	12.2	10.5	8.0	3.6	8.7	3.1	7.1
	50-60	17.7	23.0	23.0	14.1	8.3	13.1	10.3	15.5
	60-70	19.3	23.0	19.1	17.5	9.0	13.4	15.3	16.6
	70-80	18.2	18.1	13.0	15.8	11.7	15.1	21.7	16.3
	80-90	12.7	8.1	9.6	15.1	11.7	13.9	18.0	13.1
	90-100	10.0	3.0	10.5	9.5	11.9	11.6	12.1	10.2
	>= 100	13.5	6.3	12.1	17.9	42.8	21.0	18.0	18.7

3.2.2.9 *Vitamin C*

The intake of vitamin C was less than RDI of 40 mg/CU/day in all the States, except in Kerala and Orissa. About 62% of HHs were consuming vitamin C less than the RDI. While a marginal increase was noticed in the States of Karnataka (+2 mg), Andhra Pradesh (+4 mg) and Orissa (+10 mg) during the period 1975-79 to 1996-97.

Table 4.9 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILY INTAKE OF VITAMIN C AS % OF RDI

Per Cent of RDI		State							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled
Vitamin C	<10	1.2	.4	2.7	1.6	4.9	7.4	2.6	2.9
	10-20	3.9	3.3	14.3	9.9	7.5	4.2	.4	6.5
	20-30	1.9	3.7	11.3	9.5	6.6	2.2	1.8	5.5
	30-40	2.7	3.7	7.0	5.4	5.4	4.2	1.7	4.3
	40-50	3.2	4.4	7.5	3.5	4.1	4.5	22	4.2
	50-60	4.2	7.4	3.8	5.0	6.3	7.4	3.5	5.1
	60-70	2.5	5.9	5.9	4.2	5.6	7.2	3.5	4.7
	70-80	4.7	4.4	6.8	6.3	6.3	7.2	2.9	5.5
	80-90	2.9	7.4	6.4	5.7	5.1	5.2	2.2	4.8
	90-100	5.7	4.4	5.4	4.7	5.6	5.4	2.9	4.9
	>= 100	67.1	54.8	29.1	44.3	42.6	45.0	76.3	51.7

3.2.2.10. *Folic acid*

The intake of folic acid was less than RDI of 100 µg/CU/day in all the States, except Gujarat. The deficiency ranged from 17 percent in Maharashtra to 38% in Tamil Nadu. In about 80% of the HHs, the intakes were less than the recommended levels.

Table 4.10 DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO AVERAGE DAILYINTAKE OF FOLIC ACID AS % OF RDI

Per Cent of RDI		State							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Mahara-shtra	Gujarat	Orissa	Pooled
Folic Acid	<10	.0	.0	.0	.0	.0	.0	.2	.0
	10-20	1.4	.7	.0	.7	.2	.2	.7	.6
	20-30	6.1	7.8	2.3	5.2	1.0	.5	8.3	4.5
	30-40	8.8	16.3	4.1	11.3	2.7	1.7	7.7	7.3
	40-50	13.7	10.4	7.5	14.1	5.6	2.0	9.9	9.4
	50-60	14.7	18.5	14.1	17.9	9.7	4.7	9.7	12.8
	60-70	14.2	13.3	15.4	15.5	122	9.7	9.9	13.0
	70-80	12.3	8.9	16.3	10.4	18.7	8.2	12.3	12.7
	80-90	9.1	10.0	13.0	9.9	16.1	11.6	10.7	11.4
	90-100	5.9	5.2	8.6	5.9	12.2	11.4	6.3	7.8
	>= 100	13.9	8.9	18.8	9.2	21.7	50.0	24.3	20.5

3.2.3 Protein Calorie Adequacy Status of Households

The distribution of households according to protein-energy adequacy status is presented in **Table-5 and Fig.1.** About 47% of the households consumed adequate amount of both protein and calorie, while 20% of households consumed inadequate amounts of the same. In about 48% of the households, in general, the energy intakes were adequate. Their proportion ranged from 54% in Orissa to 34% in Tamil Nadu. In contrast, nearly 80% of the HHs surveyed were observed consuming adequate amounts of protein. The proportion of HHs consuming inadequate amounts of proteins ranged from a low of 16% in Karnataka to a high 34% in Tamil Nadu. Thus the data reconfirms earlier observations, that the problem of energy inadequacy (52.4%) is of greater magnitude than that of protein (20%) inadequacy among the rural population of India **(Fig.1).**

The results indicate that the proportion of HHs with protein adequacy showed an increase (+1.6%), while there was a decline in the percentage of HHs with calorie adequacy (-10.2).

Table 5 PERCENT DISTRIBUTION OF HOUSEHOLDS ACCORDING TO PROTEIN ENERGY ADEQUACY STATUS

State	1975-79		1988-90		1996-97	
	Protein adequate	Calorie adequate	Protein adequate	Calorie adequate	Protein adequate	Calorie adequate
Kerala	55.7	36.0	71.5	39.7	83.5	49.3
Tamil Nadu	84.4	72.4	62.1	32.1	65.5	33.7
Karnataka	93.3	80.7	91.4	62.1	82.8	45.0
Andhra Pradesh	76.0	60.9	82.6	58.5	74.5	51.0
Maharashtra	84.1	53.7	88.0	49.5	80.8	44.0
Gujarat	84.0	53.8	92.8	52.7	89.1	48.5
Madhya Pradesh	78.5	46.5	96.0	78.4	-	-
Orissa	-	-	51.2	23.9	76.1	537
Pooled	77.9	57.8	83.5	53.3	79.5	47.6

NUTRIENT INTAKES

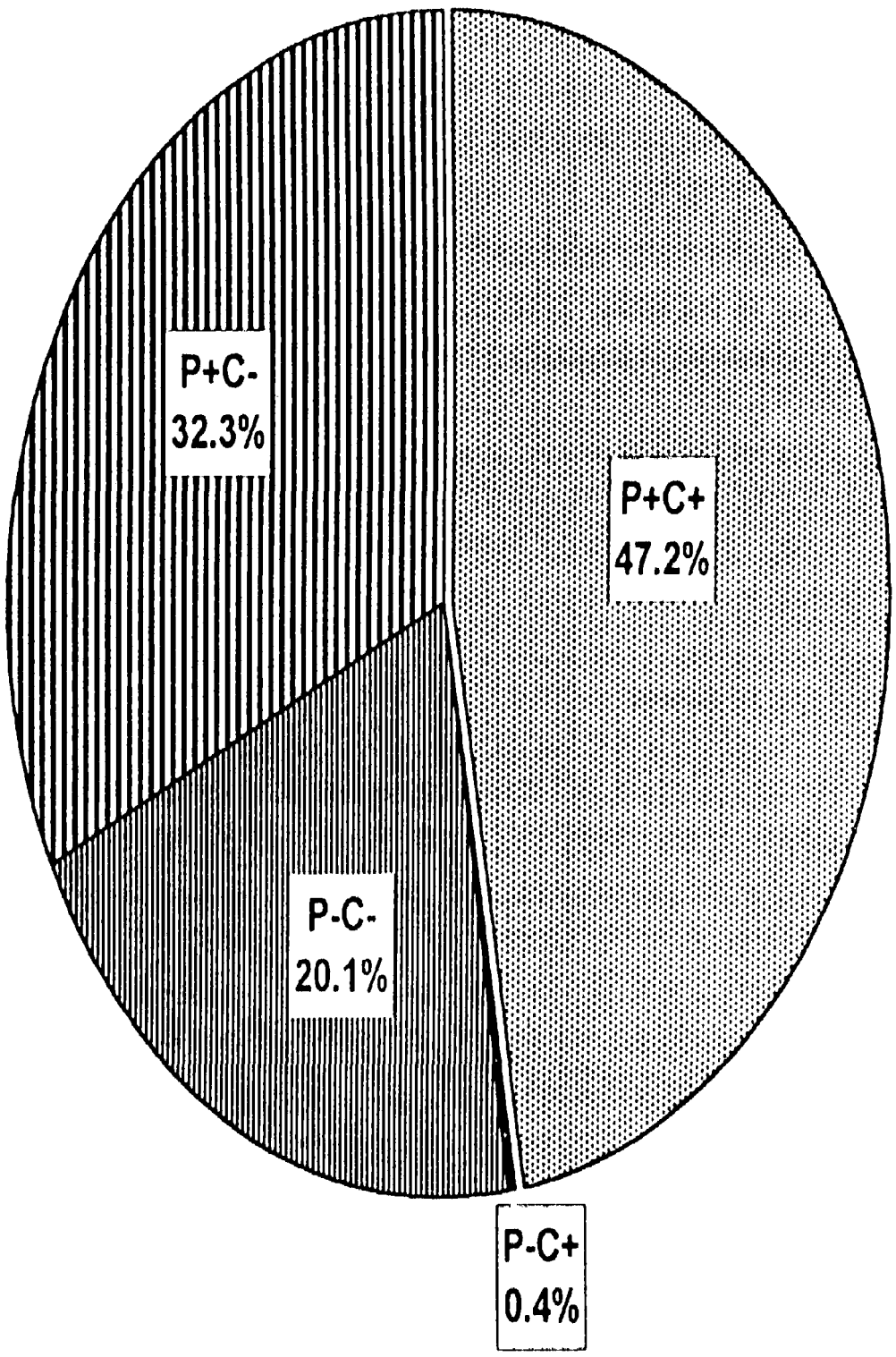
PROTEIN AND ENERGY

- 20% HHs had inadequate consumption in of protein and energy.

MICRONUTRIENTS

- 79-94% HHs had dietary deficit of iron, riboflavin, vitamin A and folic acid

Fig.1
PROTEIN & CALORIE ADEQUACY STATUS



3.2.4 Food and Nutrient Intakes : Socio-Economic Status

The average daily intakes of various foods and nutrients were compared according to different socio-economic parameters, such as community, type of house, type of family, occupation of head of HH, income and land holdings and the results are presented in **Table-6.1 to 6.12 and Figs.2-5.**

3.2.4.1 *Community*

The average daily intake of cereals, pulses and green leafy vegetables was higher among the community of scheduled tribes and scheduled caste, as compared to backward caste and others. But the consumption of other vegetables, roots and tubers, nuts and oil seeds, milk and milk products, fish and other flesh foods, fats & oils and sugar & jaggery was less among them as compared to backward and other communities.

The intake of nutrients such as energy, protein, iron, vitamin A, thiamin was observed to be better in scheduled tribes and others as compared to backward class and scheduled caste communities.

3.2.4.2 *Type of family*

No significant differences were observed in the intake of various foods and nutrients among different type of families.

3.2.4.3 *Type of House*

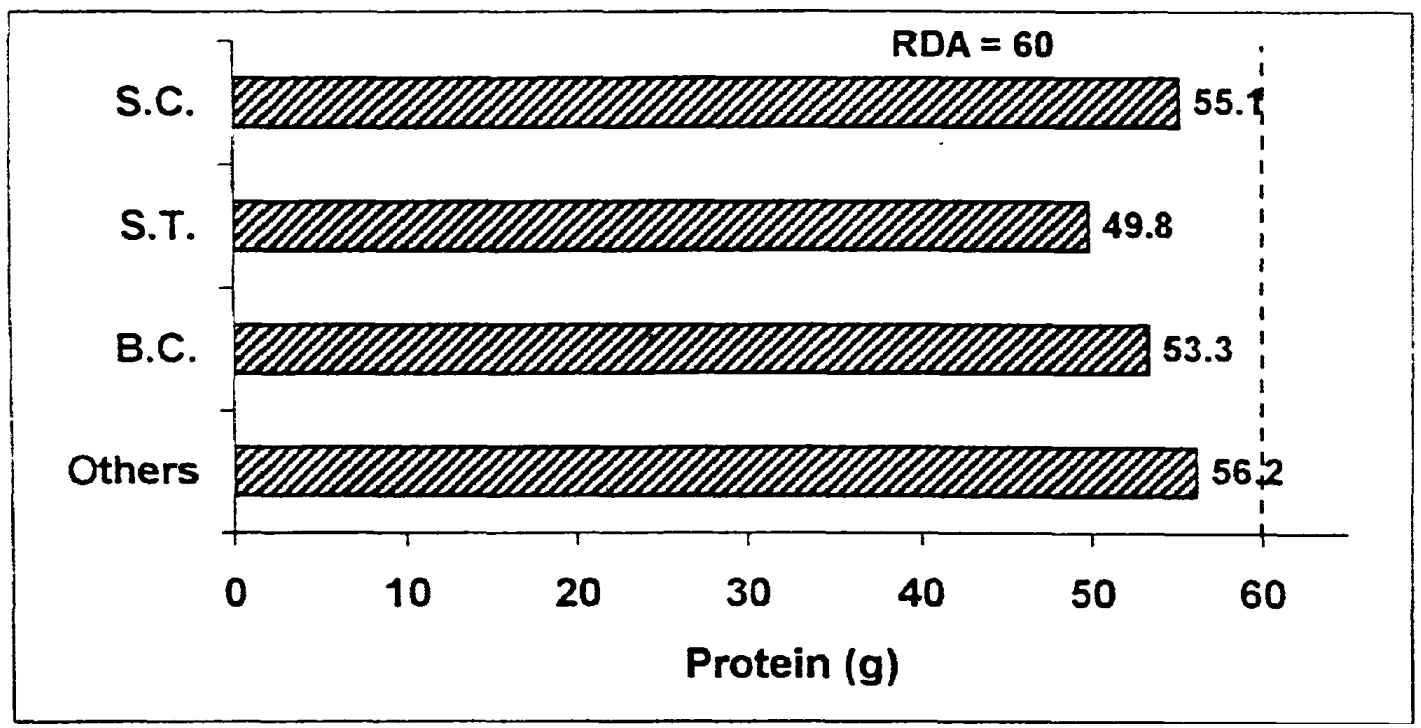
The mean intake of foods such as other vegetables, roots and tubers, nuts and oil seeds, fruits, flesh foods, milk and milk products and fats & oils were relatively better among families living in *pucca* or semi-pucca houses, as compared to the families inhabiting in *kutcha* houses. A reverse trend was seen with respect to intake of cereals and green leafy vegetables. The mean intake of nutrients such as energy, protein and total fat were high among HH, with pucca/semi-*pucca* houses as compared to *kutcha* houses.

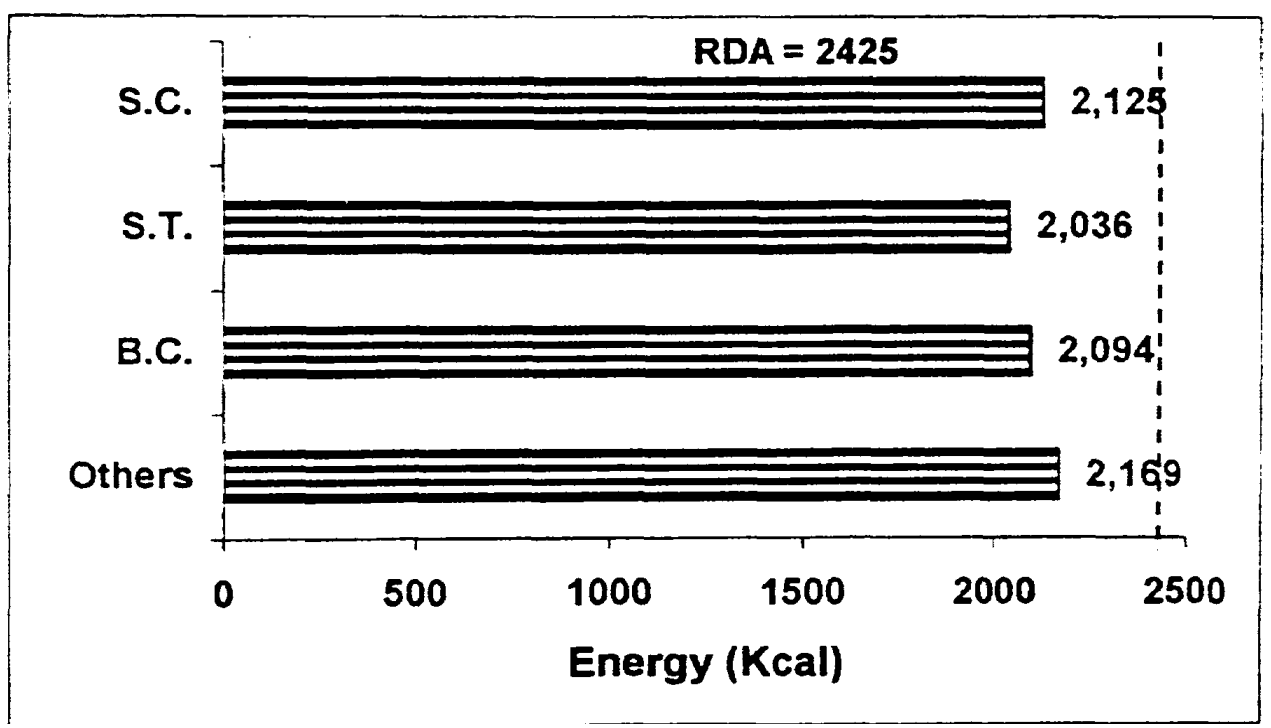
3.2.4.4 *Land holdings*

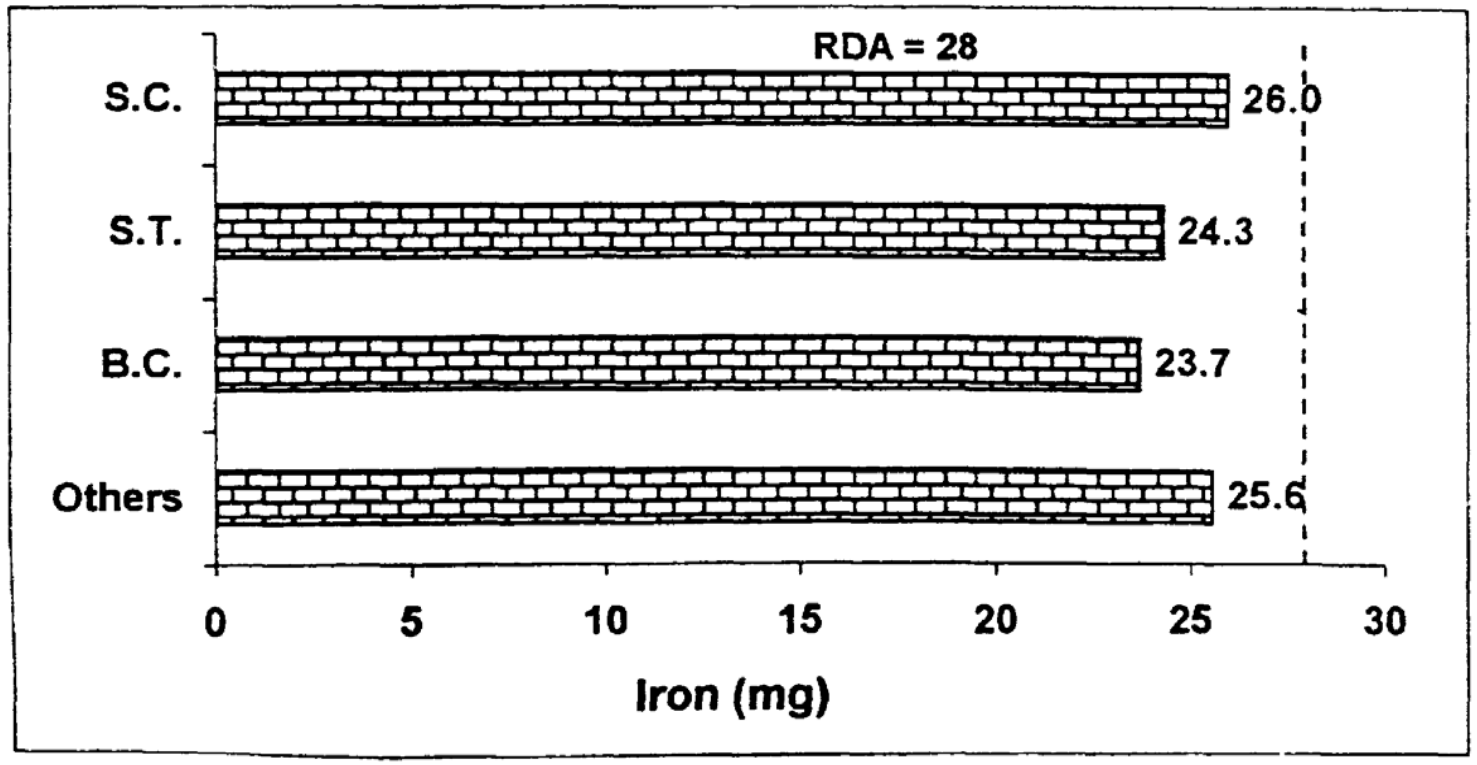
The average intake of foods such as cereals, pulses, milk and milk products, fats and oils and sugar and jaggery increased with increase in the size of land holdings. The intake of protein, energy as well as other micronutrients such as iron, calcium, vitamin A, thiamin, riboflavin, niacin increased with increase in the size of land holdings.

Fig.2

NUTRIENT INTAKES (CU/Day) BY COMMUNITY







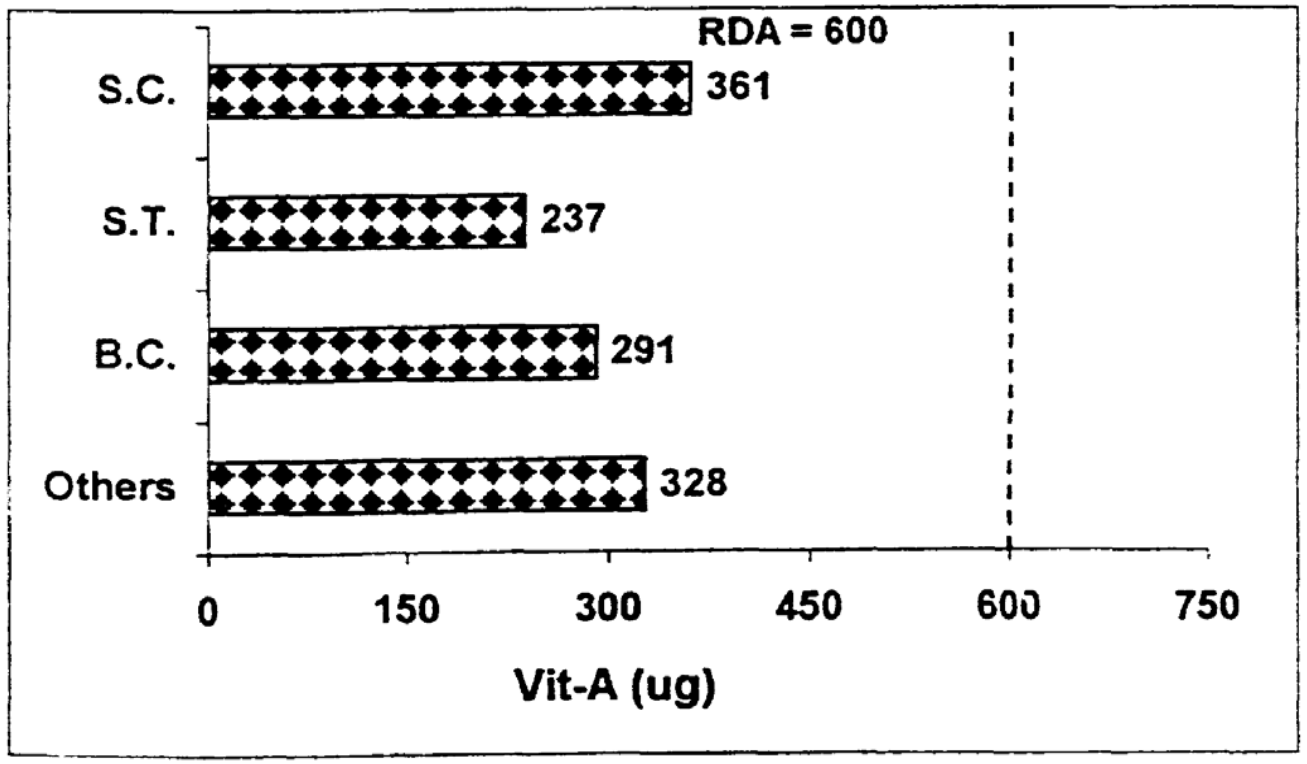
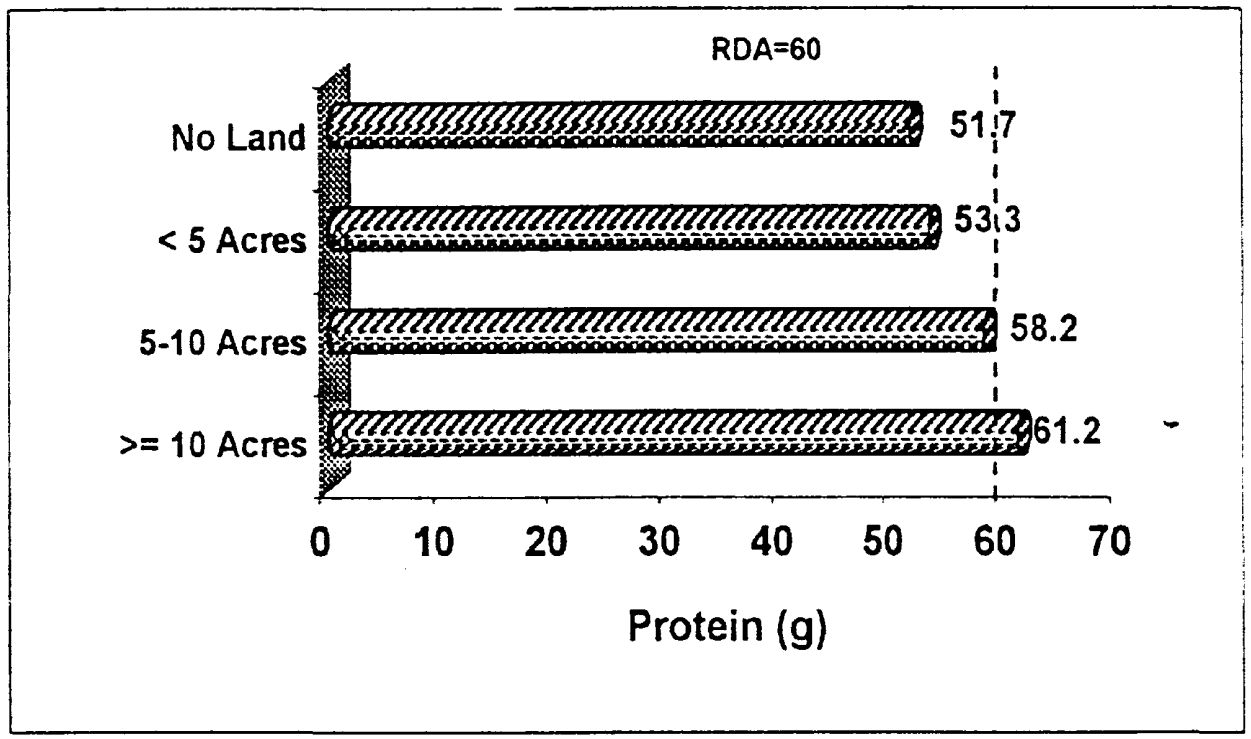
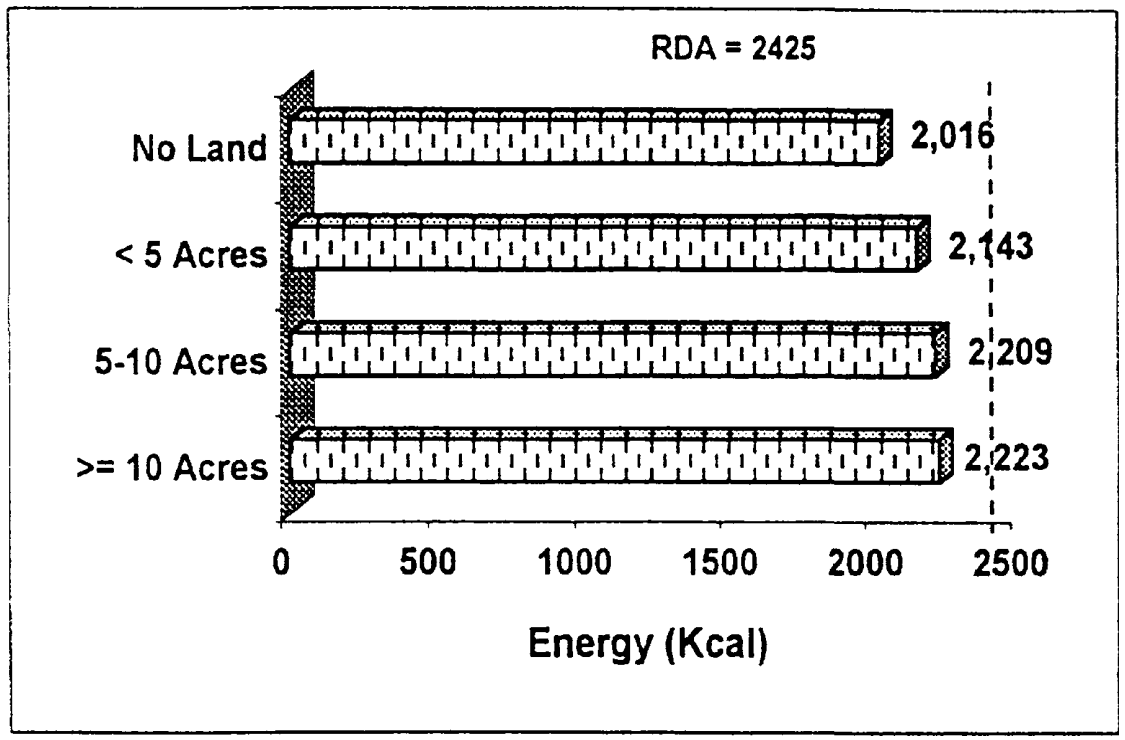
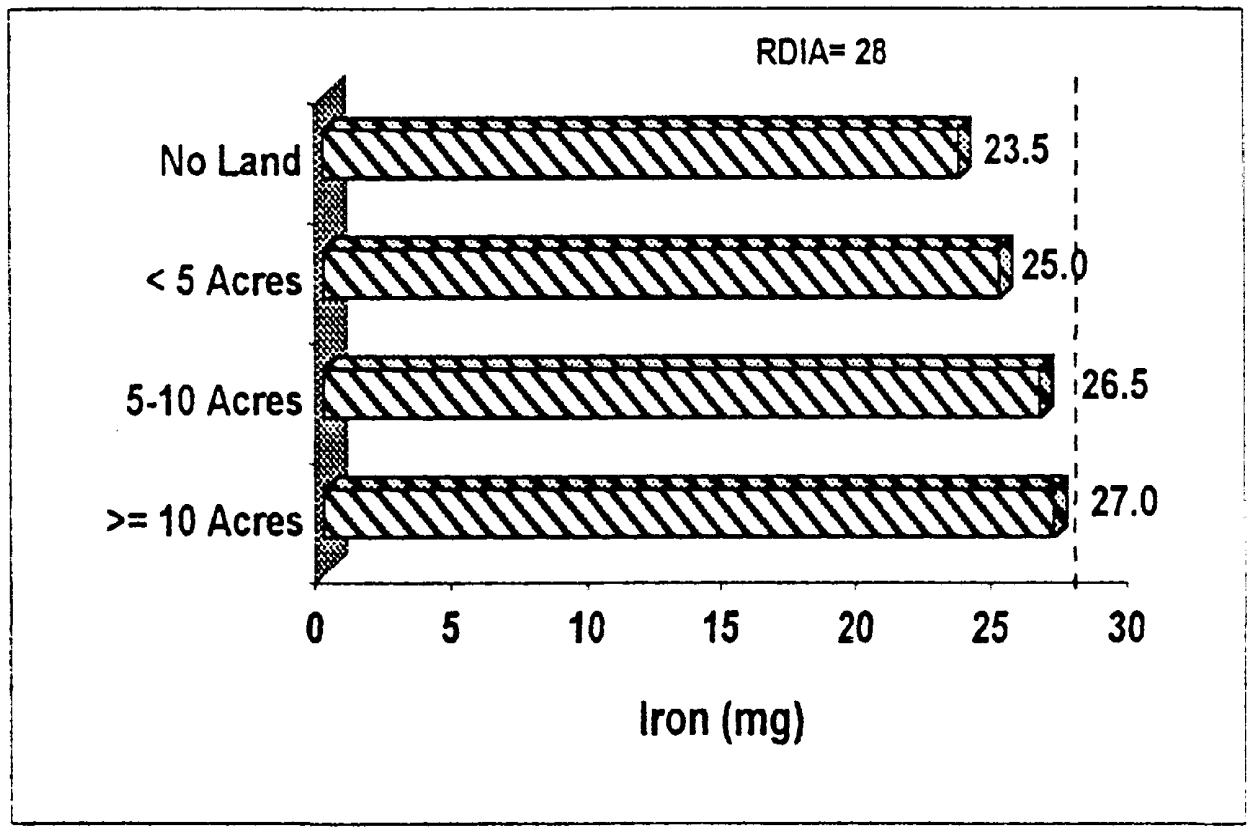


Fig.3
NUTRIENT INTAKES (CU/Day) BY LAND HOLDING STATUS







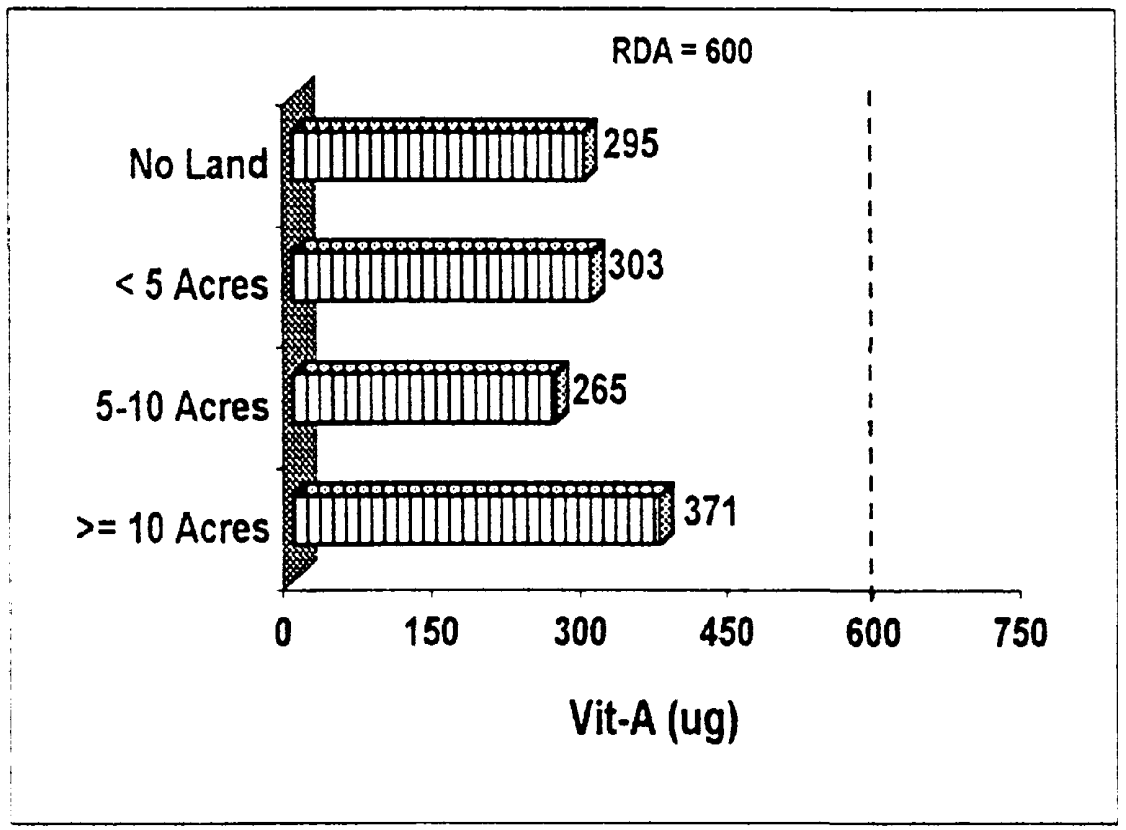
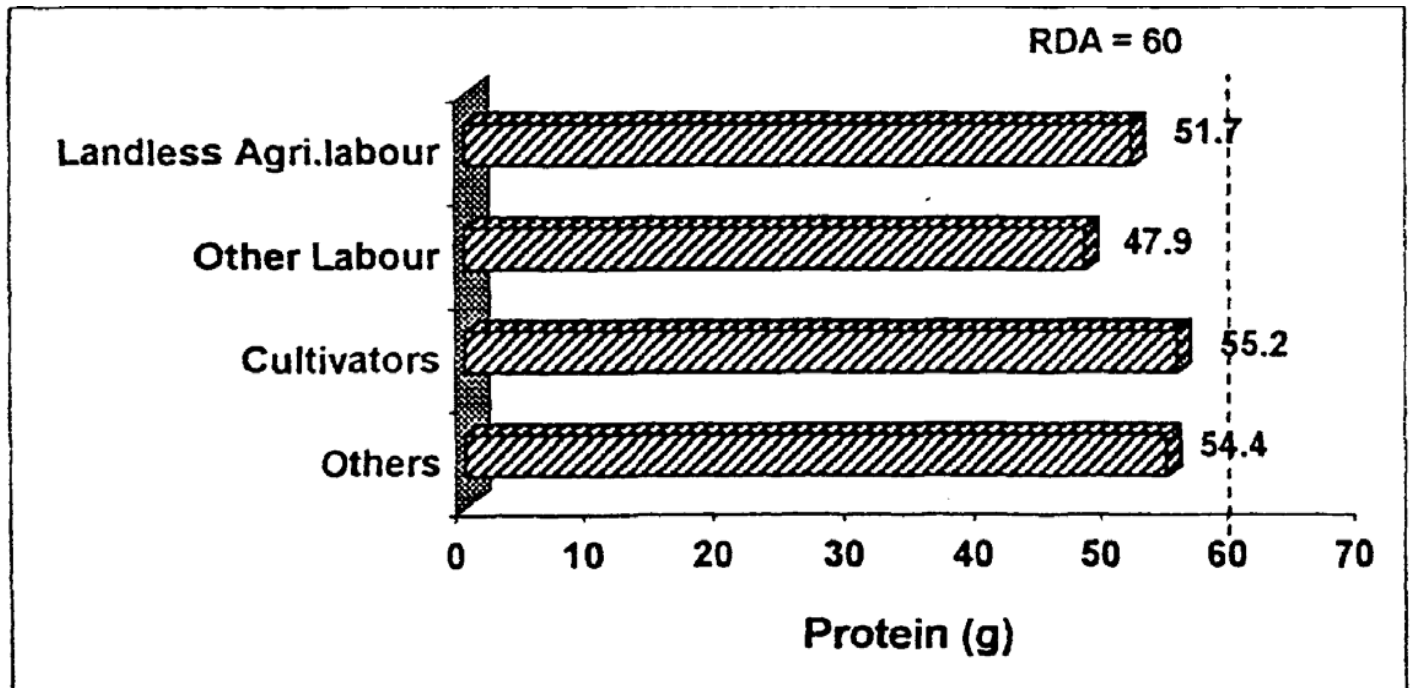
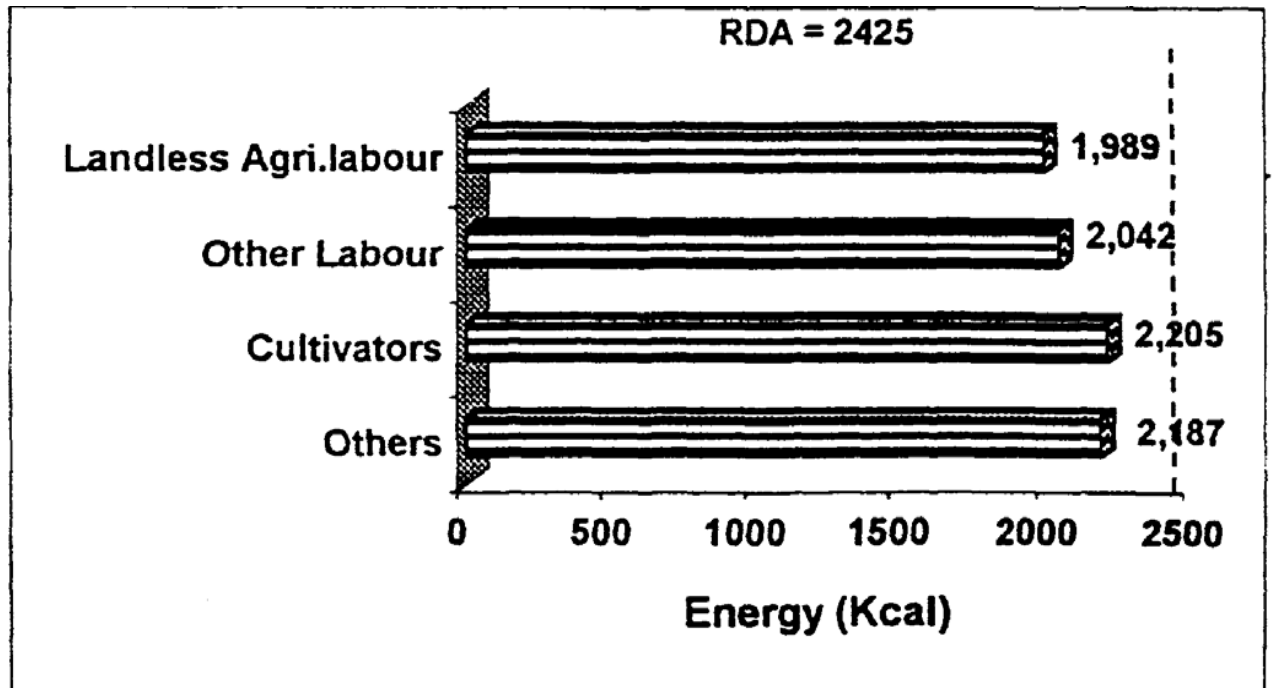
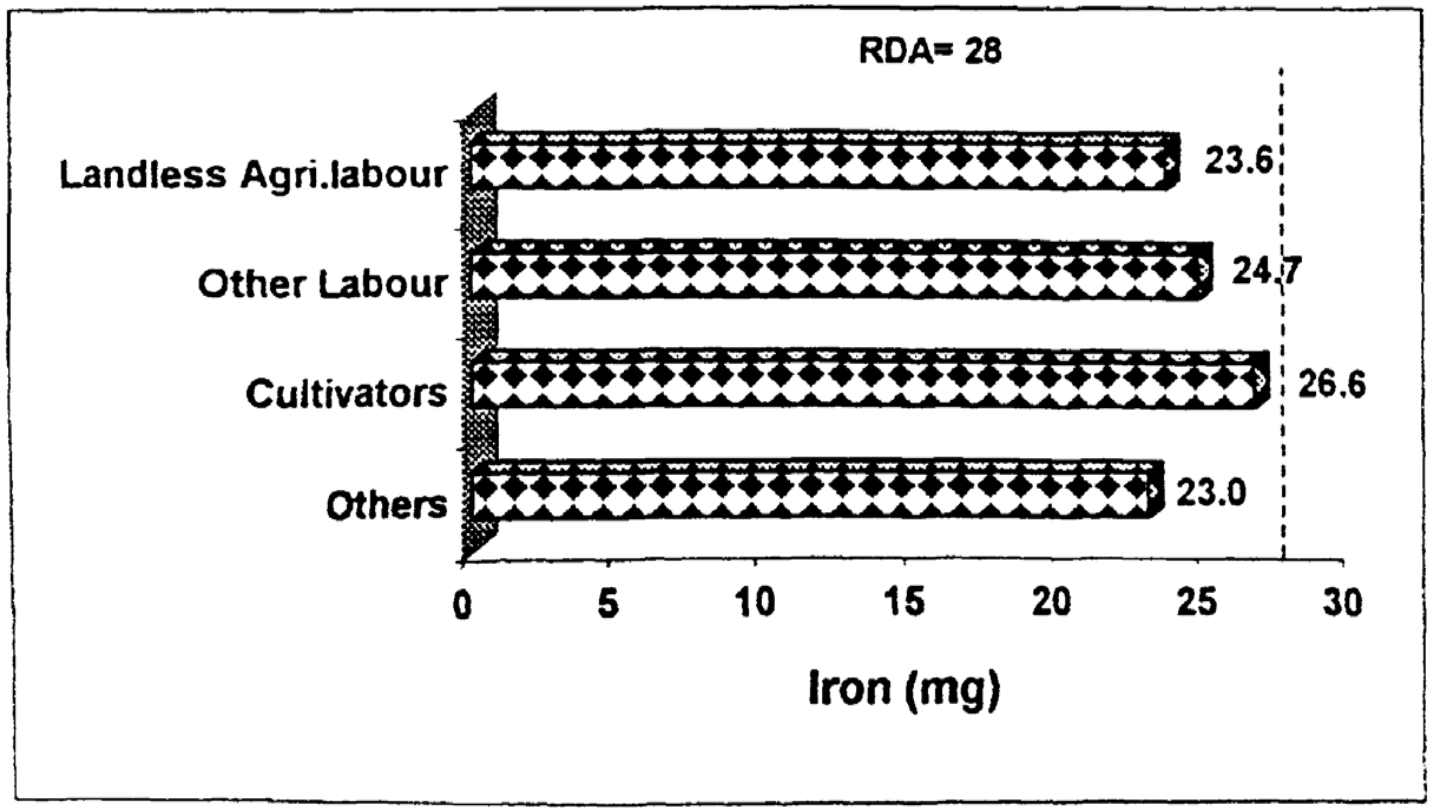


Fig.4
NUTRIENT INTAKES (Cu/Day) BY OCCUPATIONAL GROUPS







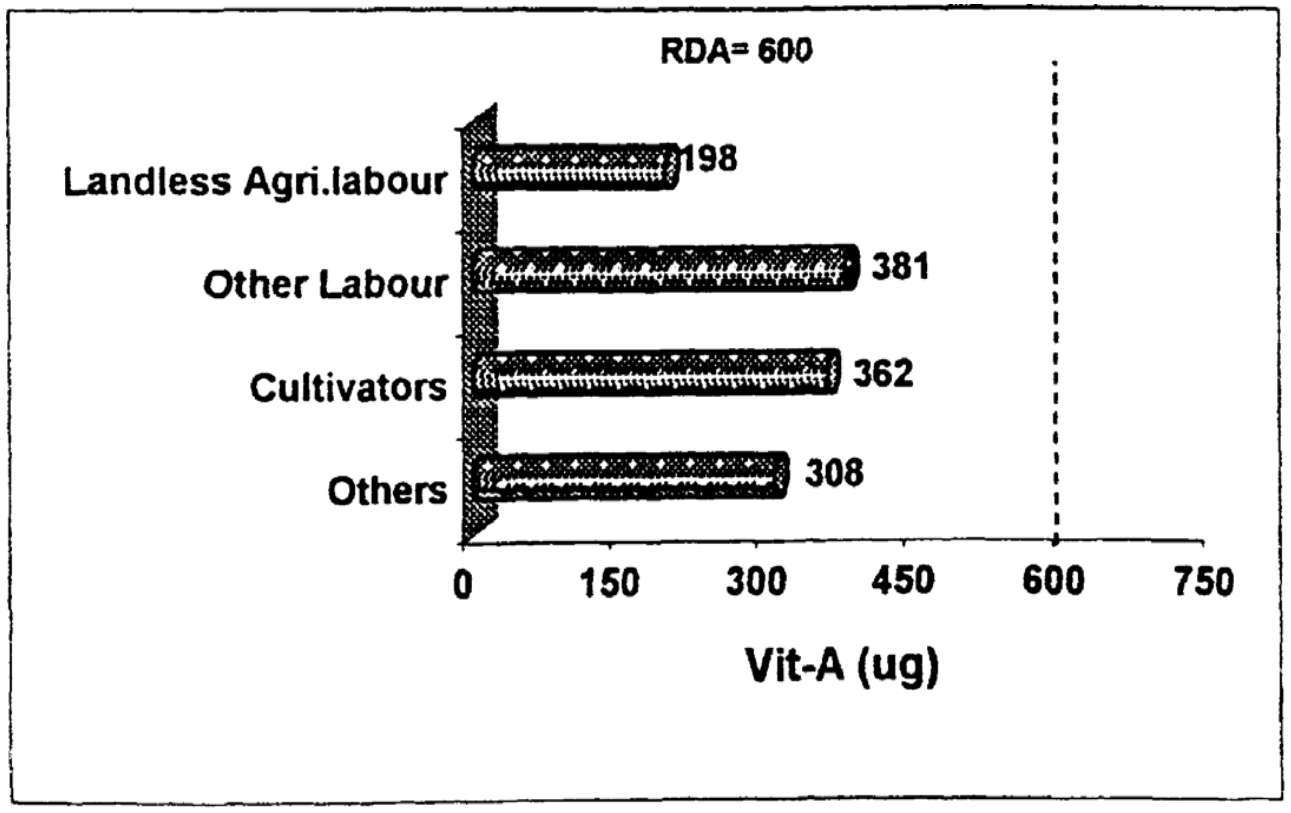
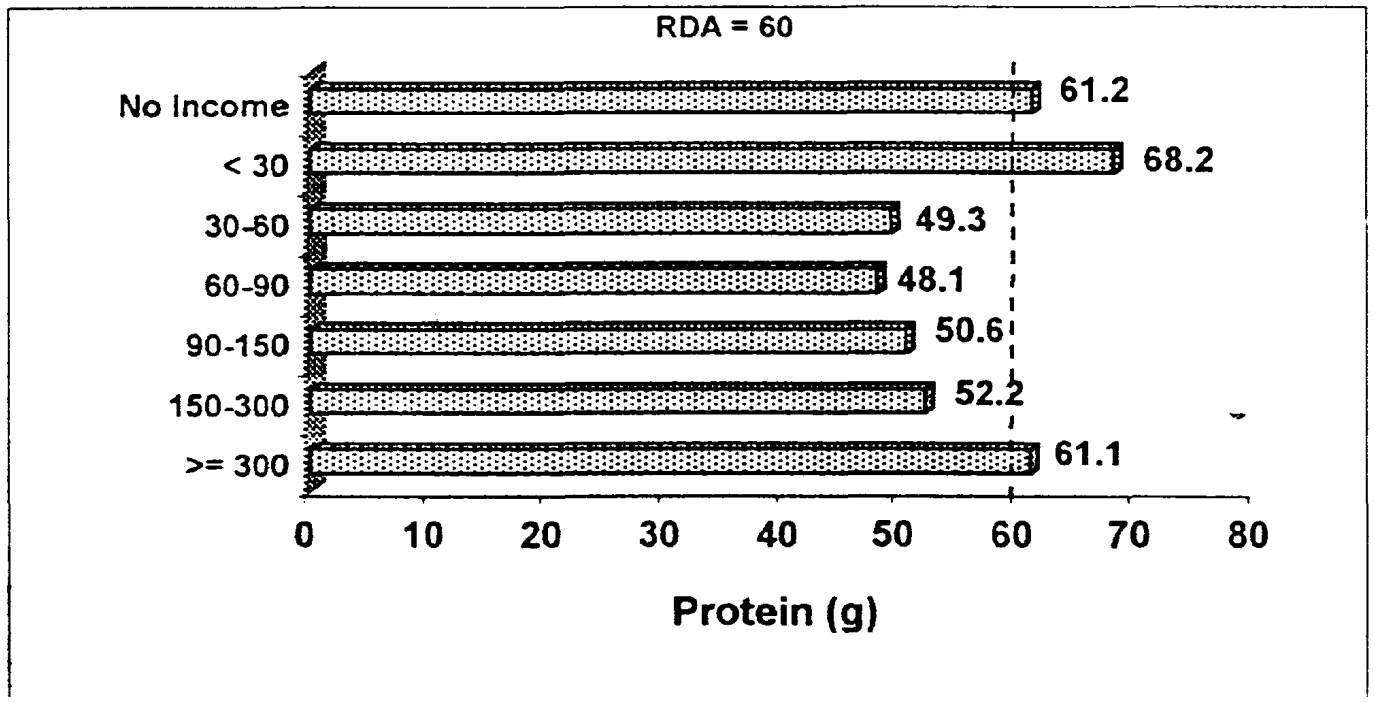
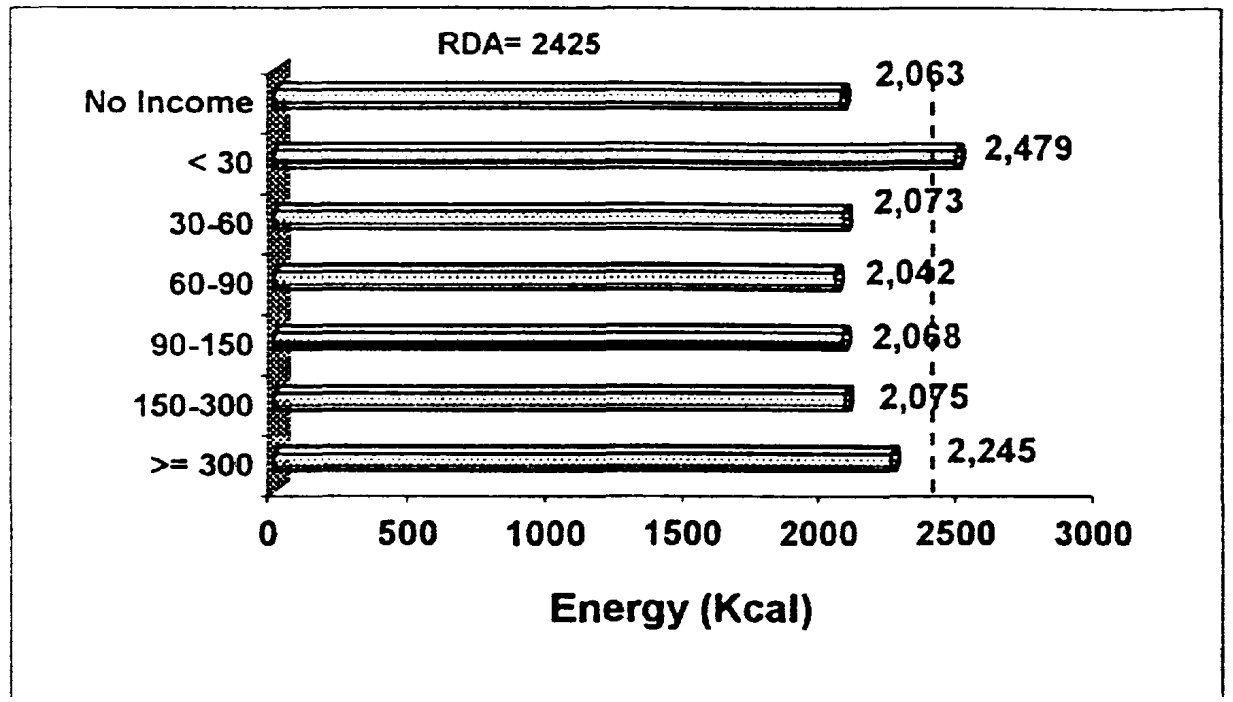
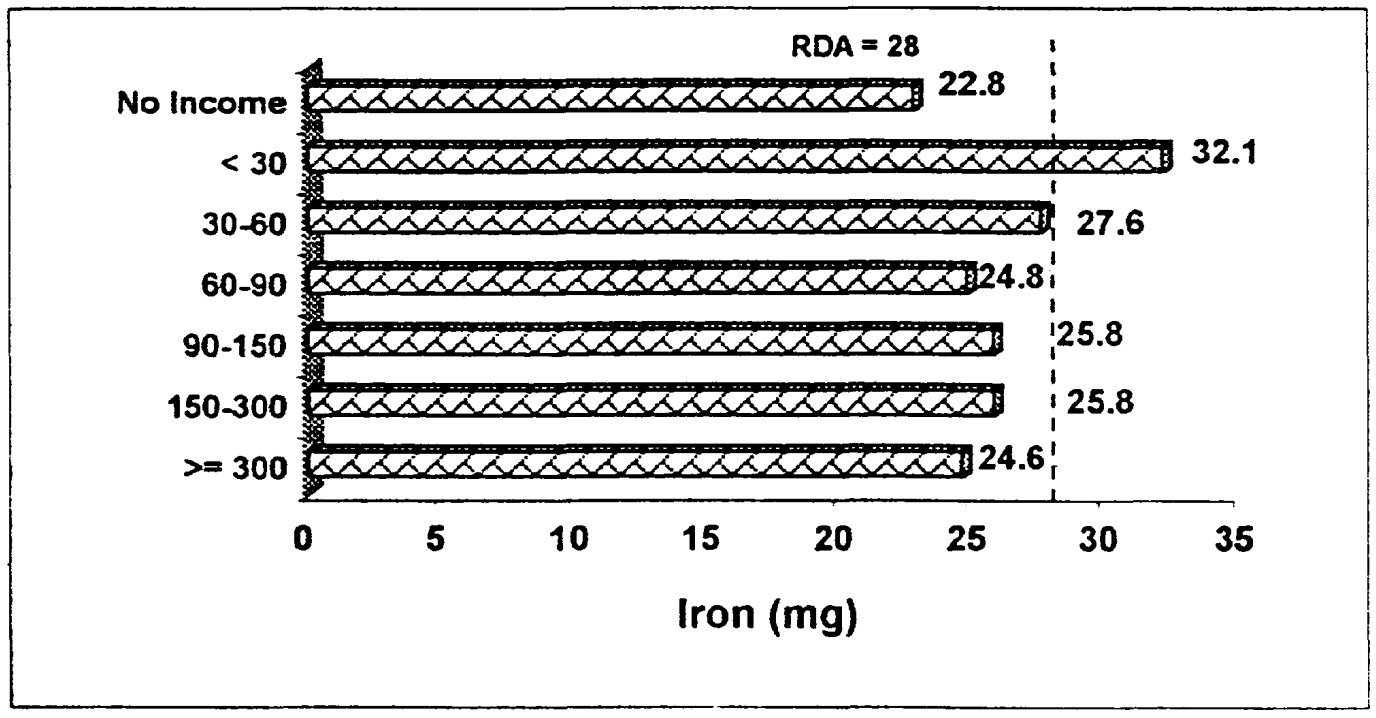


Fig.5
NUTRIENT INTAKES (CU/Day) BY PER CAPITA INCOME (Rs./month)







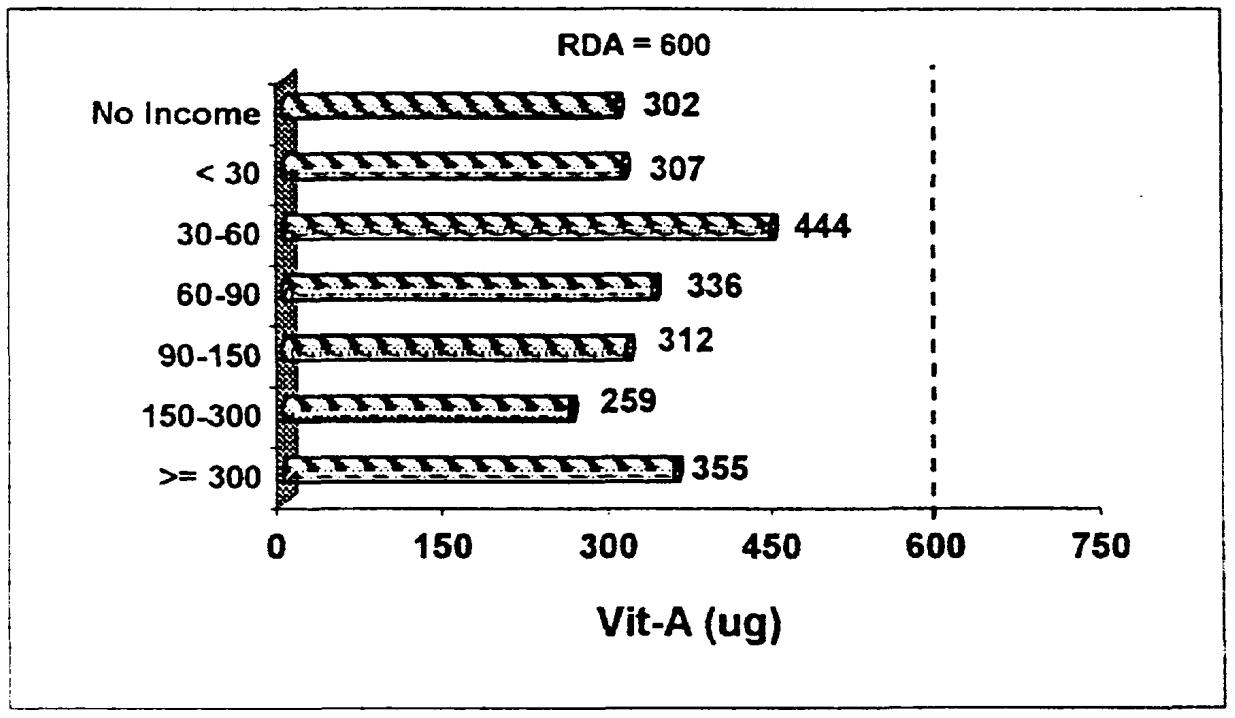


Table 6.1 AVERAGE CONSUMPTION OF FOODSTUFFS (g/CU/day) BY COMMUNITY

COMMUNITY	No of HHs	Cereals & millets	Pulses & Legumes	Leafy Vegetables	Other Vegetables	Roots & Tubers	Nuts& Oilseeds	Condiments & Spices	Fruits	Fish	Other Flesh Foods	Milk & Milk Products	Fats& oils	Sugar & Jaggery
Scheduled Tribes	455	493	34	24	44	32	3	10	17	4	2	56	10	19
Scheduled Cast	744	471	26	13	39	35	8	13	23	9	4	40	9	15
Backward Comm	1122	435	25	13	48	46	22	14	26	24	4	87	11	21
Others Communities	1036	430	32	13	52	51	21	14	26	14	6	130	15	26
Pooled	3357	450	29	15	47	43	16	14	24	15	4	85	12	21

Table 6.2 AVERAGE INTAKE OF NUTRIENTS (CU/day) BY COMMUNITY

COMMUNITY	No of HHs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)
Scheduled Tribes	455	55.1	22.9	2125	461	26.0	361	1.4	.9	12	40
Scheduled Cast	744	49.8	20.8	2035	417	24.3	237	1.1	.8	12	35
Backward Comm	1122	53.3	31.3	2094	519	23.7	291	1.1	.9	13	41
Others Communities	1036	56.2	37.6	2169	626	25.6	327	1.3	1.1	13	43
States Pooled	3357	53.7	29.8	2108	521	24.8	300	1.2	.9	13	40

Table 6.3 AVERAGE CONSUMPTION OF FOODSTUFFS (g/CU/day) BY TYPE OF FAMILY

TYPE OF FAMILY	No of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegetables	Other Vegetables	Roots & Tubers	Nuts& Oilseeds	Condiments & Spices	Fruits	Fish	Other Flesh Foods	Milk & Milk Products	Fats& oils	Sugar & Jaggery
Nuclear	1844	443	28	15	46	45	17	13	24	16	5	86	12	21
Joint	642	458	29	12	49	38	16	13	28	14	5	90	12	20
Extended	871	456	31	17	47	45	16	14	21	14	2	82	11	22
Pooled	3357	450	29	15	47	43	16	14	24	15	4	85	12	21

Table 6.4 AVERAGE INTAKE OF NUTRIENTS (CU/day) BY TYPE OF FAMILY

TYPE OF FAMILY	Number of Hhs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)
Nuclear	1844	53.3	30.5	2092	508	24.3	307	1.1	.9	13	40
Joint	642	54.7	29.8	2132	487	24.5	272	1.2	1.0	13	39
Extended	871	53.6	28.2	2125	576	25.8	306	1.2	1.0	12	41
States Pooled	3357	53.7	29.8	2108	521	24.8	300	1.2	.9	13	40

Table 6.5 AVERAGE INTAKE OF FOODSTUFFS (g/CU/day) BY TYPE OF HOUSE

Type of Family	No. of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegeta-bles	Other Vegeta-bles	Roots & Tubers	Nuts& Oilseeds	Condi-ments & Spices	Fruits	Fish	Other Flesh Foods	Milk and Milk Products	Fats& oils	Sugar & Jaggery
Kutcha	848	491	24	19	41	46	5	13	28	9	4	44	9	12
Semi Pucca	2148	442	31	13	47	40	16	13	20	14	3	89	12	24
Pucca	361	399	28	13	59	57	44	17	40	39	11	161	14	21
States Pooled	3357	450	29	15	47	43	16	14	24	15	4	85	12	21

Table 6.6 AVERAGE INTAKE OF NUTRIENTS (CU/day) BY TYPE OF HOUSE

Type of Family	No. of HHs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)	New Iron (mg)	Folic Acid (µg)
Kutcha	848	50.1	19.1	2083	412	24.5	327	1.0	.8	13	42	12.0	137.8
Semi Pucca	2148	54.3	30.9	2100	535	25.0	275	1.3	1.0	13	37	15.2	158.0
Pucca	361	58.4	47.9	2218	701	23.7	384	1.0	1.1	13	56	13.2	158.8
States Pooled	3357	53.7	29.8	2108	521	24.8	300	1.2	.9	13	40	14.2	153.0

Table 6.7 AVERAGE INTAKE OF FOODSTUFFS (g/CU/day) BY LAND HOLDING STATUS

Land Holding Status (Acres)	No. of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegeta-bles	Other Vegeta-bles	Roots & Tubers	Nuts& Oilseeds	Condi-ments & Spices	Fruits	Fish	Other Flesh Foods	Milk and Milk Products	Fats& oils	Sugar & Jaggery
No Land	1309	429	24	14	43	43	18	13	24	21	5	77	11	19
1-5	1543	464	29	16	51	46	16	13	24	14	4	78	11	21
5-10	296	471	40	11	44	34	9	14	22	3	5	97	13	26
10-20	138	466	37	13	49	42	13	15	27	7	4	162	17	28
20-30	49	426	47	7	47	39	17	21	19	10	2	193	22	37
>= 30	22	357	48	14	41	27	6	15	26	3	0	244	22	33
States Pooled	3357	450	29	15	47	43	16	14	24	15	4	85	12	21

Table 6.8 AVERAGE INTAKE OF NUTRIENTS (CU/day) BY LAND HOLDING STATUS

Land Holding Status (Acres)	Number of Households	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)
No Land	1309	51.7	29.2	2016	480	23.5	295	1.1	.9	12	38
1-5	1543	53.3	28.5	2143	531	25.0	303	1.2	.9	12	43
5-10	296	58.2	30.2	2209	537	26.5	265	1.4	1.0	14	34
10-20	138	62.6	40.0	2314	674	28.5	354	1.5	1.2	15	41
20-30	49	64.1	47.7	2326	700	27.6	345	1.6	1.3	14	33
>=30	22	56.9	44.1	2029	724	24.8	415	1.3	1.2	12	38
States Pooled	3357	53.7	29.8	2108	521	24.8	300	1.2	.9	13	40

Table 6.9 AVERAGE INTAKE OF FOODSTUFFS (g/CU/day) BY PER CAPITA INCOME

Per Capita Income (Rs./Month)	No. of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegeta-bles	Other Vegeta-bles	Roots & Tubers	Nuts& Oilseeds	Condi-ments & Spices	Fruits	Fish	Other Flesh Foods	Milk and Milk Products	Fats& oils	Sugar & Jaggery
No Income	6	449	41	15	0	15	11	12	5	11	0	115	9	19
< 30	5	531	36	15	38	20	11	9	32	0	18	78	16	25
30-60	49	507	26	41	42	34	3	9	7	2	2	44	7	11
60-90	214	497	22	25	41	37	4	8	15	4	2	35	8	13
90-150	618	486	27	20	37	40	4	11	22	4	2	45	9	15
150-300	1085	464	31	13	41	36	8	14	21	7	3	63	11	20
300-600	813	423	28	10	50	48	23	15	27	25	6	98	12	24
600-900	289	411	28	15	65	51	32	15	30	28	7	136	14	27
900-1500	187	385	30	11	67	61	48	14	32	36	9	193	18	29
>= 1500	91	370	36	14	74	73	62	16	39	45	10	263	20	32
States Pooled	3357	450	29	15	47	43	16	14	24	15	4	85	12	21

Table 6.10 AVERAGE INTAKE OF NUTRIENTS (CU/day) BY PER CAPITA INCOME

Per Capita Income (Rs./Month)	No. of HHs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)
No Income	6	61.2	32.1	2063	452	22.8	302	1.3	1.1	12	17
< 30	5	68.7	36.0	2479	881	32.1	307	2.1	1.2	19	35
30-60	49	49.3	16.0	2073	471	27.6	444	1.0	.9	12	47
60-90	214	48.1	16.3	2042	394	24.8	336	1.0	.8	12	39
90-150	618	50.6	19.8	2068	434	25.8	312	1.2	.9	13	38
150-300	1085	52.2	24.4	2079	463	25.0	259	1.2	.9	13	35
300-600	813	54.6	34.1	2097	561	23.6	287	1.1	1.0	12	40
600-900	289	58.0	42.1	2172	643	24.5	338	1.2	1.1	13	49
900-1500	187	61.7	56.1	2281	750	24.1	335	1.2	1.2	13	56
>= 1500	91	67.6	68.4	2431	914	26.1	462	1.3	1.4	14	71
States Pooled	3357	53.7	29.8	2108	521	24.8	300	1.2	.9	13	40

Table 6.11 AVERAGE INTAKE OF FOODSTUFFS (g/CU/day) BY MAJOR OCCUPATION OF HEAD OF HOUSEHOLD

MAJOR OCCUPATION	No. of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegeta-	Other Vegeta-bles	Roots & Tubers	Nuts& Oilseeds	Condi-ments & Spices	Fruits	Fish	Other Flesh Foods	Milk and Milk Products	Fats& oils	Sugar & Jaggery
Landless Agri. Labourer	506	434	25	7	38	37	15	15	18	16	5	61	9	20
Other Laborer	411	492	23	29	44	43	3	9	23	6	3	27	9	10
Owner Cultivator	812	459	35	14	49	45	13	14	22	7	4	124	14	25
Owner + Tenant Cultivator	14	505	19	47	66	49	9	7	37	1	0	78	15	12
Tenant Cultivator + Agri. Laborer	538	496	31	11	37	28	6	14	23	6	2	50	10	18
Artisans	269	429	24	14	42	40	19	14	21	23	3	72	11	21
Service	372	404	31	15	58	62	29	14	30	29	7	126	16	26
Business	197	421	26	14	55	52	23	13	34	25	7	114	13	24
Others	238	383	22	15	65	56	48	14	30	40	4	116	11	24
Pooled	3357	450	29	15	47	43	16	14	24	15	4	85	12	21

Table 6.12 AVERAGE NUTRIENT INTAKE (CU/day) BY MAJOR OCCUPATION

MAJOR OCCUPATION	No. of HHs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)
Landless Agri. Laborer	506	51.7	26.0	1989	450	23.6	198	1.2	.9	12	30
Other Laborer	411	47.9	16.3	2041	351	24.7	381	.9	.8	12	46
Owner Cultivator	812	57.2	33.7	2205	597	25.8	325	1.3	1.1	13	39
Owner + Tenant Cultivator	14	54.7	30.1	2213	422	27.5	528	1.3	1.0	14	67
Tenant Cultivator + Agri. Laborer	538	53.6	22.0	2142	497	26.4	235	1.3	.9	13	32
Artisans	269	50.6	28.6	2013	484	23.5	330	1.0	.9	12	37
Service	372	56.5	41.2	2154	618	24.1	346	1.1	1.0	13	51
Business	197	54.2	35.2	2117	569	23.7	315	1.1	1.0	13	51
Others	238	544	44 1	2094	623	23.0	308	1.0	1.0	12	50
States Pooled	3357	53.7	29.8	2108	521	24.8	300	1.2	.9	13	40

3.2.4.5 *Income*

As observed in the earlier studies, the intake of cereals and millets tended to decrease with increase in income. The intakes of income-elastic protective foods,

which are tended to increase with increase in income. The intake levels of various nutrients improved with increase in the *per capita* income of the household.

3.2.4.6 *Major occupation of Households*

The average consumption of protective foods such as vegetables, milk and milk products, as well as other income elastic foods, such as fats and oils and sugar and jaggery was relatively better among owner cultivation, business/service households, as compared to those involved on agricultural labour and other labour. This was also reflected in the low intake of various nutrients observed among labourers.

SOCIO ECONOMIC STATUS and FOOD INTAKE

* **Higher intake of cereals, pulses and GLV in the HHs of SC & ST**
* **Better intake of micronutrient rich foods in HHs living in *pucca* or *semi-pucca* houses.**
* **Decrease in intake of cereals & millets with increasing income**
* **Higher intakes of income-elastic foods in HHs involved in owner-cultivation, business and service**

3.2.5 Nutritional Status Vs. Socio-Economic Variables

The nutritional status of preschool children in the present study was compared with different socio-economic variables, such as community, type of family, type of house, land holding status, per capita income and occupation of head of households in the present survey **(Tables-7.1 to 7.12).**

Preschool Children

3.2.5.1 *Community*

A higher proportion of children of scheduled tribes (10.4) were severely undernourished followed by scheduled castes (7.3), backward communities (6.5) and other castes (5.3). A reverse trend was observed with respect to the normal grade children (5% to 10.9%).

Table 7.1 DISTRIBUTION (%) OF 1-5 YEARS CHILDREN ACCORDING TO GOMEZ CLASSIFICATION AND COMMUNITY

Community	n	Nutritional Grades*			
		Normal	Under nutrition	Moderate	Severe
ST	1047	5.0	33.7	50.9	10.4
SC	1957	7.1	37.9	47.7	7.3
BC	2255	8.7	40.2	44.7	6.5
Others	2116	10.9	42.8	41.0	5.3
Pooled	7375	8.4	39.4	45.3	6.9

*: NCHS Standards

3.2.5.2 *Type of family*

The proportion of children with severe undernutrition was higher among the nuclear families (7.4) as compared to the joint (6.5) and extended nuclear families (6.2).

The percentage of normal grade children were marginally higher among the extended (9%) and joint families (8.2%) as compared to the children of nuclear families.

Table 7.2 DISTRIBUTION (%) OF 1-5 YEARS CHILDREN ACCORDING TO GOMEZ CLASSIFICATION AND TYPE OF FAMILY

Type of Family	n	Nutritional Grades*			
		Normal	Under nutrition	Moderate	Severe
Nuclear	4122	8.1	37.8	46.6	74
Joint	1360	8.2	41.4	43.9	6.5
Extended	1893	9.0	41.4	43.4	6.2
Pooled	7375	8.4	39.4	45.3	6.9

*: NCHS Standards

3.2.5.3 *Type of house*

The percent prevalence of nutritionally 'at risk' children (<75% weight for age of NCHS standards) was higher among the HHs living in *kutcha* houses (53.8) as compared to the children in *pucca* houses (40.3%).

Table 7.3 DISTRIBUTION (%) OF 1-5 YEARS CHILDREN ACCORDING TO GOMEZ CLASSIFICATION AND TYPE OF HOUSE

Type of House			Nutritional Grades *		
	n	Normal	Under nutrition	Moderate	Severe
Kutcha	2266	6.7	39.5	46.6	7.2
Semi Pucca	4520	8.4	38.6	45.9	7.1
Pucca	589	14.4	45.3	35.7	4.6
Pooled	7375	8.4	39.4	45.3	6.9

*: NCHS Standards

3.2.5.4 *Land holdings*

No significant differences were observed in the distribution of children by Gomez grades, according to land holdings status.

3.2.5.5 *Income*

The proportion of normal children tended to increase with Increase in *per capita* income of HHs (5.3% to 23.8%) and a reverse trend was seen with respect to the severe undernutrition (10.5% to 7.9%).

Table 7.4 DISTRIBUTION (%) OF 1-5 YEARS CHILDREN ACCORDING TO GOMEZ CLASSIFICATION AND HOUSEHOLD LAND HOLDINGS STATUS

Land (Acres)	n	Nutritional Grades*			
		Normal	Under nutrition	Moderate	Severe
No Land	3176	9.0	39.1	44.5	7.4
1-5	377	8.8	47.2	38.5	5.6
5-10	419	7.4	34.6	51.3	6.7
10-20	1116	7.5	40.1	45.5	6.9
20-30	829	7.7	38.5	46.1	7.7
>=30	1458	8.2	39.5	46.4	5.8
Pooled	7375	8.4	39.4	45.3	6.9

*: NCHS Standards

Table 7.5 DISTRIBUTION%) OF 1-5 YRS.CHILDREN ACCORDING TO GOMEZ CLASSIFICATION AND AVERAGE PER CAPITA INCOME OF HOUSEHOLD

Per Capita Income (Rs./Month)	n	Nutritional Grades*			
		Normal	Under nutrition	Moderate	Severe
No Income	19	5.3	31.6	52.6	10.5
<30	10	10.0	40.0	50.0	.0
30-60	211	5.7	36.0	50.2	8.1
60-90	635	5.2	35.3	50.2	9.3
90-150	1760	6.6	38.8	46.9	7.5
150-300	2730	7.2	37.9	48.0	6.9
300-600	1352	11.3	42.5	39.9	6.3
600-900	387	11.1	47.8	37.5	3.6
900-1500	208	20.7	41.3	33.7	4.3
>= 1500	63	23.8	52.4	15.9	7.9
Pooled	7375	8.4	39.4	45.3	6.9

*: NCHS Standards

3.2.5.6 *Major occupation of head of the household*

The percent prevalence of normal grade children was maximum among those HHs involved in occupations like service and business (12.5 each) followed by agricultural labourers (6.6%) and labourers (5.5%). A reverse trend was observed with respect to severe undernutrition.

Adults

3.2.5.7 *Community*

The prevalence of Chronic Energy Deficiency (CED) was higher among the Scheduled Tribes (56.9%) and Scheduled Castes (53%) as compared to Backward Communities (43.4%) and other castes (42.1%). A reverse trend was seen with respect to normal adults.

Table 7.6 DISTRIBUTION (%) OF 1-5 YEARS CHILDREN ACCORDING TO GOMEZ CLASSIFICATION AND OCCUPATION OF HEAD OF HOUSEHOLD

Major Occupation	n	Nutritional Grades*			
		Normal	Under nutrition	Moderate	Severe
Landless Agri. Laborer	1464	6.6	38.5	46.6	8.3
Other Laborer	978	5.5	36.8	50.7	7.0
Owner Cultivator	1579	8.7	40.6	44.6	6.0
Owner + Tenant Cultivator	47	2.1	42.6	46.8	8.5
Tenant Cultivator + Agri. Laborer	1342	6.6	36.7	49.2	7.5
Artisans	574	9.9	35.0	45.5	9.6
Service	703	12.5	42.4	40.5	4.6
Business	391	12.5	45.0	36.3	6.1
Others	297	15.2	51.9	29.3	3.7
Pooled	7375	8.4	39.4	45.3	6.9

*: NCHS Standards

Table 7.7 DISTRIBUTION (%) OF ADULTS (>= 18 Years) ACCORDING TO BMI* CLASSIFICATION AND COMMUNITY

Community	n	BMI Grades						
		<16 CED III	16-17 CED II	17-18.5 CED I	18.5-20 Low Normal	20-25 Normal	25-30 Obese I	>=30 Obese II
ST	3906	12.6	15.4	28.9	25.2	16.6	1.2	.1
SC	6319	12.3	13.8	27.0	23.6	20.8	2.3	.2
BC	8737	9.6	11.4	22.4	21.4	28.5	6.1	.7
Others	9338	9.7	10.5	21.9	20.5	30.1	6.3	1.0
Pooled	28300	10.6	12.2	24.2	22.1	25.7	4.6	.6

*: Body Mass Index

3.2.5.8. *Type of family*

No significant differences were observed in the distribution of adults according to BMI grades by type of family.

Table 7.8 DISTRIBUTION (%) OF ADULTS (>= 18 Years) ACCORDING TO BMI* CLASSIFICATION AND TYPE OF FAMILY

Type of Family	n	BMI Grades						
		<16 CED III	16-17 CED II	17-18.5 CED I	18.5-20 Low Normal	20-25 Normal	25-30 Obese I	>=30 Obese II
Nuclear	14334	9.8	12.8	24.4	22.5	25.3	4.6	. 6
Joint	5919	10.9	11.8	23.7	20.2	27.5	5.2	..8
Extended	8047	12.0	11.5	24.0	22.9	25.0	4.2	..5
Pooled	28300	10.6	12.2	24.2	22.1	25.7	4.6	.6

*: Body Mass Index

3.2.5.9 Type of house

The prevalence of CED was higher among the adults living in kutcha houses (53.1%) as compared to semi-pucca (47%) or pucca houses (29%).

Table 7.9 DISTRIBUTION (%) OF ADULTS (>= 18 Years) ACCORDING TO BMI* CLASSIFICATION AND TYPE OF HOUSE

Type of House	n	BMI Grades						
		<16 CED III	16-17 CED II	17-18.5 CED I	18.5-20 Low Normal	20-25 Normal	25-30 Obese I	>=30 Obese II
Kutcha	7319	12.3	13.5	27.3	24.6	19.8	2.3	.1
Semi Pucca	18119	10.6	12.4	24.3	21.7	26.2	4.3	.5
Pucca	2862	6.7	7.3	14.9	18.5	37.4	12.8	2.4
pooled	28300	10.6	12.2	24.2	22.1	25.7	4.6	.6

*: Body Mass Index

3.2.5.10 *Land holdings*

The nutritional status of adults by BMI grades was observed to be similar, irrespective of the extent of land holdings.

Table 7.10 DISTRIBUTION (%) OF ADULTS (>= 18 Years) ACCORDING TO BMI* CLASSIFICATION AND LAND STATUS

Land (Acres)	n	BMI Grades						
		<16 CED III	16-17 CED II	17-18.5 CED I	18.5-20 Low Normal	20-25 Normal	25-30 Obese I	>=30 Obese II
No Land	10539	10.5	12.2	23.6	21.9	26.0	5.1	.7
1-5	2060	8.6	10.6	18.6	18.6	35.1	7.4	1.0
5-10	1556	10.8	12.4	26.3	23.8	23.3	3.1	.2
10-20	4547	11.2	12.7	25.2	23.0	23.6	3.9	.4
20-30	3244	10.5	11.7	25.7	22.9	24.9	3.6	.6
>=30	6354	11.1	12.7	24.7	22.3	24.5	4.3	.5
Pooled	28300	10.6	12.2	24.2	22.1	25.7	4.6	.6

*: Body Mass Index

3.2.5.11 *Income*

The prevalence of CED among adults tended to decrease with increase of income from 55.6% in HHs with PCI of <Rs.30 per month to 23.3% in HHs with $\geq$ Rs.1500/-. The percentage of normals was maximum among those having per capita income of Rs.1500/- per month.

3.2.5.12 *Occupation of head of the HH*

The proportion of adults with normal BMI was maximum among those in service (54.9%) followed by business (52.5%), landless agricultural labourers (43.6%), other labourers (46.5%) and cultivation (42-49), while the prevalence of Chronic Energy Deficiency (CED) was maximum among tenant cultivators and landless agricultural labourers (56.5%) and least in business (36.5%) and service (33.6%).

Table 7.11 DISTRIBUTION (%) OF ADULTS (>= 18 Years) ACCORDING TO BMI* CLASSIFICATION AND PER CAPITA INCOME

Per Capita Income (Rs./Month)	n	BMI Grades						
		<16 CEDIII	16-17 CEDII	17-18.5 CEDI	18.5-20 Low normal	20-25 Normal	25-30 Obese I	>=30 Obese II
No Income	67	22.4	10.4	31.3	10.4	19.4	6.0	.0
<30	45	8.9	8.9	37.8	11.1	28.9	4.4	.0
30-60	552	13.2	15.8	29.9	23.6	15.6	1.8	.2
50-90	1951	11.7	15.1	28.2	26.6	17.1	1.2	.1
90-150	5295	12.2	13.3	26.9	24.9	20.8	1.6	.3
150-300	9181	12.1	13.6	26.6	22.5	22.2	2.7	.3
300-600	6478	9.7	11.2	22.4	21.4	28.8	5.9	.6
600-900	2384	7.4	9.0	17.5	19.6	36.6	8.6	1.3
900-1500	1630	5.6	7.0	16.0	16.9	38.5	13.7	2.4
>= 1500	717	4.7	7.4	11.2	12.3	44.1	17.2	32
Pooled	28300	10.6	12.2	24.2	22.1	25.7	4.6	.6

*: Body Mass Index

Table 7.12 DISTRIBUTION (%) OF ADULTS (>= 18 Years) ACCORDING TO BMI* CLASSIFICATION AND OCCUPATION OF HEAD OF HOUSEHOLD

Major Occupation	n	BMI Grades						
		<16 CED III	16-17 CED II	17-18.5 CED I	18.5-20 Low Normal	20-25 Normal	25-30 Obese I	>=30 Obese II
Landless Agri. Laborer	4147	12.4	14.9	26.3	21.1	22.5	2.5	.3
Other Laborer	3248	11.0	12.6	28.0	27.5	19.0	1.7	.1
Owner Cultivator	7562	10.6	11.7	24.4	22.3	25.7	4.6	8
Owner + Tenant Cultivator	194	11.3	13.4	24.7	28.4	20.6	1.5	.0
Tenant Cultivator + Agri. Laborer	4324	12.4	14.8	29.3	23.0	18.8	1.6	.1
Artisans	2141	10.2	13.1	23.0	22.1	26.2	4.7	.7
Service	2990	8.0	9.3	17.8	20.0	34.9	9.2	1.0
Business	1539	8.1	9.7	18.7	19.6	32.9	9.6	1.4
Others	2155	9.0	7.8	16.8	17.8	37.3	9.7	1.5
Pooled	28300	10.6	12.2	24.2	22.1	25.7	4.6	.6

*: Body Mass Index

SOCIO ECONOMIC STATUS and NUTRITION STATUS

- Higher severe undernutrition in children of SC & ST
- Higher proportion of at risk children (< 75% Wt for age) from *kutcha* houses.
- Higher the per capita income of HHs larger would be normal children
- CED in adults was more among SCs and STs, and those living in *kutcha* houses.

3.3 Food and nutrient intake of individuals

The average daily intake of foods and nutrients by family members was assessed using 24-hour recall method of diet survey. The average intakes of 14,392 individuals were calculated for different age, sex and physical activity groups. These individuals are in accordance with those for which nutrient requirements are suggested by ICMR Expert Committee. The salient observations of food and nutrient intakes are summarised in **Tables- 8.1 to 8.8** and discussed below:

There are large inter-state differences in the mean food and nutrient intakes within each of these age, sex and activity groups.

3.3.1 *Food intake*

3.3.1.1 *Preschool Children*

The average intake of all the foods was lower than the suggested levels among 1-3 and 4-6 years children. However, the intake of protective foods such as milk and milk products, green leafy vegetables, fats and oils and sugar and jaggery were found to be grossly deficient in these children.

The mean intake of cereals and millets was 152 g as against the RDI of 175 g among 1-3 years children, while there was a marginal deficit of 10% in 4-6 years children.

The average cereal intake ranged from 107 g in Kerala and was the highest (168 g) in Karnataka among 1-3 years children. Similarly in 4-6 years age group, the lowest intake was observed in Kerala (162 g) and highest was noticed in the State of Andhra Pradesh (277 g).

3.3.1.2 *School age children*

Among the school age children, the average intake of cereals and millets was 308 g and 356 g respectively in 7-9 and 10-12 years age groups. The intake of pulses and legumes was about 55% of the recommended levels. As observed in the preschool children, the intake of various protective foods was lower than the RDI.

3.3.1.3 *Adolescents*

The mean intake of cereals and millets was 411 g and 467 g in 13-15 and 16-17 years age groups respectively. The intake of green leafy vegetables, milk and milk products, fats and oils was observed to be low.

3.3.1.4 *Adults*

In general, the average consumption of cereals among adult males was 538 g, which was above the RDI. The consumption of micronutrient rich foods such as other vegetables and roots and tubers were comparable to RDI, while the intake of GLV was very low.

Similar trend was also observed in case of adult females with respect to the various foodstuffs. The intake of cereals and millets was found maximum in Karnataka (635 g) followed by Orissa (610 g), Andhra Pradesh (580 g), Maharashtra (533 g), Gujarat (526 g), Tamil Nadu (497 g) and lowest in Kerala (386 g) among adult males. Where as among adult females, the intake ranged from 547 g in Karnataka to 315 g in Kerala. In case of pulses, the intake was more than the RDI in Karnataka (52 g) and the intake is maximum as compared to other States.

Table 8.1 MEAN INTAKE OF FOODSTUFFS (g/day) BY AGE AND SEX

Age (Years)	Sex	No of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegeta-bles	Other Vegeta-bles	Roots & Tubers	Nuts& Oilseeds	Condi-ments & Spices	Fruits	Fish	Other Flesh Foods	Milk & Milk Products	Fats& oils	Sugar & Jaggery
1-3	Boys	724	150	12	5	13	16	3	6	13	3	1	69	5	14
	Girls	629	155	13	5	16	16	4	5	14	7	2	63	5	16
	Pooled	1353	152	13	5	14	16	4	5	14	5	2	66	5	15
4-6	Boys	659	246	20	10	25	25	6	9	25	7	2	64	8	18
	Girls	606	239	20	10	25	32	6	8	18	6	2	53	8	16
	Pooled	1265	243	20	10	25	28	6	9	22	7	2	59	8	17
7-9	Boys	565	311	25	10	28	32	9	10	17	9	2	53	9	18
	Girls	559	305	25	15	32	30	8	10	19	8	2	50	8	16
	Pooled	1124	308	25	12	30	31	8	10	18	8	2	51	9	17
10-12	Boys	493	366	26	14	34	39	11	12	20	15	3	66	10	19
	Girls	499	346	25	13	37	39	11	11	21	12	3	51	9	19
13-15	Boys	390	427	28	12	46	48	15	13	37	19	3	65	11	19
	Girls	405	396	26	17	44	52	12	11	17	15	4	60	10	20
16-17	Boys	203	511	32	21	59	50	22	15	26	26	6	71	12	20
	Girls	201	424	27	12	50	57	18	13	25	19	4	79	11	20

Table 8.2 MEAN INTAKE OF FOODSTUFFS (g/day) OF ADULT MALES BY ACTIVITY STATUS

Activity Status	No of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegeta-bles	Other Vegeta-bles	Roots & Tubers	Nuts& Oilseeds	Condi-ments & Spices	Fruits	Fish	Other Flesh Foods	Milk & Milk Products	Fats& oils	Sugar & Jaggery
Sedentary	1349	474	36	17	62	66	31	17	33	29	6	101	16	26
Moderate	2650	570	34	16	49	49	12	17	31	14	4	60	14	19
Heavy	48	575	28	36	72	35	2	13	10	5	6	65	13	19
Pooled	4047	538	35	17	54	55	18	17	31	19	5	74	14	22

Table 8.3 MEAN INTAKE OF FOODSTUFFS (g/day) OF ADULT FEMALES BY ACTIVITY

Activity Status	No of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegeta-bles	Other Vegeta-bles	Roots & Tubers	Nuts& Oilseeds	Condi-ments & Spices	Fruits	Fish	Other Flesh Foods	Milk & Milk Products	Fats& oils	Sugar & Jaggery
Sedentary	2765	414	29	15	51	58	22	14	24	25	4	81	13	22
Moderate	1632	504	32	14	40	35	6	16	29	4	4	51	12	19
Heavy	14	514	18	18	59	28	3	13	11	16	6	77	10	14
Pooled	4411	448	30	15	47	50	16	15	26	17	4	70	12	21

Table 8.4 MEAN INTAKE OF FOODSTUFFS (g/day) OF ADULT FEMALES BY PHYSIOLOGICAL STATUS AND ACTIVITY

Physiological Status	Activity Status	No of HHs	Cereals & Millets	Pulses & Legumes	Leafy Vegeta-bles	Other Vegeta-bles	Roets& Tubers	Nuts& Oilseeds	Condi-ments & Spices	Fruits	Fish	Other Flesh Foods	Milk & Milk Products	Fats& oils	Sugar & Jaggery
NPNL	Sedentary	1477	410	29	16	51	62	25	14	24	28	4	92	13	22
	Moderate	950	492	32	16	41	35	6	15	27	5	4	50	12	20
	Heavy	7	505	10	35	82	18	3	12	1	33	0	14	8	6
	Pooled	2434	442	30	16	48	51	18	14	25	19	4	75	13	21
Pregnant	Sedentary	79	432	34	15	50	38	14	14	27	12	5	80	11	16
	Moderate	48	499	23	20	30	27	8	15	24	1	7	38	11	13
	Heavy	1	767	66	0	0	0	0	6	31	0	0	67	14	33
	Pooled	128	459	30	16	42	33	12	14	25	8	6	65	11	15
Lactating	Sedentary	429	474	35	13	47	49	14	17	26	21	3	68	13	23
	Moderate	433	558	34	11	35	34	4	20	41	2	5	53	13	16
	Heavy	4	468	31	0	0	33	4	19	27	0	20	214	15	20
	Pooled	866	516	34	12	41	41	9	18	33	11	4	61	13	20

3.3.1.5 *Pregnant Women*

The average intake of all the foodstuffs was below the recommended levels. However, the intake of cereals and millets and pulses was high as compared to the intakes of non-pregnant and non-lactating women (NPNL). The average intake of cereals and millets was 432 g, while pulses and legumes was about 30 g, whereas protective foods such as leafy vegetables, milk & milk products and fats & oils was very low.

3.3.1.6 *Lactating Women*

The mean intake of all the foodstuffs, except cereals was below the RDI. The average intake of cereals was about 474 g/day in sedentary women. The consumption of foods rich in micronutrients such as other vegetables and roots and tubers was marginally lower, while the intake of leafy vegetables and milk & milk products was very low. The intake of cereals (474 g), pulses (35 g) was maximum among sedentary lactating women as compared to the intakes of non-pregnant and non-lactating sedentary women (410 g and 29 g respectively).

3.3.2 *Nutrient Intake*

3.3.2.1 *Preschool Children*

The average intake of various nutrients for the States pooled was less than RDI, except protein and folic acid (4-6 years children). The mean intake of protein was about 21 g and 31 g in the age group of 1-3 year and 4-6 year children respectively and it was on par with the recommended levels. The intake of vitamin A was very low as compared to the RDI, the extent of deficit was 67% in 1-3 years and 49% in 4-6 years. The extent of iron deficit was 28% in 1-3 years and 21% in 4-6 years age children, whereas the energy deficit was 30-35% among the preschool children.

3.3.2.2. *School age children*

The mean intake of all the nutrients except fats and oils and thiamin was below the RDI. However, the intake of protein, fat, calcium, thiamin and folic acid was above the RDI in the States of Karnataka and Kerala. The extent of energy and vitamin A deficit was about 25% and 30% respectively.

3.3.2.3 *Adolescents*

The average intake of all the nutrients was below the RDI, except total fat, thiamin and calcium (16-17 years). However, the intake of protein was also above the RDI in the State of Karnataka. The extent of deficit in the intake of energy was about 18% in males 7% in females and 10% in males, 2% in females among 13-15 years and 16-17 years respectively, while the deficit of iron was 41% in boys and 17% in females and 43% in boys and 22% in girls among 13-15 years and 16-17 years respectively.

3.3.2.4 *Adults*

The mean intake of all the nutrients except vitamin A, riboflavin and folic acid was above the recommended levels in males and females. The extent of deficit in the intake of vitamin A was 40-51%, while in case of riboflavin was 22-19%.

Table 8.5 MEAN INTAKE OF NUTRIENTS (per day) BY AGE AND SEX

Age (Years)	Sex	No of HHs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin(mg)	Niacin (mg)	Vitamin C (mg)	Folic Acid (µg)
1-3	Boys	724	20.4	12.7	794	244	8.6	133	.4	.4	4	15	55.8
	Girls	629	21.4	13.1	821	233	8.9	134	.4	.4	5	15	59.4
	Pooled	1353	20.9	12.9	807	239	8.7	133	.4	.4	5	15	57.5
4-6	Boys	659	31.6	18.3	1236	315	14.4	211	.7	.6	7	25	95.0
	Girls	606	30.7	17.6	1189	279	14.1	198	.7	.5	7	25	92.0
	Pooled	1265	31.2	18.0	1213	298	14.3	205	.7	.6	7	25	93.5
7-9	Boys	565	38.5	20.5	1481	348	17.8	206	.9	.7	9	26	113.3
	Girls	559	38.3	19.4	1453	351	18.4	251	.9	.6	9	30	117.5
	Pooled	1124	38.4	19.9	1467	350	18.1	229	.9	.7	9	28	115.4
10-12	Boys	493	45.7	24.7	1738	440	21.3	264	1.1	.8	11	33	133.2
	Girls	499	42.6	22.2	1635	420	20.3	241	1.0	.7	10	33	126.1
13-15	Boys	390	52.4	27.7	2004	504	24.2	365	1.2	.9	13	40	148.2
	Girls	405	48.0	24.1	1848	463	22.5	270	1.1	.8	12	38	142.4
16-17	Boys	203	61.7	33.2	2369	589	28.6	373	1.3	1.1	15	47	178.2
	Girls	201	51.7	29.2	2030	525	23.3	249	1.1	.9	12	40	144.0

Table 8.6 MEAN INTAKE OF NUTRIENTS (per day) OF ADULT MALES BY ACTIVITY

Activity Status	No HHs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)	Folic Acid (µg)
Sedentary	1349	62.4	41.9	2402	683	28.5	372	1.4	1.1	15	52	183.8
Moderate	2650	64.3	30.6	2532	531	30.2	350	1.5	1.1	16	43	180.2
Heavy	48	62.7	27.9	2449	610	33.3	1057	1.4	1.4	15	57	232.0
Pooled	4047	63.6	34.4	2488	582	29.7	365	1.4	1.1	16	46	182.0

Table 8.7 MEAN INTAKE OF NUTRIENTS (per day) OF ADULT FEMALES BY ACTIVITY

Activity Status	No HHs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)	Folic Acid (µg)
Sedentary	2765	52.5	32.6	2044	552	24.0	295	1.1	.9	12	43	151.9
Moderate	1632	56.0	24.8	2211	437	26.9	296	1.4	.9	14	36	159.8
Heavy	14	55.8	24.5	2175	410	25.5	291	1.1	1.0	13	39	157.8
Pooled	4411	53.8	29.7.	2106	509	25.1	295	1.2	.9	13	40	154.9

Table 8.8 MEAN INTAKE OF NUTRIENTS (per day) OF ADULT FEMALES BY PHYSIOLOGICAL STATUS AND ACTIVITY

Physiological Status	Activity Status	No of HHs	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vitamin A (µg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Vitamin C (mg)	Folic Acid (µg)
NPNL	Sedentary	1477	53.4	35.3	2070	593	24.1	311	1.1	1.0	12	44	154.8
	Moderate	950	55.2	24.5			2171	324	1.4	.9	14	36	159.8
	Heavy	7	49.2	16.1	2012	387	25.6	384	.8	.8	12	51	154.2
	Pooled	2434	54.1	31.1	2109	538	25.2	316	1.2	.9	13	41	156.8
Pregnant	Sedentary	79	50.7	27.1	2006	575	24.3	269	1.1	.9	12	39	146.5
	Moderate	48	53.4	23.5	2137	409	27.0	291	1.3	.8	14	35	142.6
	Heavy	1	96.1	32.6	3223	381	47.9	185	3.2	1.1	25	11	230.7
	Pooled	128	52.1	25.8	2064	511	25.5	276	1.2	.9	13	37	145.7
Lactating	Sedentary	429	57.5	29.6	2218	553	26.7	277	1.3	1.0	14	40	163.8
	Moderate	433	60.4	25.6	2396	430	28 4	269	1.4	1.0	15	36	167.6
	Heavy	4	59.3	37.8	2240	526	20.1	224	1.1	1.1	12	19	122.9
	Pooled	866	58.9	27.7	2307	491	27.5	273	1.4	1.0	14	38	165.5

3.3.2.5 *Pregnant Women*

The average intake of all the nutrients was lower than the RDI. The extent of deficit in the intake of important micronutrients was 55% in case of vitamin A, 42% for calcium, 37% for iron and 31% for riboflavin.

3.3.2.6. *Lactating Women*

As in the case of pregnant women, the intakes among lactating women with respect to all the nutrients were lower than the recommended levels. The extent of deficit was more with respect to vitamin A (71%), followed by vitamin C (50%) and calcium (45%).

FOOD AND NUTRIENT INTAKES IN INDIVIDUALS

- **Lower than RDI intake of all the foodstuffs, except roots & tubers in all ages**
- **Protein and folic acid consumption in preschool children was below RDI**
- **Above RDI nutrient-intakes in all except vitamin A, riboflavin and folic acid**
- **Nutrient-intakes were less than RDI among pregnant and lactating women**

3.4 TIME TRENDS IN SOCIO-ECONOMIC PROFILE

The socio-economic profile of the HHs surveyed, at the three points of time are presented in Tables **9-12** and Figs.6-9.

3.4.1 Type of House

Type of house is known to indicate the socioeconomic status of the households in the rural areas. The distribution of HHs according to type of house is presented in **Table-9 & Fig.6.** A significant (P<0.001) increase in the proportion of *semi-pucca* houses (+13%), and decrease (-12.2%) in the proportion *kutcha* houses was observed over the period. There was, however, no change in the proportion of HHs having *pucca* houses. These results, indicate that there was a marginal improvement in the housing of the community surveyed, during the last two decades.

Table 9 PERCENT DISTRIBUTION OF HHs ACCORDING TO TYPE OF HOUSE AND PERIOD OF SURVEY

Type of House	Period of Survey		
	1975-79	1988-89	1996-97
Kutcha	37.7	30.8	25.5
Semi-pucca	51.3	58.3	64.4
Pucca	11.0	10.9	10.1

χ^2 =242.57; P<0.001

3.4.2 Occupation

The distribution of the HHs according to occupational status is presented in **Table-10 & Fig.7.** In general, there was a decrease in the proportion of HHs engaged in agriculture, with concomitant increase in the proportion of those involved in service or other occupations. These changes, though marginal were found to be statistically significant (P<0.001).

Fig.6

DISTRIBUTION (% HHs) ACCORDING TO TYPE OF HOUSE AND PERIOD OF SURVEY

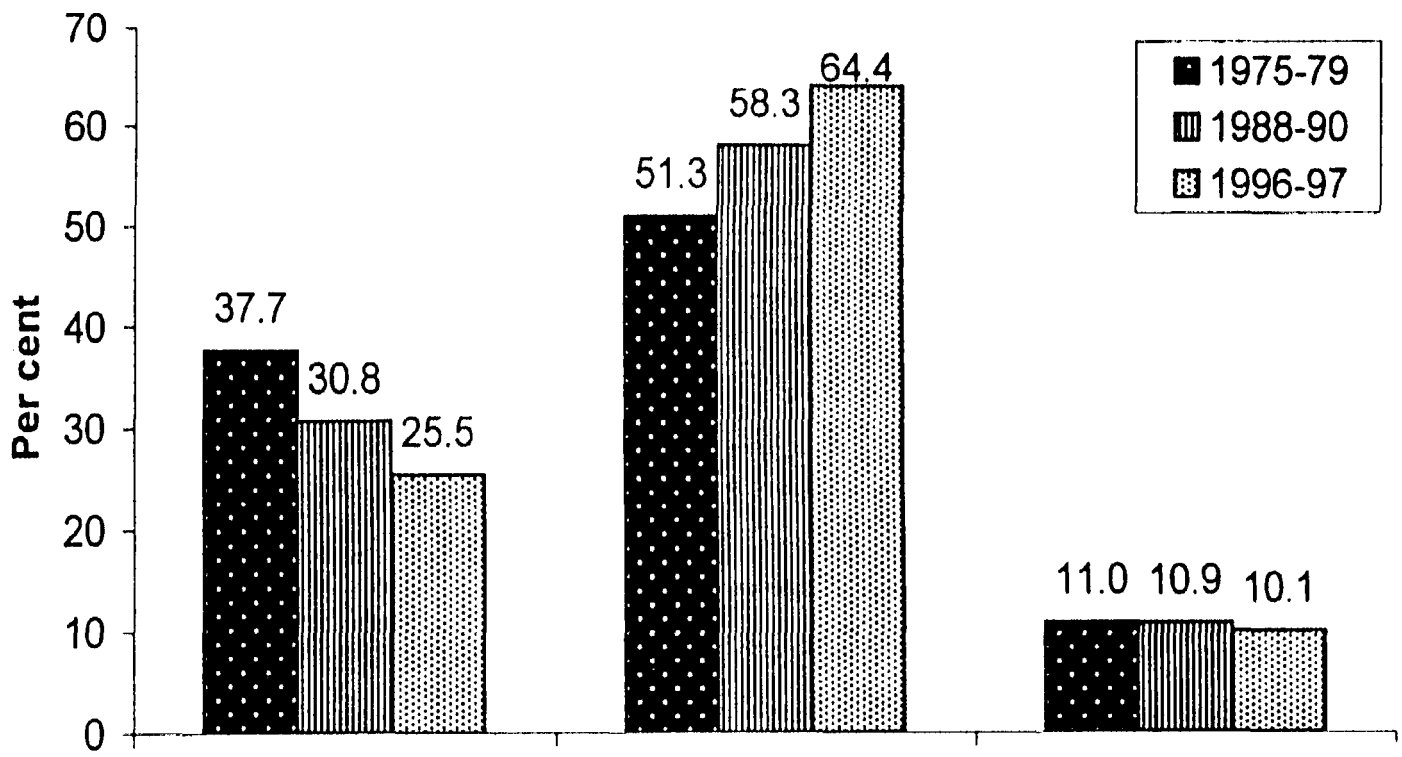


Fig.7

DISTRIBUTION (% HHs) ACCORDING TO OCCUPATION OF HEAD C HOUSEHOLD AND PERIOD OF SURVEY

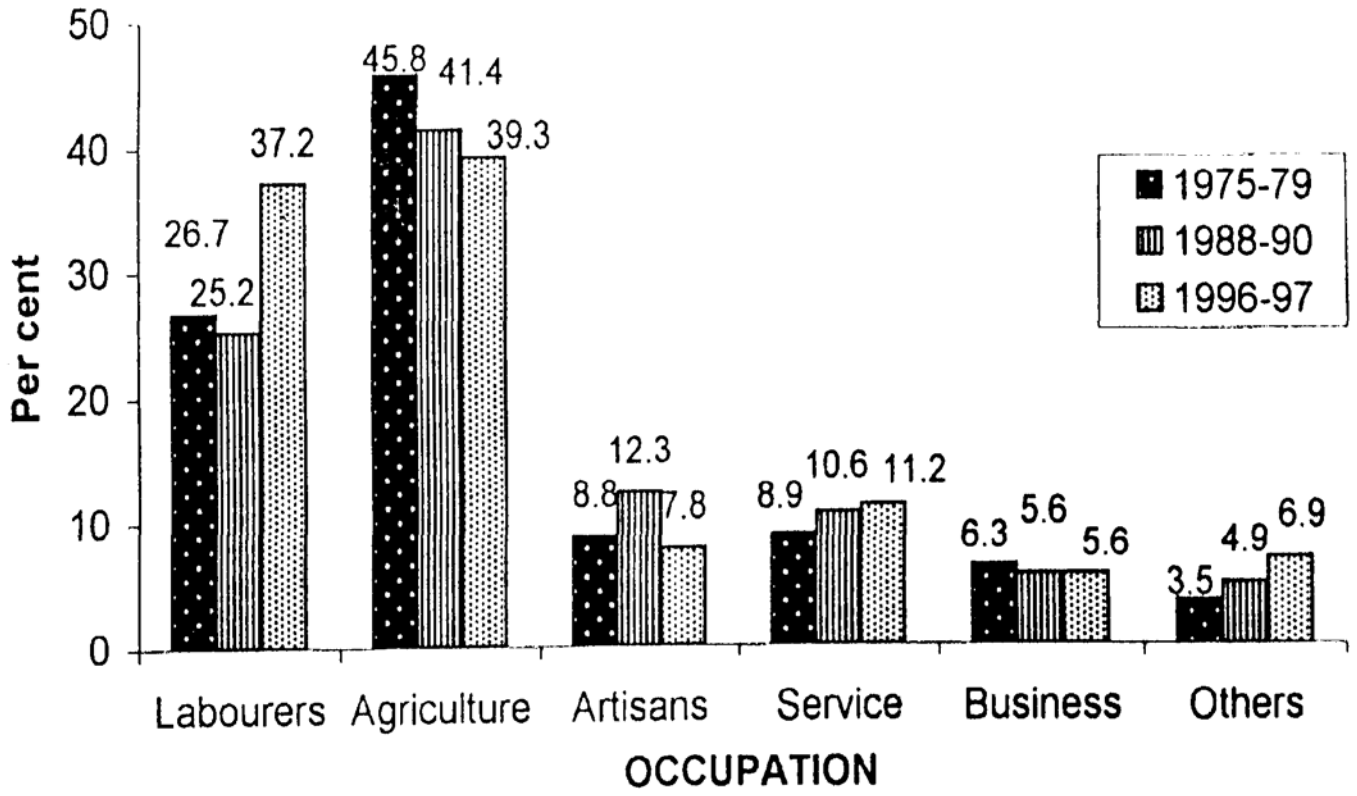


Table 10 PERCENT DISTRIBUTION OF HHs ACCORDING TO MAJOR OCCUPATION OF HEAD OF HH AND PERIOD OF SURVEY

Occupation	Period of Survey		
	1975-79	1988-89	1996-97
Labourers	26.7	25.2	29.2
Agriculture	45.8	41.4	39.3
Artisans	8.8	12.3	7.8
Service	8.9	10.6	11.2
Business	6.3	5.6	5.6
Others	3.5	4.9	6.9

χ^2 = 152.25; P<0.001

3.4.3 Land holding Status

The proportion of the HHs having no land increased from about 30% to about 41% between 1975-79 and 1996-97 (P<0.001). There was reduction in the proportion of HHs having agricultural land **(Table-11 & Fig.8).** This, perhaps, could affect food security status of the HHs adversely.

Table 11 PERCENT DISTRIBUTION OF HHS ACCORDING TO LAND OWNERSHIP AND PERIOD OF SURVEY

Land Status (Acres)	Period of Survey		
	1975-79	1988-89	1996-97
No land	29.9	47.3	41.1
<5	42.9	28.2	45.6
5-10	12.6	15.4	7.9
>10	14.6	9.1	5.4

χ^2 = 767.44; P<0.001

3.4.4 Per capita Income

The distribution of the HHs according to monthly per capita income (after adjusting for 1977 value) is presented in **Table-12 & Fig.9.** The proportion of HHs with per capita income of less than Rs.30/- showed a significant decline (P<0.001), with an increase in the proportion of HHs in other income groups. The overall monthly per capita income decreased by about Rs.4/- during 1988-90 and increased by about Rs.37/- during 1996-1997.

Table 12 PERCENT DISTRIBUTION OF HHs ACCORDING TO PER CAPITA INCOME/ MONTH* AND PERIOD OF SURVEY

Per Capita Income (Rs./month)	Period of Survey		
	1975-79 (n=5518)	1988-89 (n=5181)	1996-97 (n=13426)
<30	32.7	20.7	15.7
30-90	48.0	49.3	33.0
90-150	10.6	20.4	33.4
≥50	8.7	9.6	17.9
Average PCI	67.50	63.30	100.2

* Adjusted for the year 1977 χ^2 =2116.87; P<0.001

Fig.8
DISTRIBUTION (% HHs) ACCORDING TO LAND OWNERSHIP AND PERIOD OF SURVEY

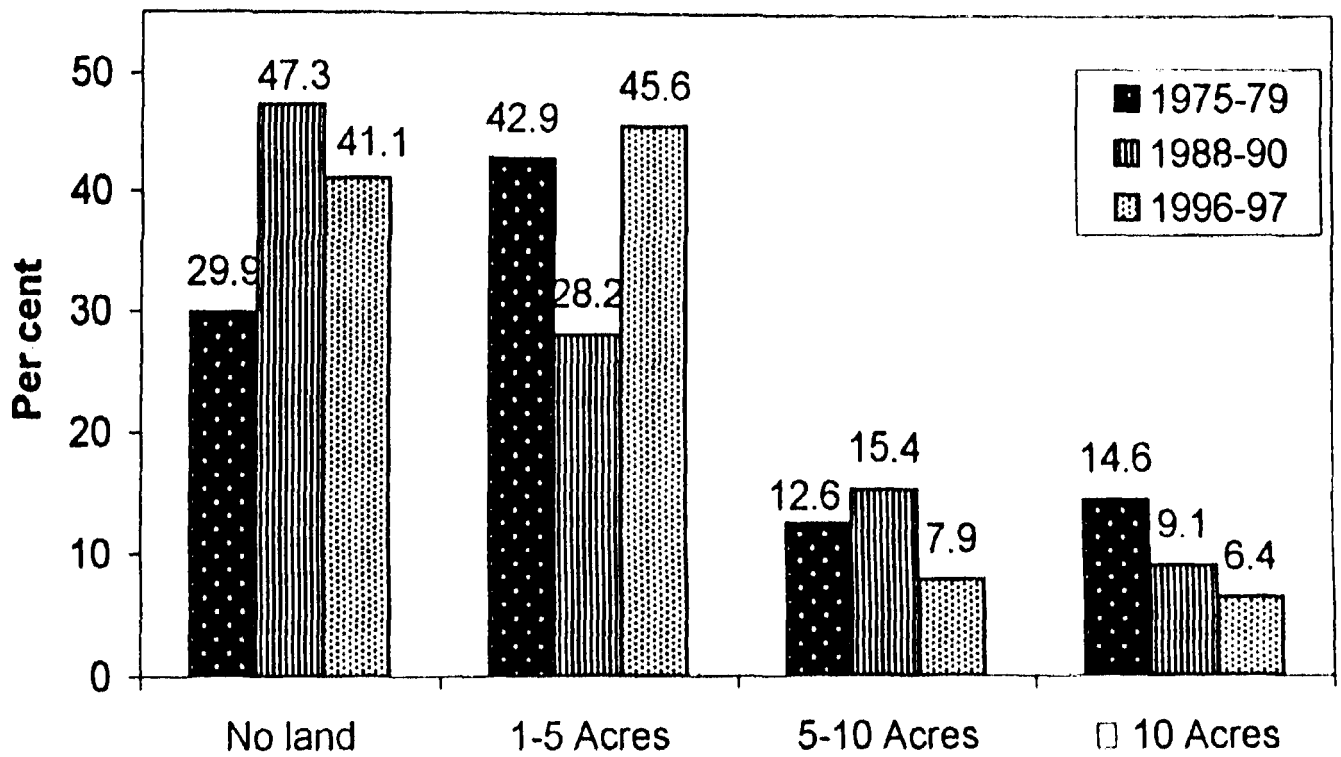
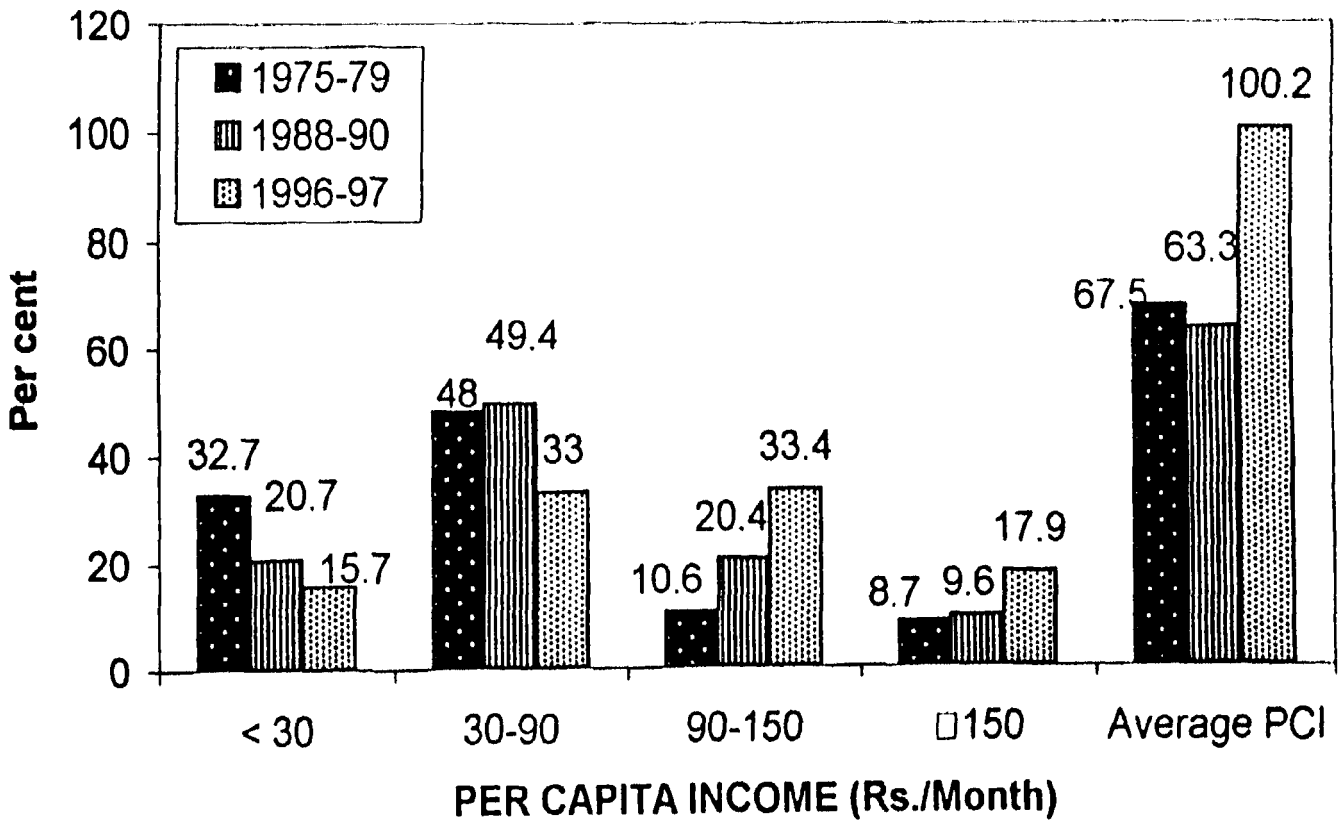


Fig.9
DISTRIBUTION (% HHs) ACCORDING TO PER CAPITA INCOME (Rs./Month) AND PERIOD OF SURVEY



3.5 TIME TRENDS IN FOOD AND NUTRIENT INTAKE OF PRESCHOOL CHILDREN

3.5.1 Food Intake

The average intakes of different foods of preschool children are presented in **Table-13.1.** The intake of all the foods was lower than the RDI in 1-3years age group. A decreasing trend was observed in the consumption of various foods from 1975-79 to 1996-97, except for the consumption of vegetables and sugar & jaggery.

Table 13.1 AVERAGE CONSUMPTION OF FOODS (g/DAY) AMONG PRESCHOOL CHILDREN

Age (Yrs)	Year	N	Cer-eals	Pul-ses	Veget ables	Nuts& Oil seeds	Condi-ments & spices	Fruits	Fish	Other flesh foods	Milk & Milk Prod	Fats & Oils	Sugar & Jaggery
1-3	1975-79	747	158	14	35	5	7	14	5	2	74	5	12
	1988-90	892	176	14	31	5	6	18	4	2	68	5	16
	1996-97	1353	152	13	35	4	6	14	5	2	66	5	15
4-6	1975-79	776	228	20	52	7	10	14	6	2	57	6	14
	1988-90	922	263	20	51	5	8	23	4	3	62	7	18
	1996-97	1265	243	20	64	6	9	22	7	2	59	8	17

3.5.2. Nutrient intake

The average intake of all the nutrients among preschool children was below the RDI. The deficit ranged from 5% in protein to 67.7% of vitamin A among children of 1-3 years, while among those of 4-6 years, the protein intake was more than RDI. The intake of vitamin A was 51.3% **(Table-13.2).** The average intake of all the nutrients, showed a decrease between 1975-79 and 1996-97 in the age groups of 1-3 years, while in 4-6 years, the average intake of all the nutrients, except calcium, iron, thiamin and protein showed an increase between 1975-79 and 1996-97.

Table 13.2 AVERAGE NUTRIENT INTAKES AMONG PRESCHOOL CHILDREN

Age (Yrs)	Year	N	Protein (g)	Total Fat (g)	Energy (Kcal)	Calcium (mg)	Iron (mg)	Vit.A (µg)	Thiamin (mg)	Ribo-flavin (mg)	Niacin (mg)	Vit.C (mg)
1-3	1975-79	747	22.8	13.7	834	304	10.2	136	0.50	0.38	5.08	15
	1988-90	892	23.7	13.5	908	256	10.2	117	0.52	0.37	5.56	14
	1996-97	1353	20.9	12.9	807	239	8.7	133	0.4	0.4	4.60	15
4-6	1975-79	776	30.2	16.0	1118	359	15.0	159	0.76	0.48	7.09	20
	1988-90	922	33.9	17.1	1260	147	15.3	153	0.83	0.52	8.40	23
	1996-97	1265	31.2	18.0	1213	298	14.3	205	0.70	0.60	7.4	25

TIME TRENDS

FOODS

- **Increase only in intake of GLV and other vegetables over period**

NUTRIENTS

- **Intakes of all major nutrients, particularly vitamin A and iron, decreased over a period of time.**

3.6 NUTRITIONAL STATUS

3.6.1 Clinical Signs

Eight thousand six hundred and sixty four preschool children were examined clinically during the present survey. The proportion of clinically normal children increased from 80.7% in 1975-79 to 93% in 1996-97 **(Table-14).** At the aggregate level, only 7% of the preschool children exhibited one or more clinical deficiency signs. The prevalence of florid cases of PEM, viz., kwashiorkor and marasmus was very low (about 0.8% each) followed by 0.7% of Bitot spots and 2.1% of angular stomatitis. The prevalence of Bitot spots was similar and did not show any change from that of 1988-90. There was a significant reduction in the prevalence of severe forms of PEM (marasmus & kwashiorkor) during 1996-97 as compared to 1975-79. Similarly, there was a decreasing trend in the prevalence of angular stomatitis from 5.7% in 1975-79 to 2.1 percent in 1996-97.

Table 14 PERCENT PREVALENCE OF NUTRITIONAL DEFICIENCY SIGNS AMONG PRESCHOOL CHILDREN

Nutritional Deficiency Signs	Year	Kerala	Tamil Nadu	Kama-taka	Andhra Pradesh	Maha-rashtra	Gujarat	Orissa	Pooled
Number	1975-79	1034	1832	2941	2631	1580	1893	660	12775
	1988-90	748	2792	1715	2394	1488	1090	911	11535
	1996-97	879	809	1665	1940	1017	635	1635	8664
NAD	1975-79	91.7	84.4	71.9	79.8	86.0	79.7	76.7	80.7
	1988-90	94.5	73.6	79.2	88.5	87.5	79.4	96.3	83.5
	1996-97	98.6	82.1	94.5	92.0	88.2	99.2	96.2	93.1
Oedema	1975-79	-	-	0.4	0.9	0.5	0	-	0.4
	1988-90	-	-	0.2	-	0.1	1.1	-	0.1
	1996-97	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1
Marasmus	1975-79	0.2	0.6	0.5	2.0	0.8	3.8	0.6	1.3
	1988-90	0.1	0.2	0.4	0.1	0.3	4.9	0.1	0.6
	1996-97	0.0	0.0	0.1	0.2	0.2	0.0	0.1	0.1
Two or more signs of PEM	1975-79	0.2	0.6	0.9	3.0	0.6	0.2	0.1	1.2
	1988-90	-	0.1	0.4	0.1	0.3		0.1	0.2
	1996-97	0.0	0.0	0.5	1.1	1.8	0.1	0.1	0.8
Bitot spots	1975-79	0.1	2.9	2.3	3.1	0.4	0.9	1.5	1.8
	1988-90	0.5	0.6	1.1	1.0	0.3	0.5	1.1	0.7
	1996-97	0.1	0.7	0.5	0.8	3.0	0.0	0.0	0.7
Angular stomatitis	1975-79	1.6	5.0	11.8	7.9	1.0	1.5	5.9	5.7
	1988-90	-	6.3	13.9	9.0	1.3	0.5	-	5.7
	1996-97	0.0	10.6	0.5	3.4	1.2	0.0	0.3	2.1

3.6.2 Anthropometry

Mean Anthropometric Measurements

The mean anthropometric measurements such as height, weight, mid upper arm circumference (MUAC) and fat fold at triceps (FFT) are presented according to the age and sex for each State in Annexure **A 3.1 to A 3.28.** In the state of Kerala, there was overall increase in heights (by 1-2 cm) and weights (2-3 kgs), both in

males as well as females in all age groups. In Gujarat, there was increase in the heights and weights among school age and adolescents of both sexes. In other States, the heights and weights remained essentially same. The distance charts for heights and weights are presented in **Figs. 10-16.**The measurements, however, were lower than the NCHS standards in all the age and sex groups.

3.6.2.1 *Preschool Children*

3.6.2.1.1 Gomez Classification

The body weights of preschool children (1-5 years) were expressed as percentage of NCHS standards and categorized into different nutritional grades based on Gomez classification. The **Tables 15-17 & Fig.17** provide distribution of body weights as percent of NCHS Standards according to sex.

When the data for all the States was pooled, there was a significant decline in the proportion of severely malnourished children from 15 percent in 1975-79 to 6.2 percent in 1996-97, with concomitant increase in the proportion of normal children from 5.9 percent in 1975-79 to 8.9% in 1996-97 ($P < 0.05$). There were no significant differences in the prevalence of under nutrition between boys and girls ($P > 0.05$).

When the results were considered for individual States, a declining trend in severe degree of malnutrition was noticed in 6 of the 7 States, viz. Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra and Orissa. However, in the State of Gujarat, the prevalence of severe undernutrition increased from about 13% in 1975-79 to about 17% in 1996-98. In the States of Maharashtra, Kerala and Andhra Pradesh, the current prevalence rates were, similar to those observed in 1988-90. **Table-25** provides distribution of children according to nutritional status by age. It was observed that the prevalence of severe undernutrition was relatively higher among 1-3 years children (8.1%) as compared to 3-5 year children (4.6%).

Table 15 DISTRIBUTION (%) OF 1-5 YEARS(BOYS) BY NUTRITIONAL STATUS* (Weight For Age) - GOMEZ CLASSIFICATION

STATE	Period	N	Nutritional Grades			
			>=90	75-90	60-75	<60
Kerala	1975+	373	7.5	32.4	49.9	10.2
	1988+	451	16.6	47.7	33.3	2.4
	1996+	482	18.5	53.1	26.6	1.9
Tamil Nadu	1975+	589	6.6	34.5	46.2	12.7
	1988+	1743	7.2	42.1	46.1	4.6
	1996+	395	14.7	49.9	32.4	3.0
Karnataka	1975+	561	3.7	30.3	52.1	13.9
	1988+	1066	3.8	37.7	50.8	7.7
	1996+	858	11.2	37.9	45.2	5.7
Andhra Pradesh	1975+	427	4.4	29.7	49.1	16.8
	1988+	1466	7.5	40.7	44.9	6.9
	1996+	1034	5.9	37.7	49.6	6.8

(Contd...)

Table 15 DISTRIBUTION (%) OF 1-5 YEARS(BOYS) BY NUTRITIONAL STATUS* (Weight For Age) - GOMEZ CLASSIFICATION (Contd..)

STATE	Period	N	Nutritional Grades			
			>=90	75-90	60-75	<60
Maharashtra	1975+	431	3.5	22.5	53.8	20.2
	1988+	858	5.3	36.8	49.5	8.4
	1996+	529	7.9	34.8	49.7	7.6
Gujarat	1975+	373	3.0	26.8	57.6	12.6
	1988+	639	6.0	30.5	48.8	14.7
	1996+	335	3.9	27.5	53.4	15.2
Orissa	1975+	314	7.3	35.4	43.0	14.3
	1988+	600	7.3	35.8	46.7	10.0
	1996+	821	3.3	42.2	50.4	4.1
Pooled	1975+	3404	5.3	30.3	49.8	14.6
	1988+	6953	8.9	37.8	44.3	9.0
	1996+	4463	8.8	40.6	44.8	5.8

*NCHS Standards used

Table 16 DISTRIBUTION (%) OF 1-5 YEAR CHILDREN (GIRLS) BY NUTRITIONAL STATUS* (Weight For Age) - GOMEZ CLASSIFICATION

STATE	Period	N	Nutritional Grades			
			Normal	Under nutrition	Moderate	Severe
Kerala	1975+	364	7.4	39.0	43.2	10.4
	1988+	431	18.8	47.1	32.5	1.6
	1996+	404	26.7	47.8	23.3	2.2
Tamil Nadu	1975+	594	5.7	34.0	47.8	12.5
	1988+	1594	8.8	42.1	45.8	3.7
	1996+	424	14.2	48.6	34.4	2.8
Karnataka	1975+	504	5.6	31.9	47.8	12.5
	1988+	969	6.0	38.5	46.5	9.0
	1996+	826	7.6	40.1	45.5	6.8
Andhra Pradesh	1975+	382	7.9	35.3	42.7	14.1
	1988+	1372	9.8	38.3	43.7	8.2
	1996+	928	8.7	38.5	45.3	7.5
Maharashtra	1975+	329	2.7	29.2	43.8	24.3
	1988+	808	8.3	39.2	45.4	7.1
	1996+	486	6.8	36.2	49.2	7.8
Gujarat	1975+	345	4.6	29.6	50.7	15.1
	1988+	623	8.7	37.4	42.7	11.2
	1996+	312	5.1	36.5	40.1	18.3
Orissa	1975+	257	7.8	36.6	40.1	15.5
	1988+	575	8.9	33.4	46.2	11.5
	1996+	821	2.7	39.8	52.6	4.9
Pooled	1975+	3024	6.7	33.1	44.9	15.3
	1988+	6479	10.9	37.3	42.8	90
	1996+	4201	9.1	40.6	43.6	6.7

* NCHS Standards used

Table 17 DISTRIBUTION (%) OF 1-5 YEAR CHILDREN (BOYS AND GIRLS) BY NUTRITIONAL STATUS* (Weight For Age) - GOMEZ CLASSIFICATION

STATE	Period	N	Nutritional Grades			
			Normal	Under nutrition	Moderate	Severe
Kerala	1975+	737	7.5	35.7	46.5	10.3
	1988+	882	17.7	47.4	32.9	2.0
	1996+	886	22.2	50.7	25.1	2.0
Tamil Nadu	1975+	1183	6.2	34.2	47.0	12.6
	1988+	3337	8.0	42.0	45.8	4.2
	1996+	819	14.4	49.2	33.5	2.9
Karnataka	1975+	1065	4.6	31.1	50.0	14.3
	1988+	2035	4.8	38.1	48.8	8.3
	1996+	1684	9.4	39.0	45.4	6.2
Andhra Pradesh	1975+	809	6.1	32.4	46.1	15.4
	1988+	2838	8.7	39.5	44.3	7.5
	1996+	1962	7.2	38.1	47.6	7.1
Maharashtra	1975+	760	3.2	25.4	49.5	21.9
	1988+	1666	6.7	38.0	47.5	7.8
	1996+	1015	7.4	35.5	49.5	7.7
Gujarat	1975+	718	3.8	28.1	54.3	13.8
	1988+	1262	7.3	33.9	45.8	13.0
	1996+	647	4.5	31.8	47.0	16.7
Orissa	1975+	371	7.5	35.9	41.7	14.9
	1988+	1175	8.1	34.6	46.6	10.7
	1996+	1651	3.3	42.2	50.4	4.1
Pooled	1975+	6248	5.9	31.6	47.5	15.0
	1988+	13432	9.9	37.6	43.8	8.7
	1996+	8664	8.9	40.6	44.3	6.2

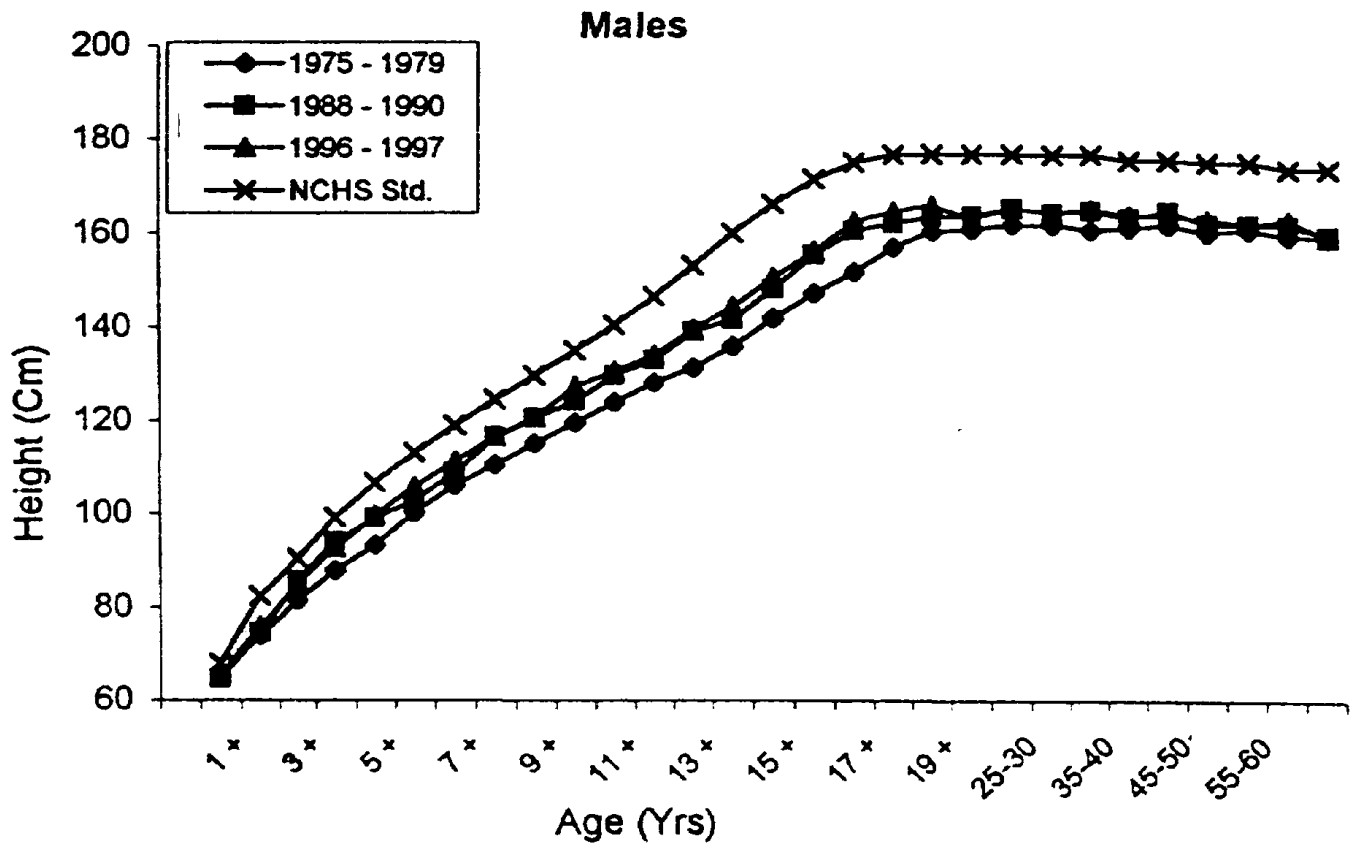
* NCHS Standards used

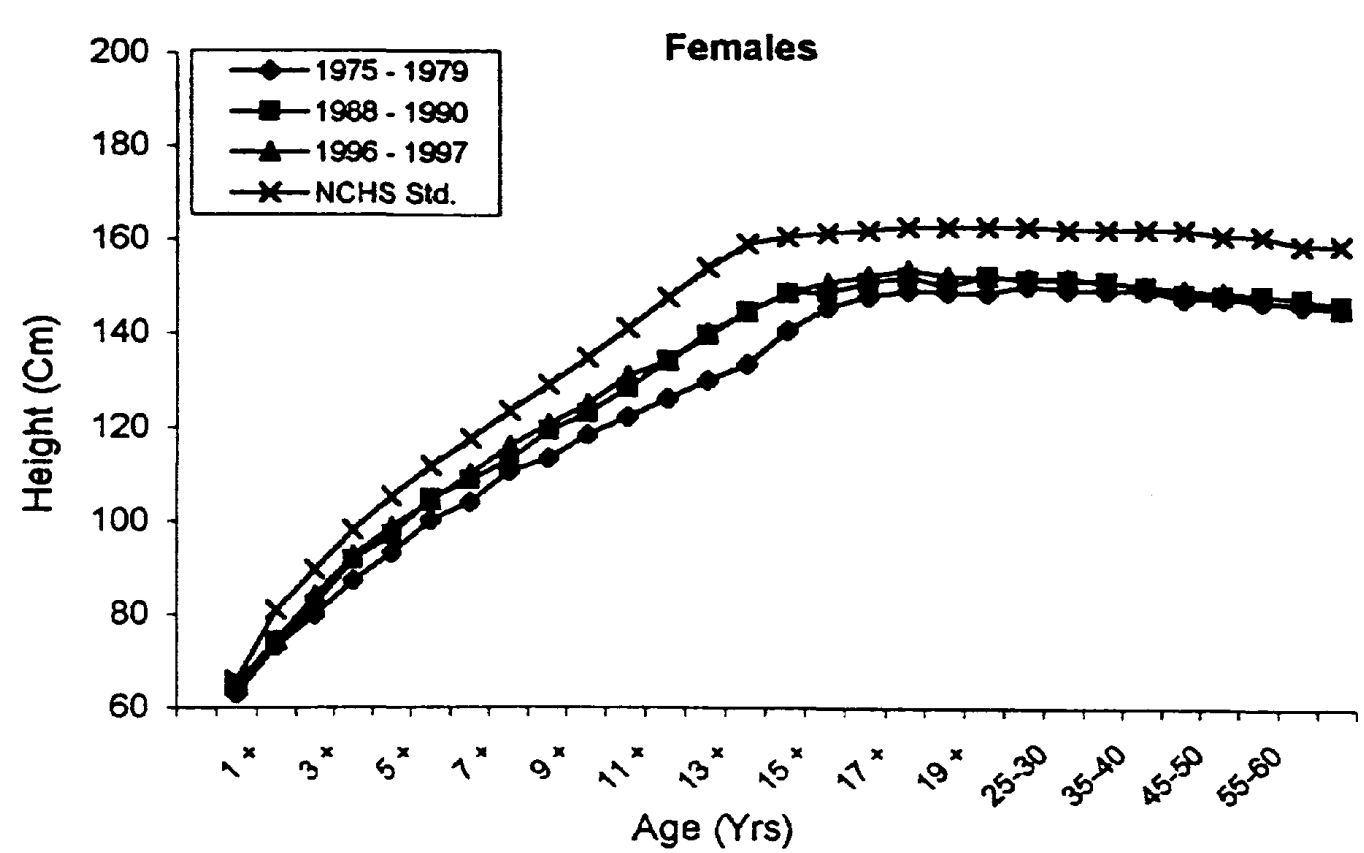
Table 18 PERCENT DISTRIBUTION OF PRE-SCHOOL CHILDREN (1-5 YEARS) BY NUTRITIONAL STATUS* (WEIGHT-FOR-AGE): GOMEZ CLASSIFICATION

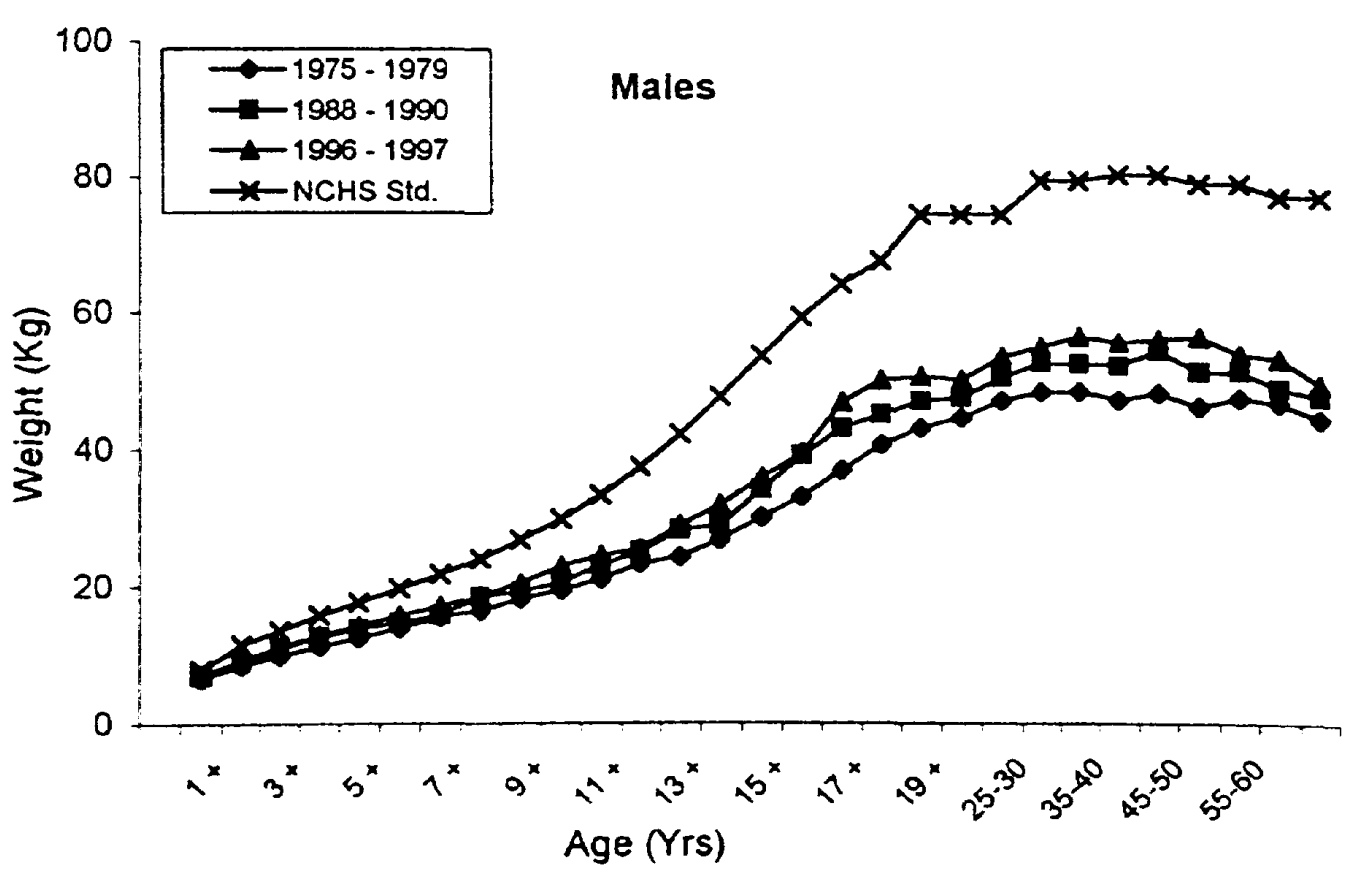
AGE (Years)	SEX	NUMBER	WEIGHT FOR AGE AS % OF NCHS STANDARDS			
			Normal	Under nutrition	Moderate	Severe
1-3	Boys	2132	10.0	37.6	44.8	7.6
	Girls	1981	9.3	40.1	42.0	8.6
	Pooled	4113	9.7	38.9	43.3	8.1
3-5	Boys	2331	7.6	43.5	44.7	4.2
	Girls	2220	8.9	41.0	45.1	5.0
	Pooled	4551	8.3	42.3	44.8	4.6
1-5	Boys	4463	8.8	40.6	44.8	5.8
	Girls	4201	9.1	40.6	43.6	67
	Pooled	8664	8.9	40.6	44.3	6.2

* NCHS Standards used

FIG.10 DISTANCE CHARTS FOR HEIGHTS AND WEIGHTS FOR MALES AND FEMALES - KERALA







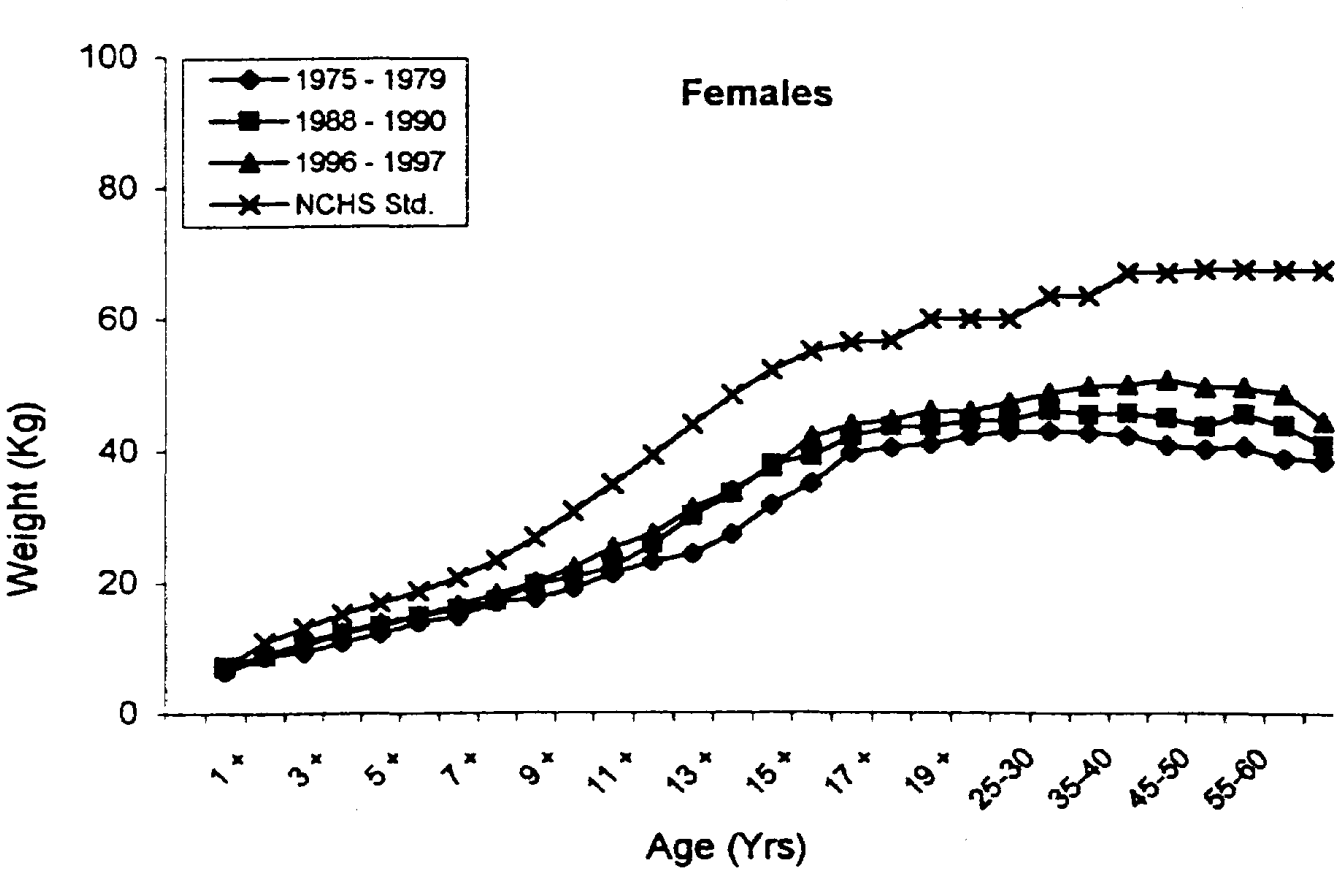
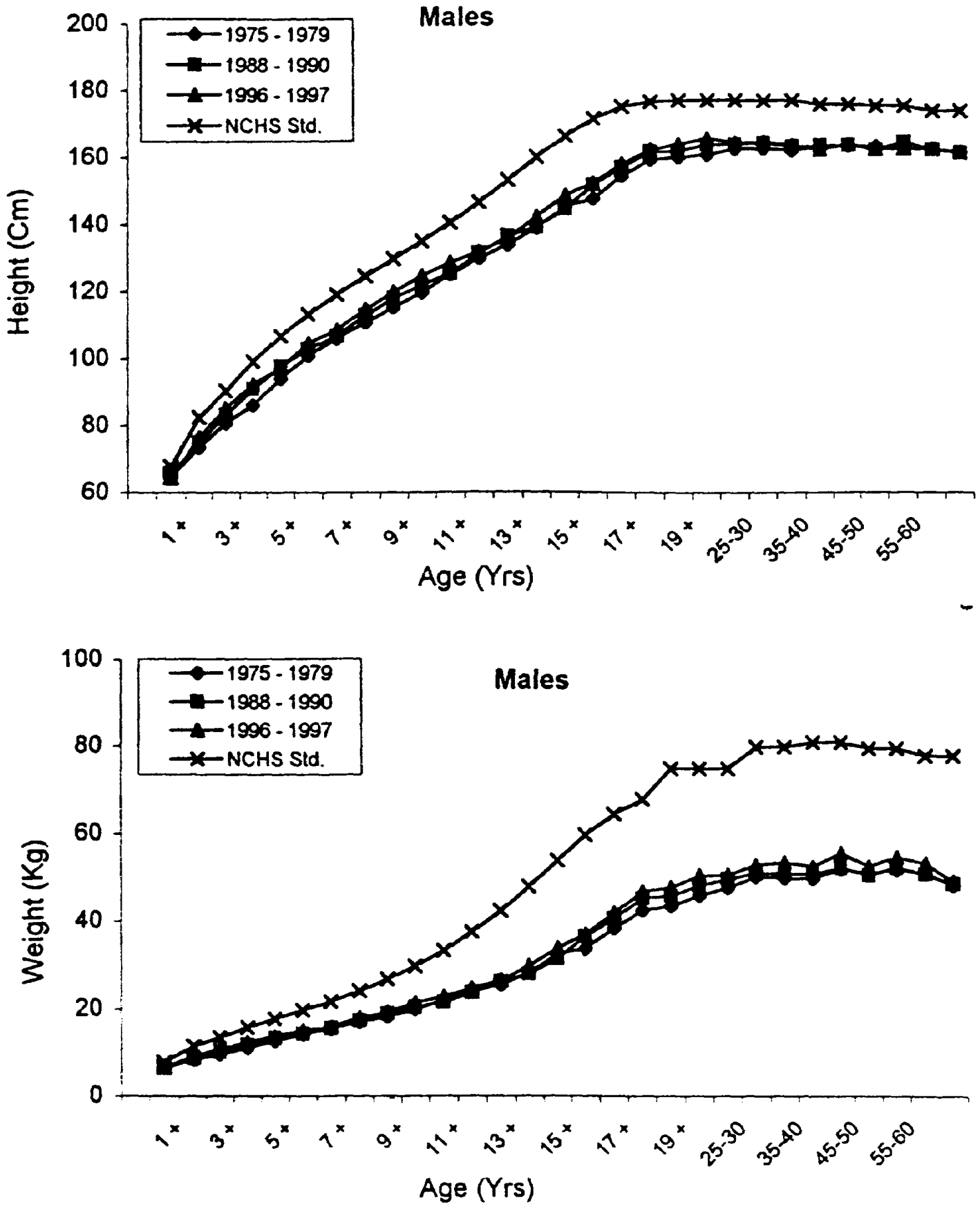


FIG.11 DISTANCE CHARTS FOR HEIGHTS AND WEIGHTS FOR MALES AND FEMALES - TAMIL NADU



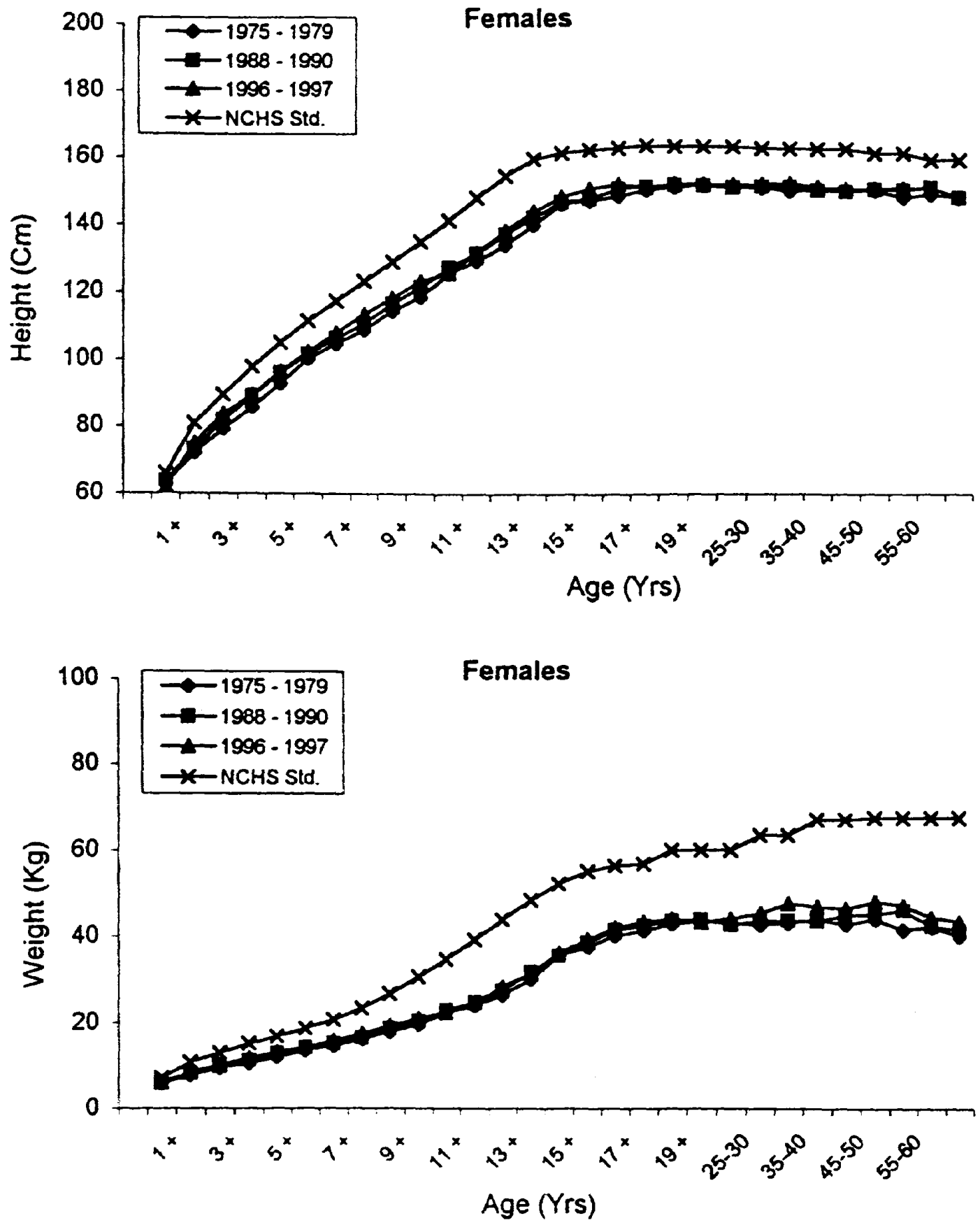


FIG.12 DISTANCE CHARTS FOR HEIGHTS AND WEIGHTS FOR MALES AND FEMALES - KARNATAKA

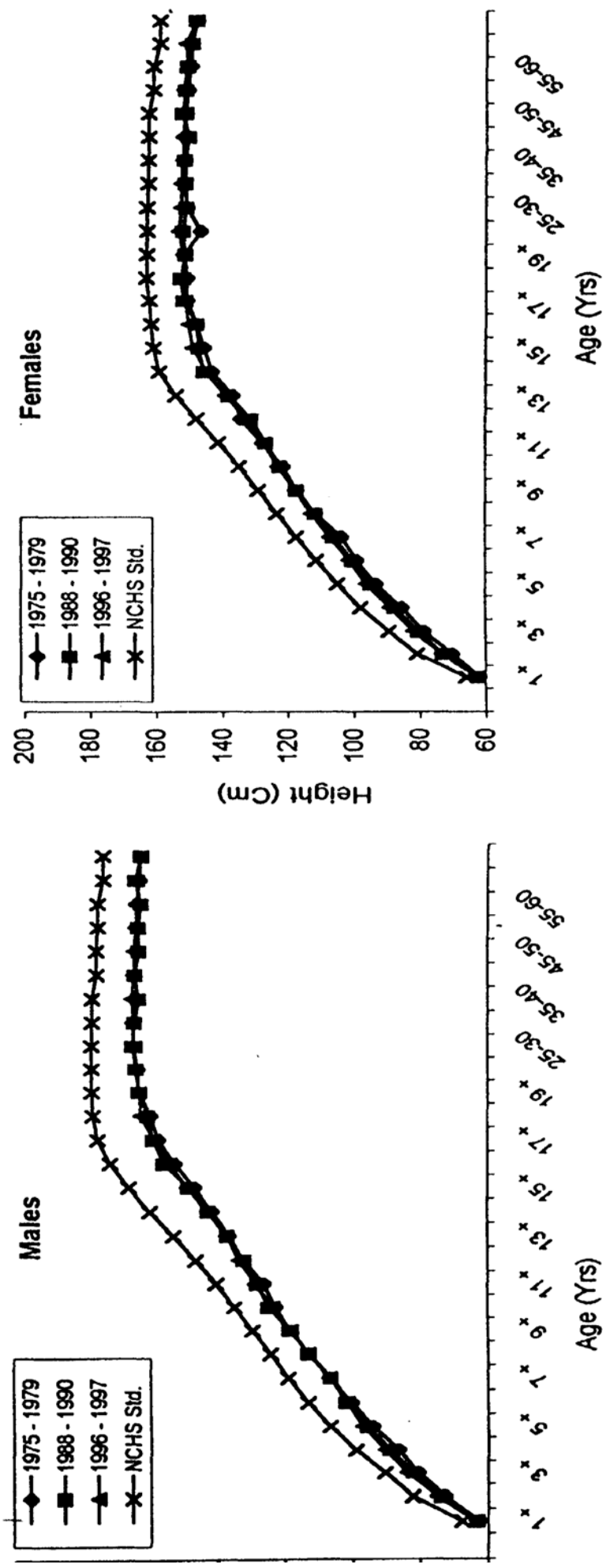
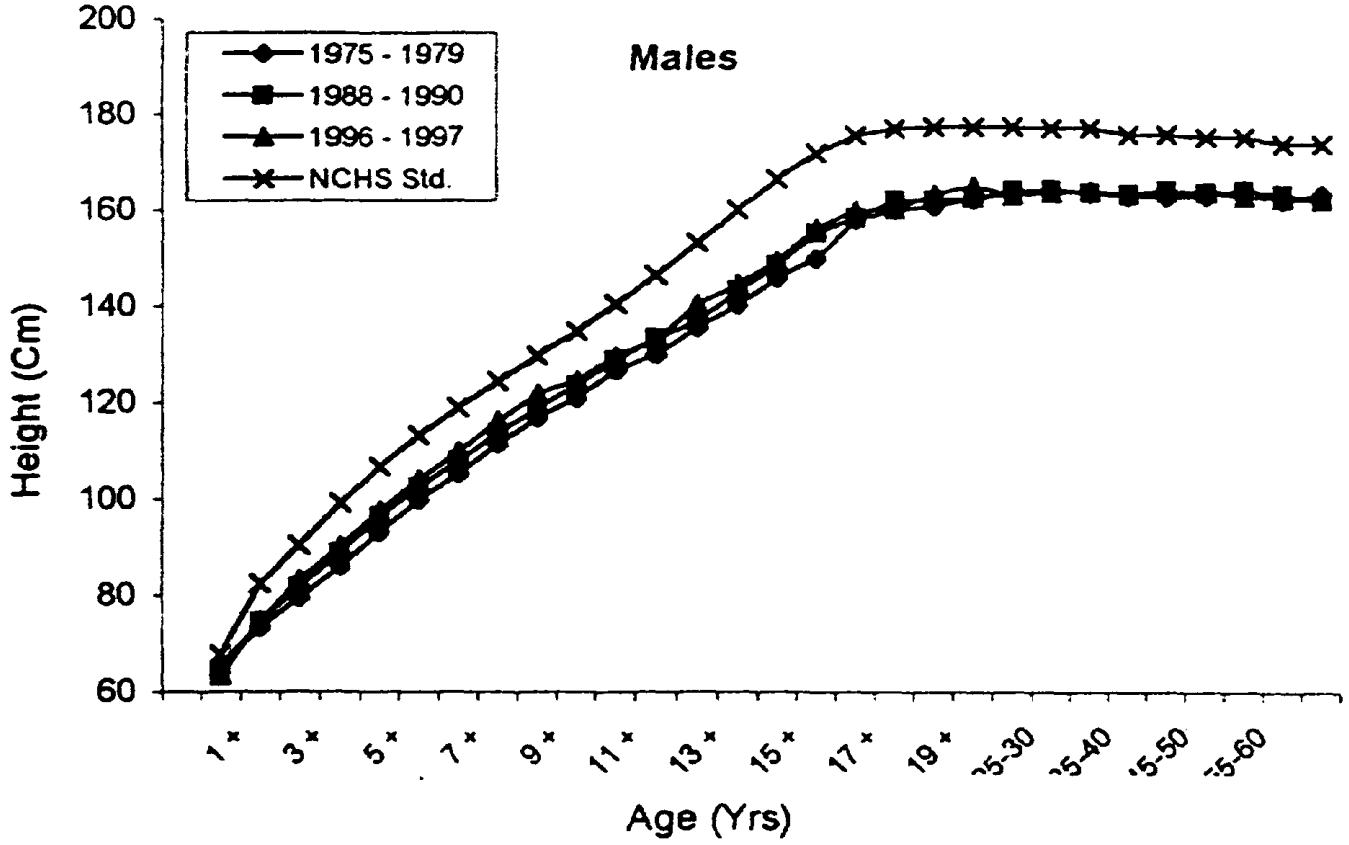
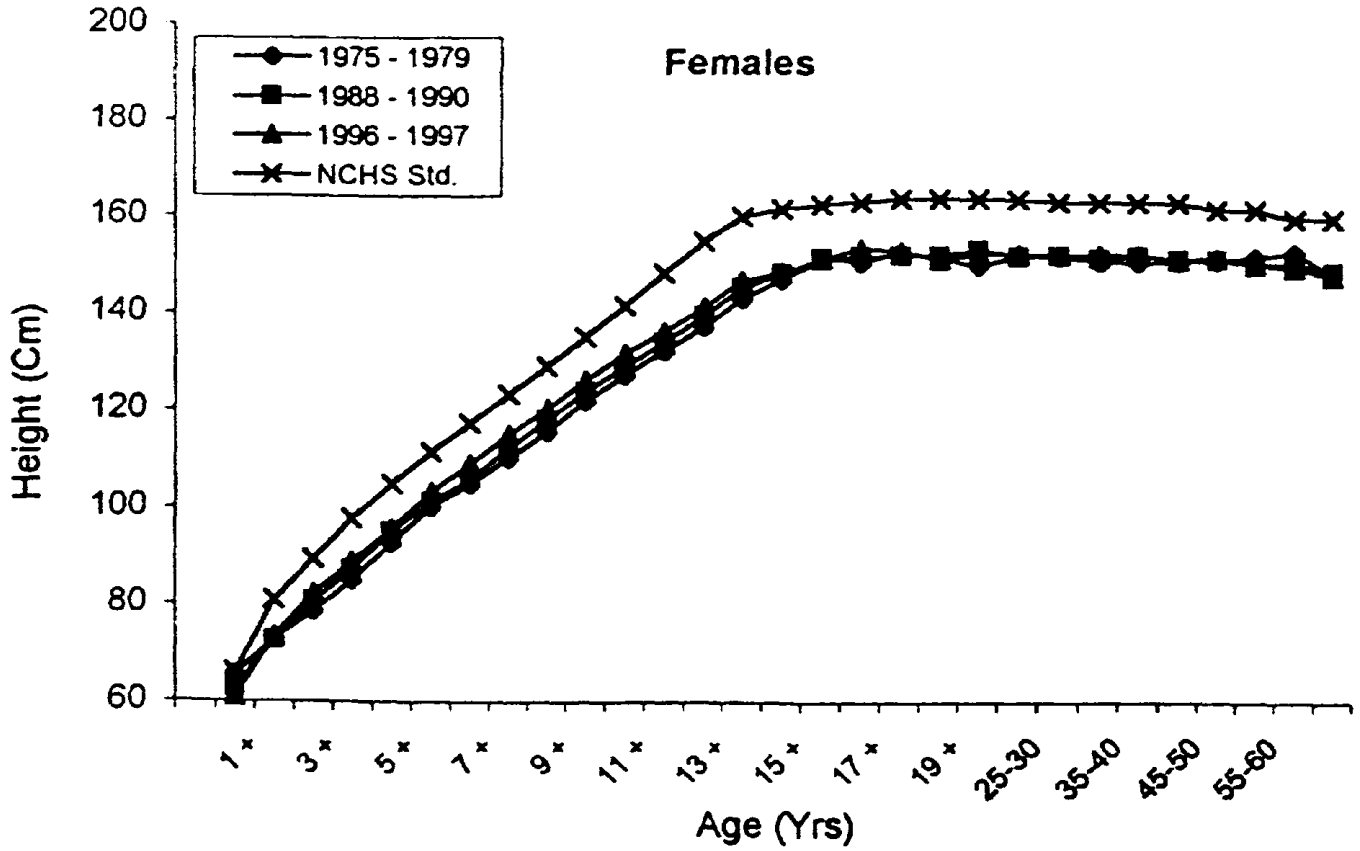
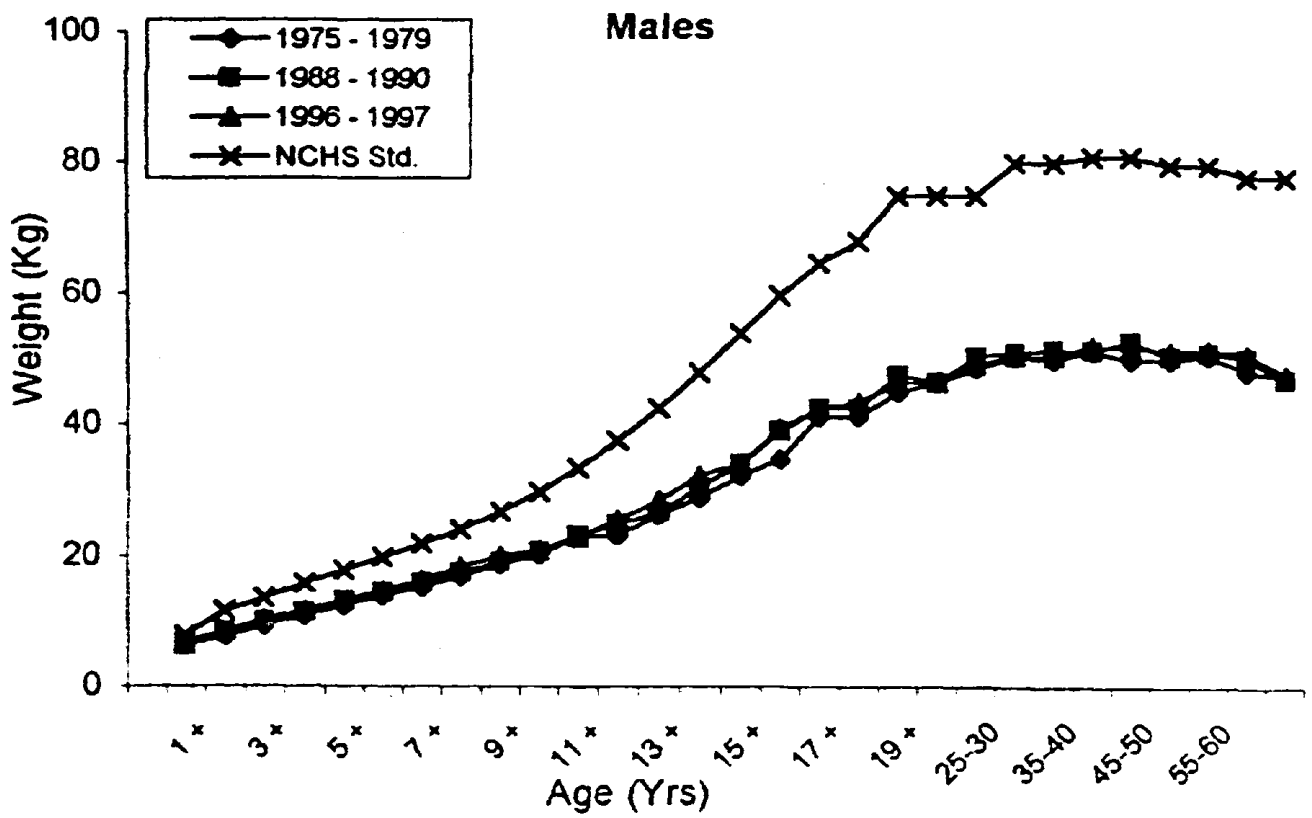


FIG.13 DISTANCE CHARTS FOR HEIGHTS AND WEIGHTS FOR MALES AND FEMALES - ANDHRA PRADESH







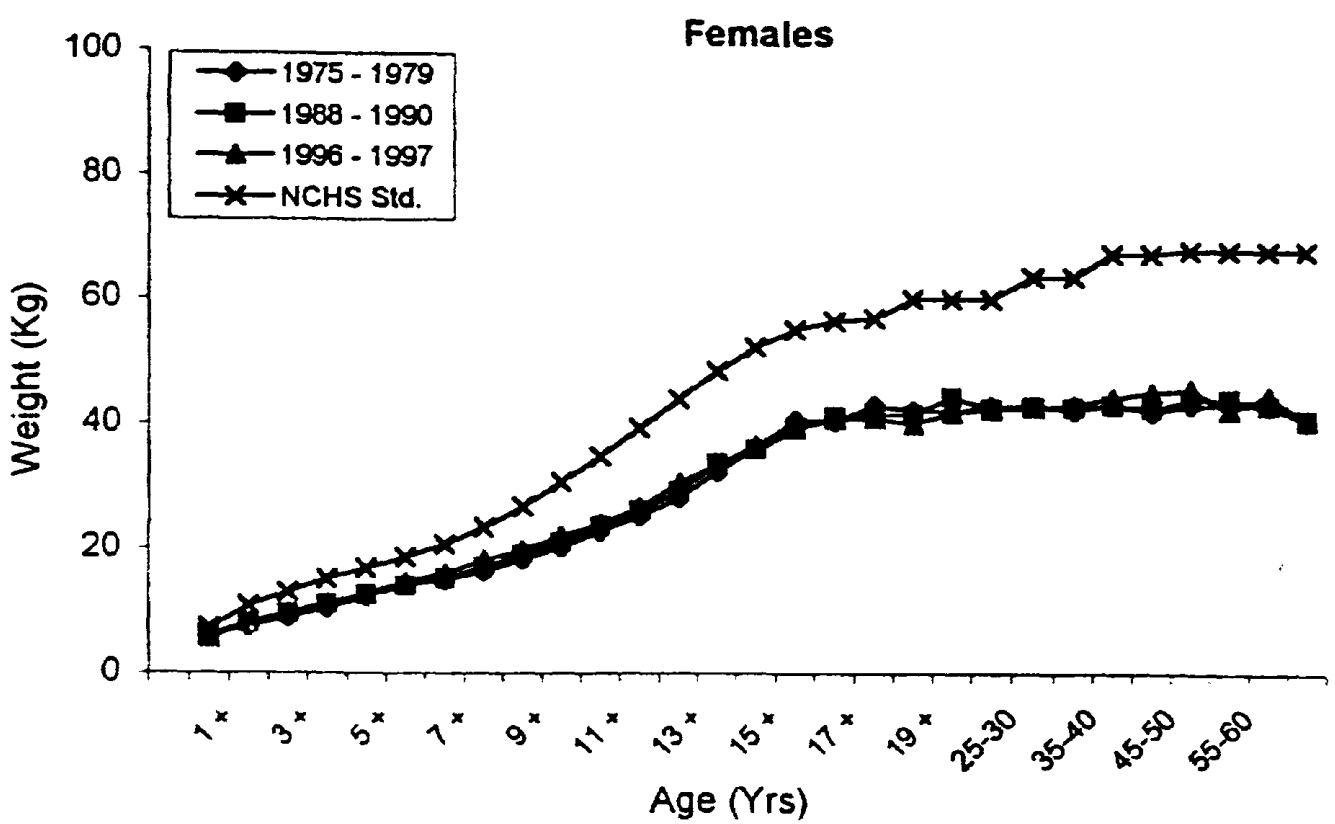
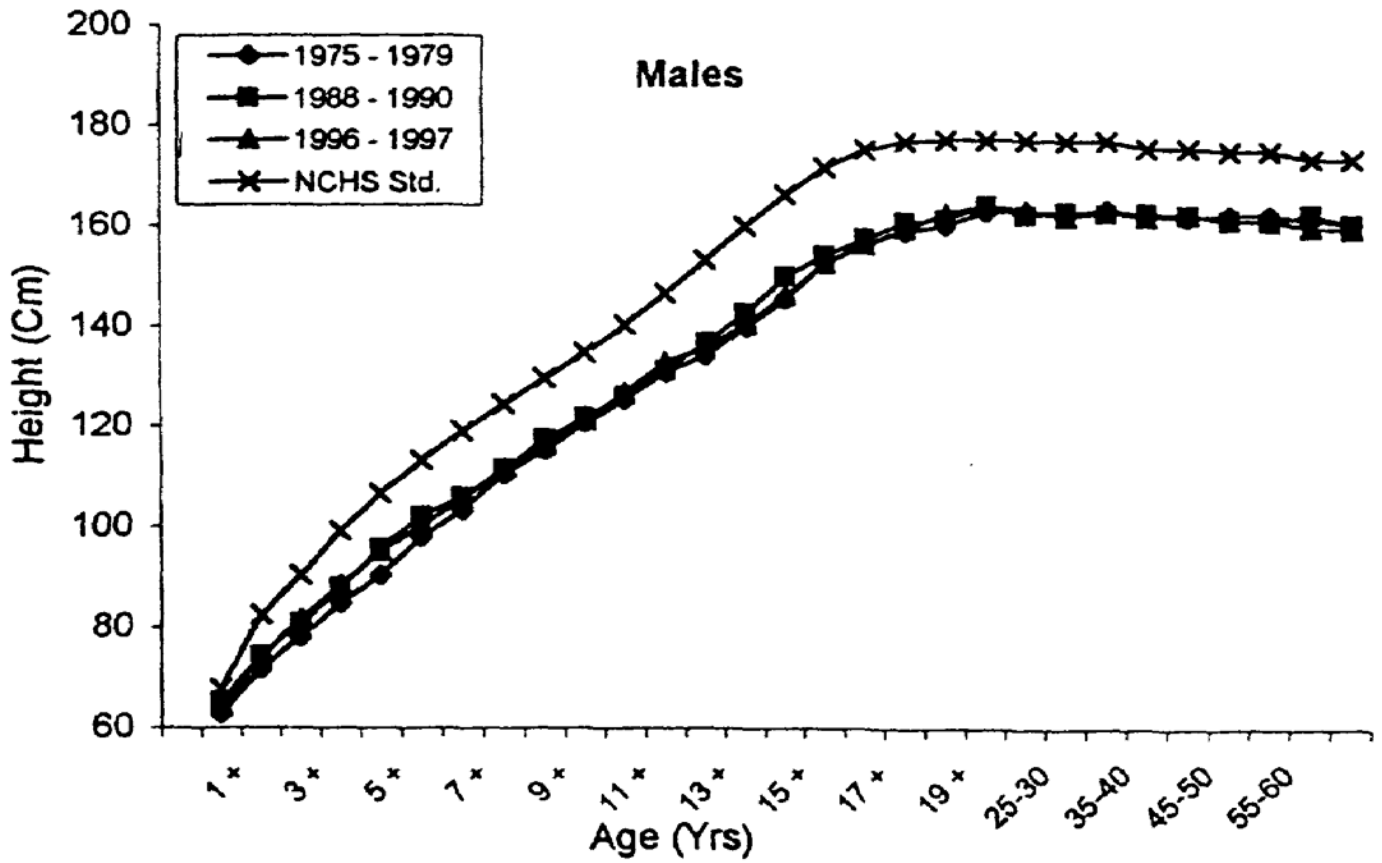
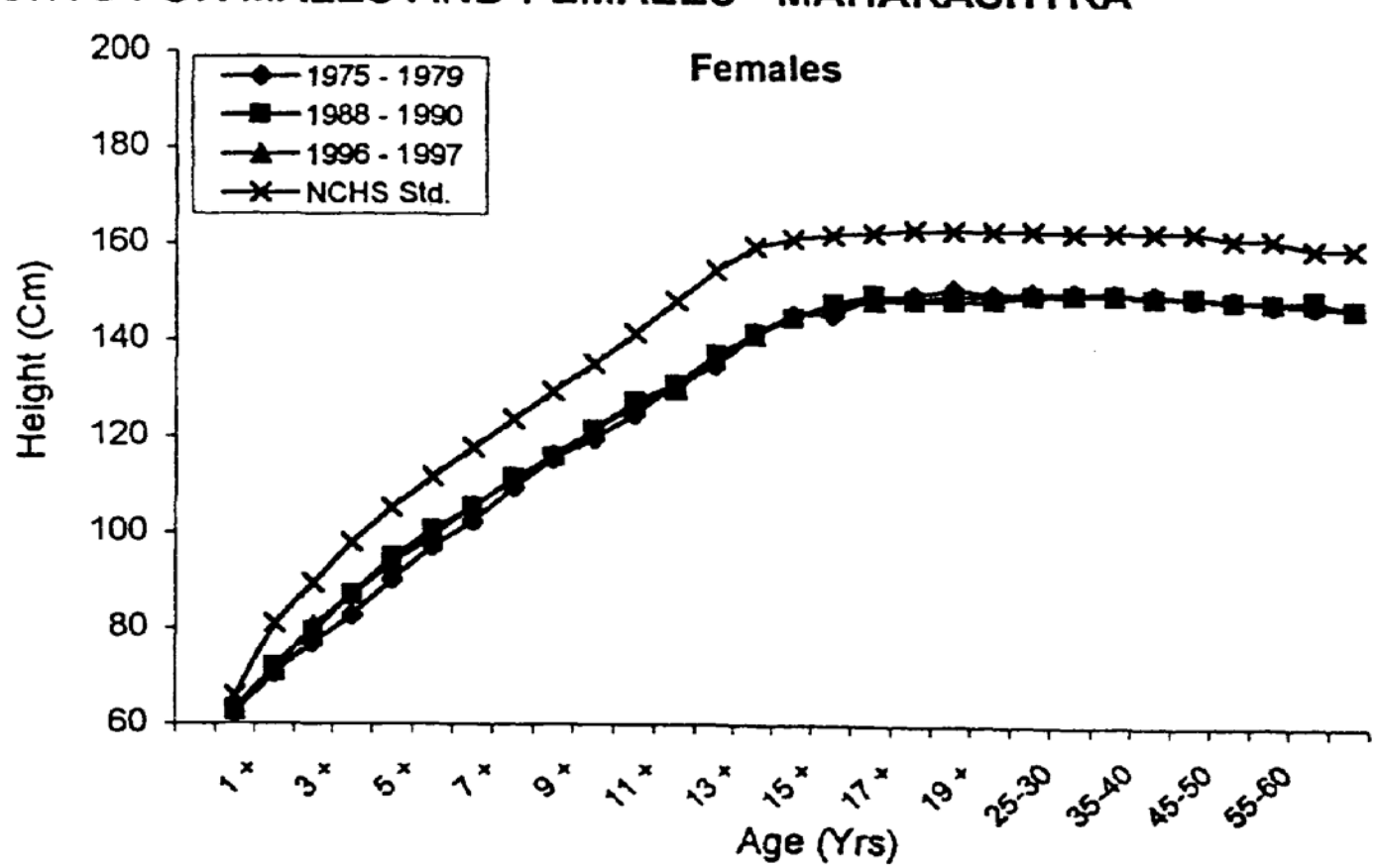
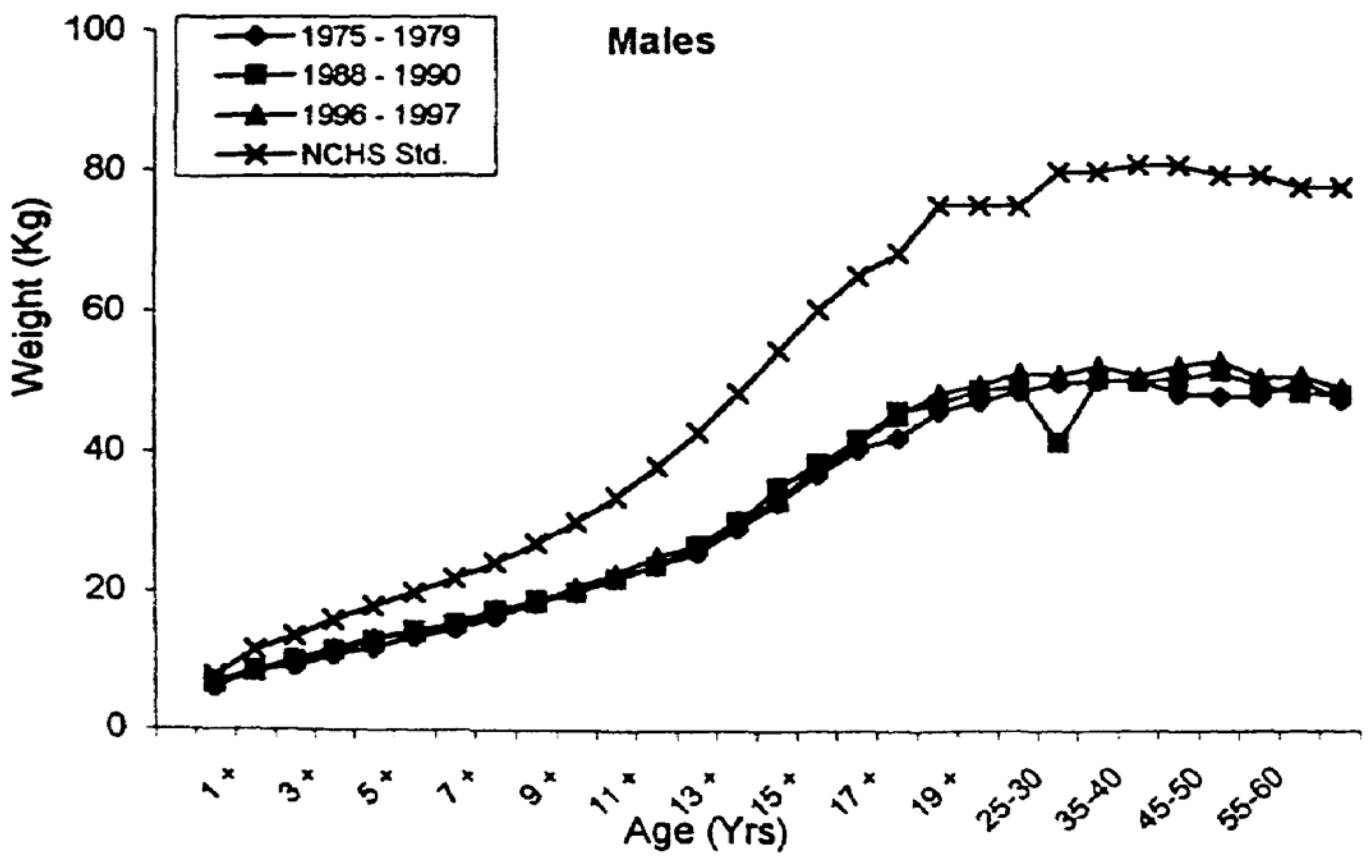


FIG.14 DISTANCE CHARTS FOR HEIGHTS AND WEIGHTS FOR MALES AND FEMALES - MAHARASHTRA







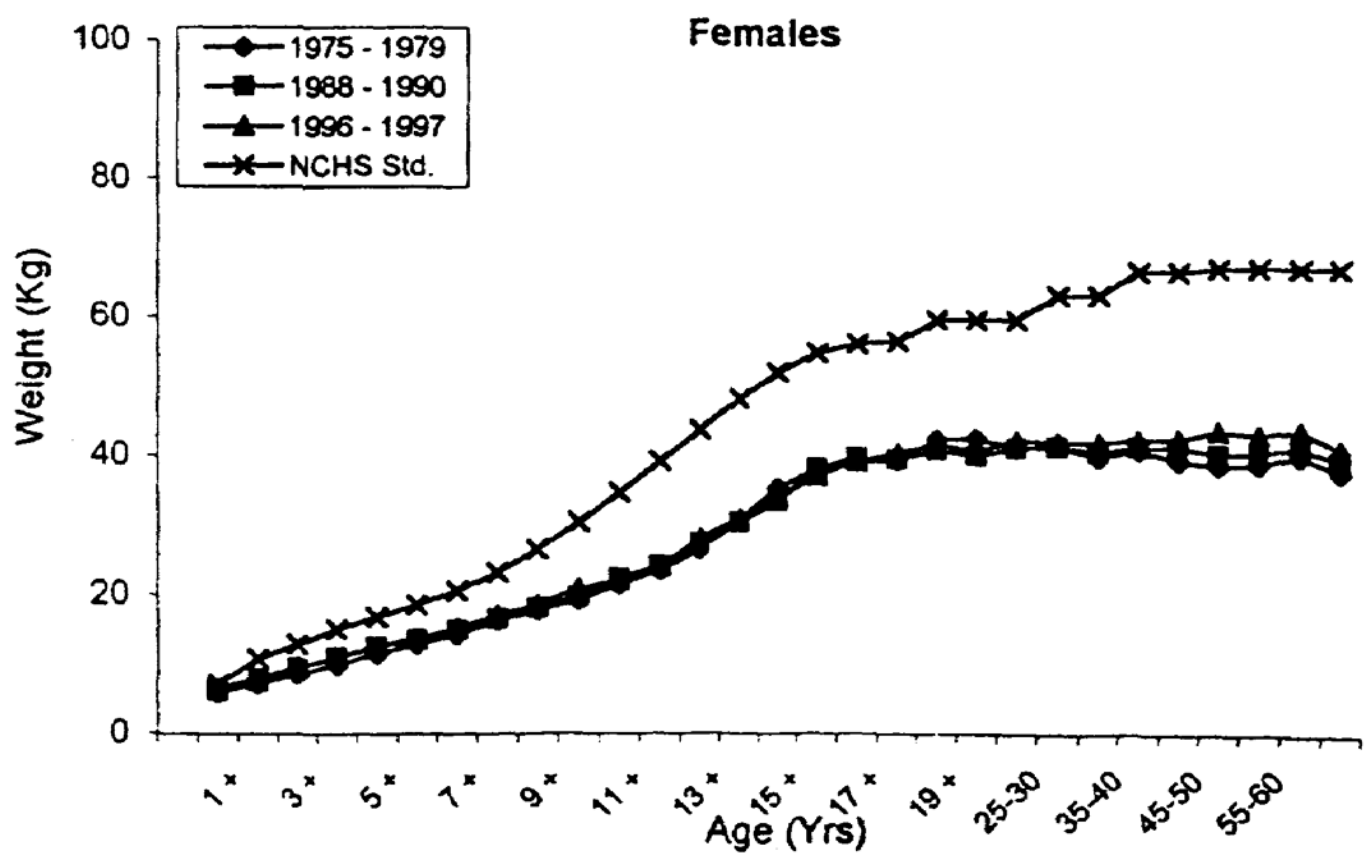
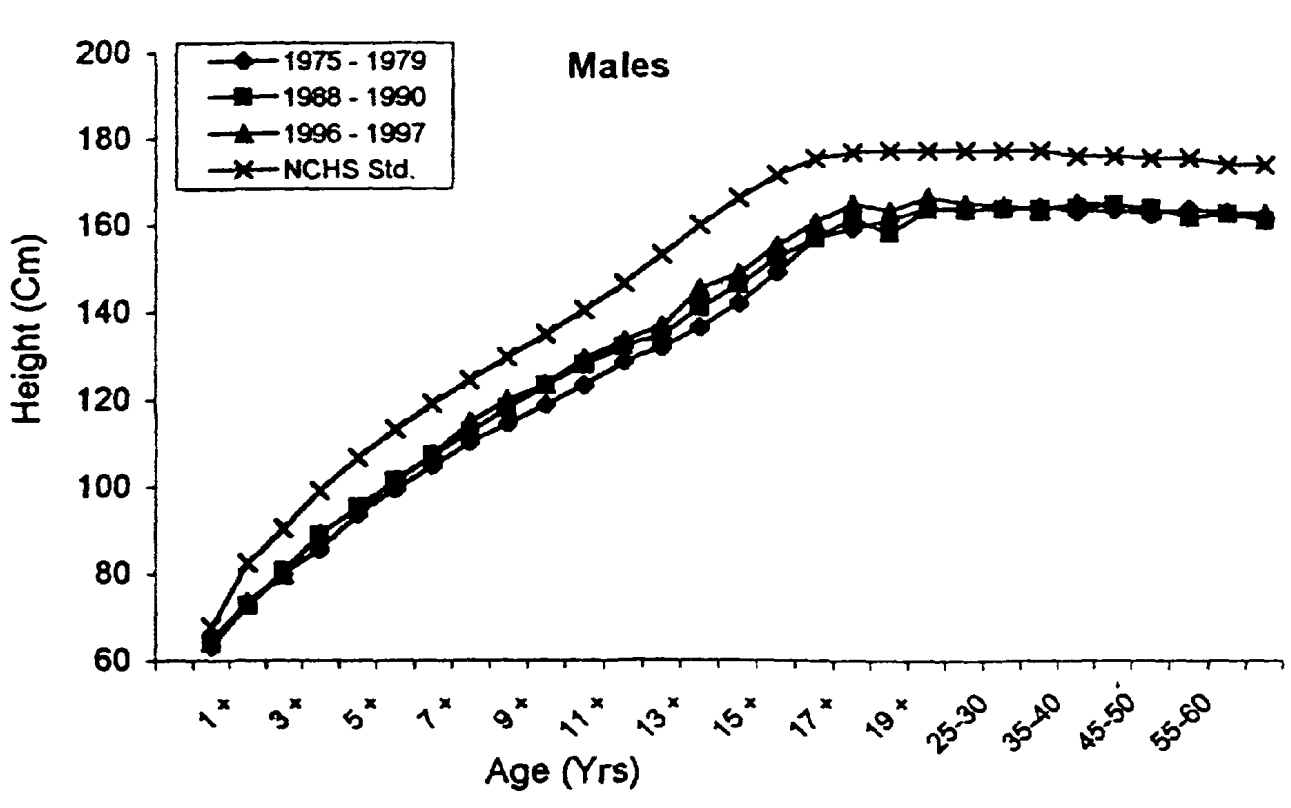
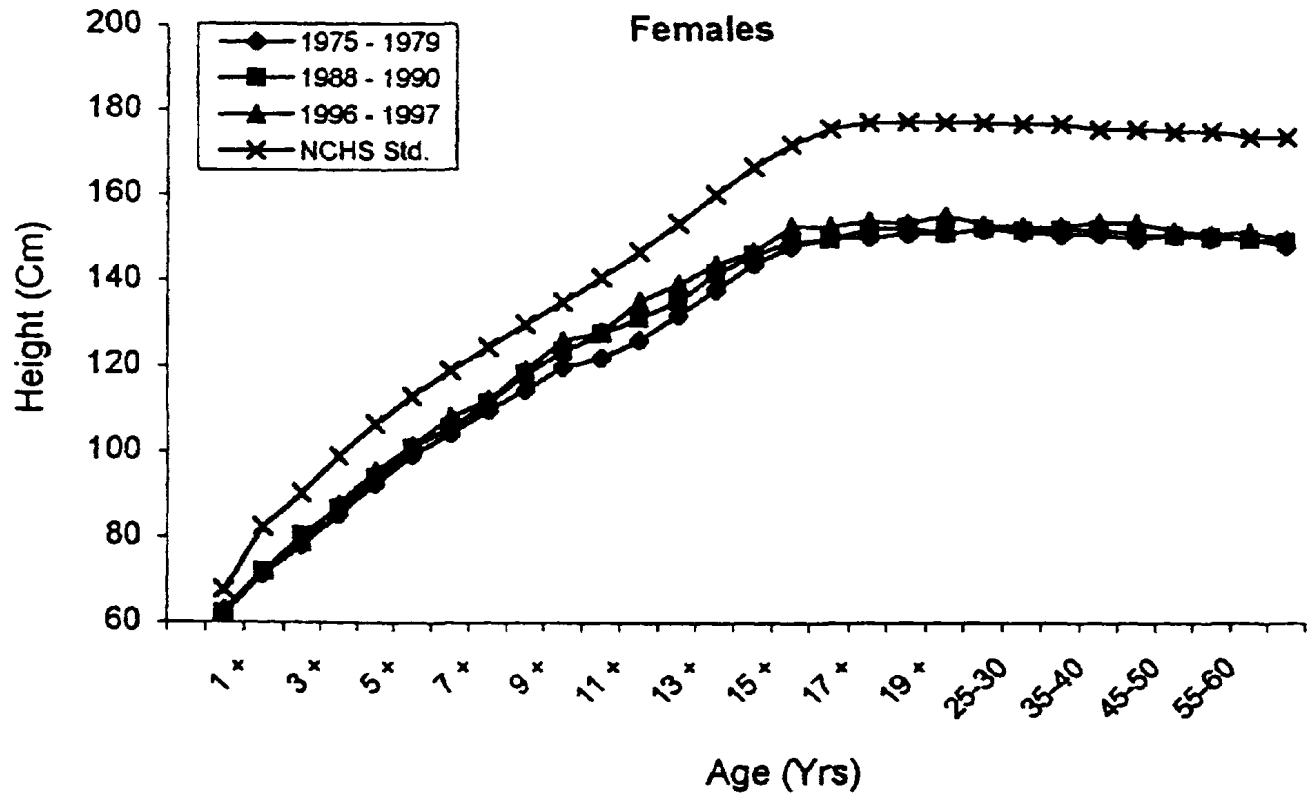
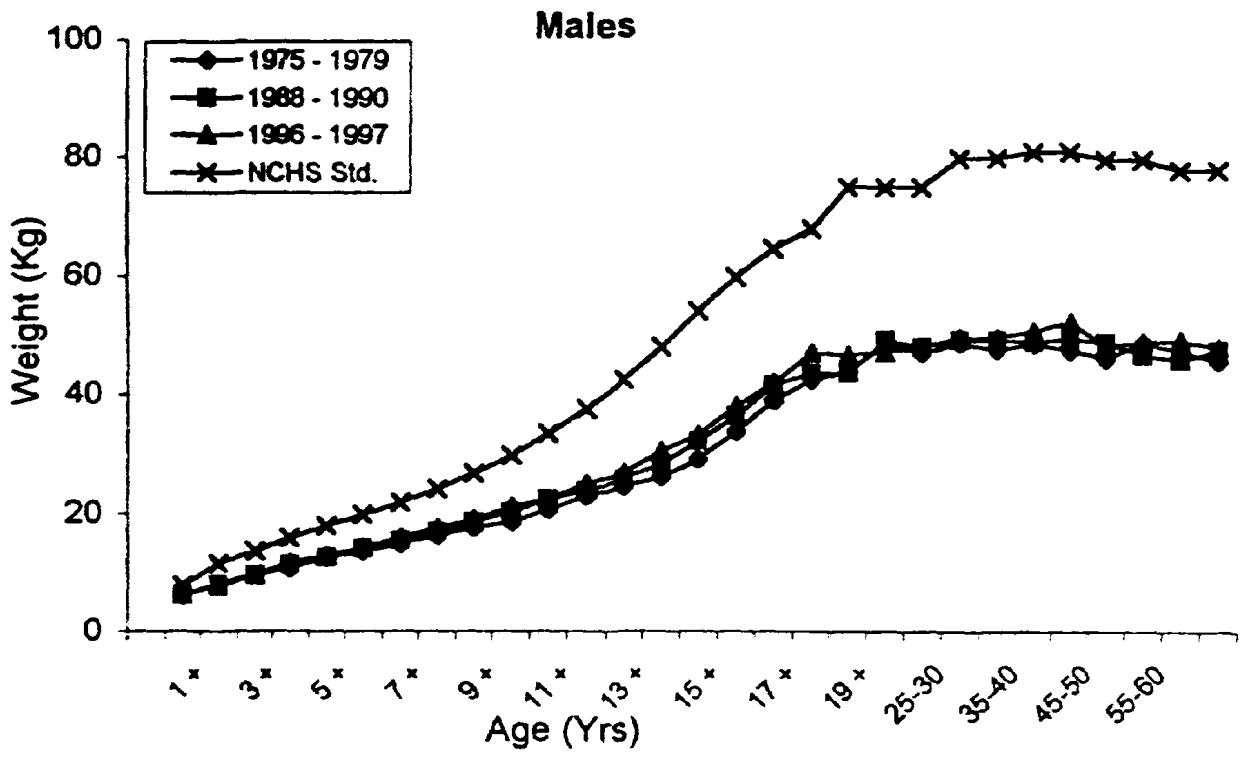


FIG.15 DISTANCE CHARTS FOR HEIGHTS AND WEIGHTS FOR MALES AND FEMALES - GUJARAT







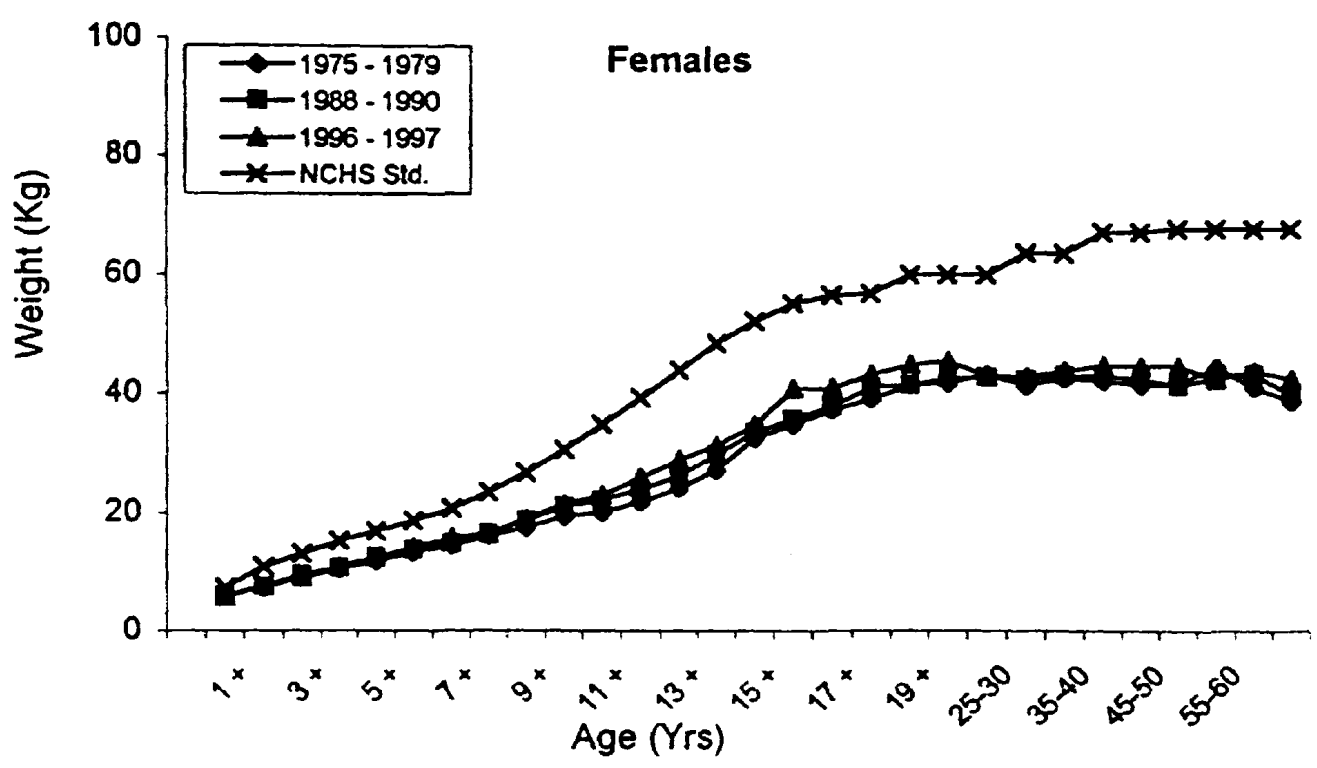
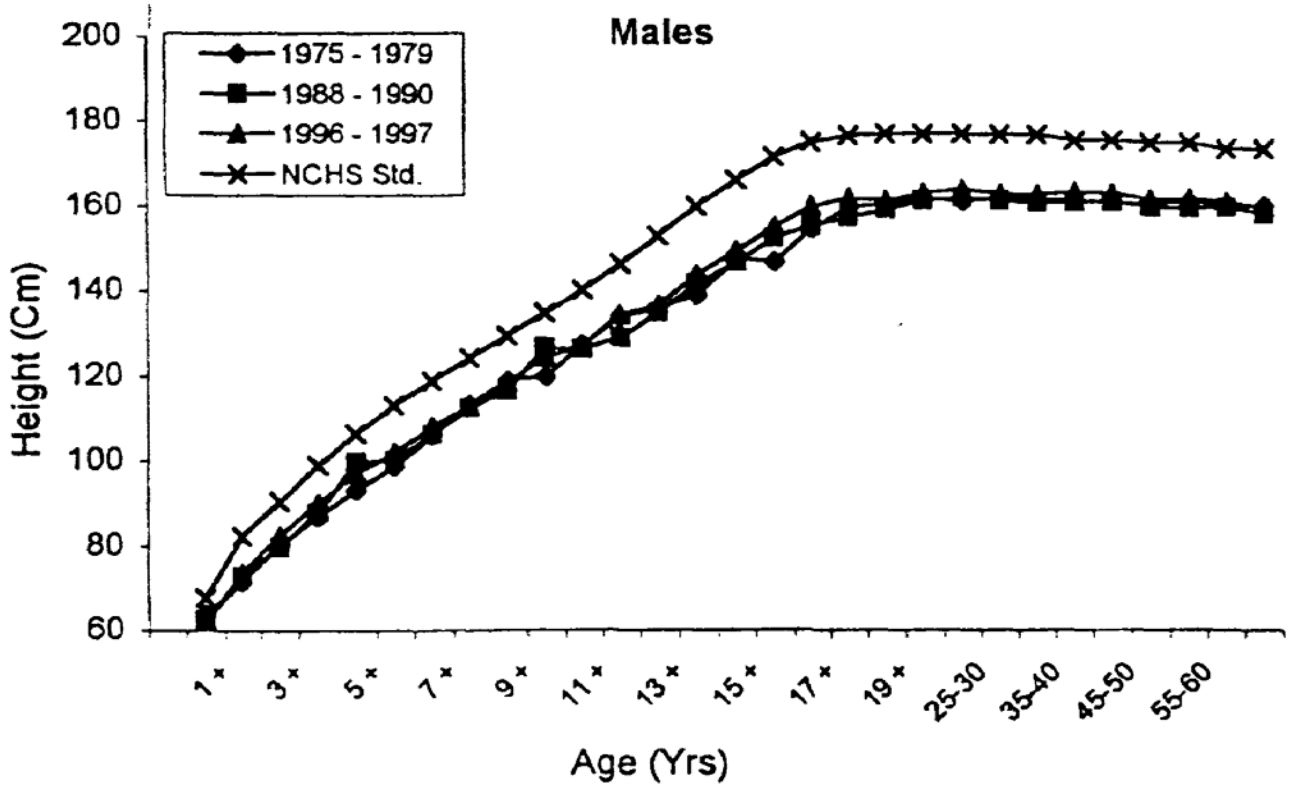
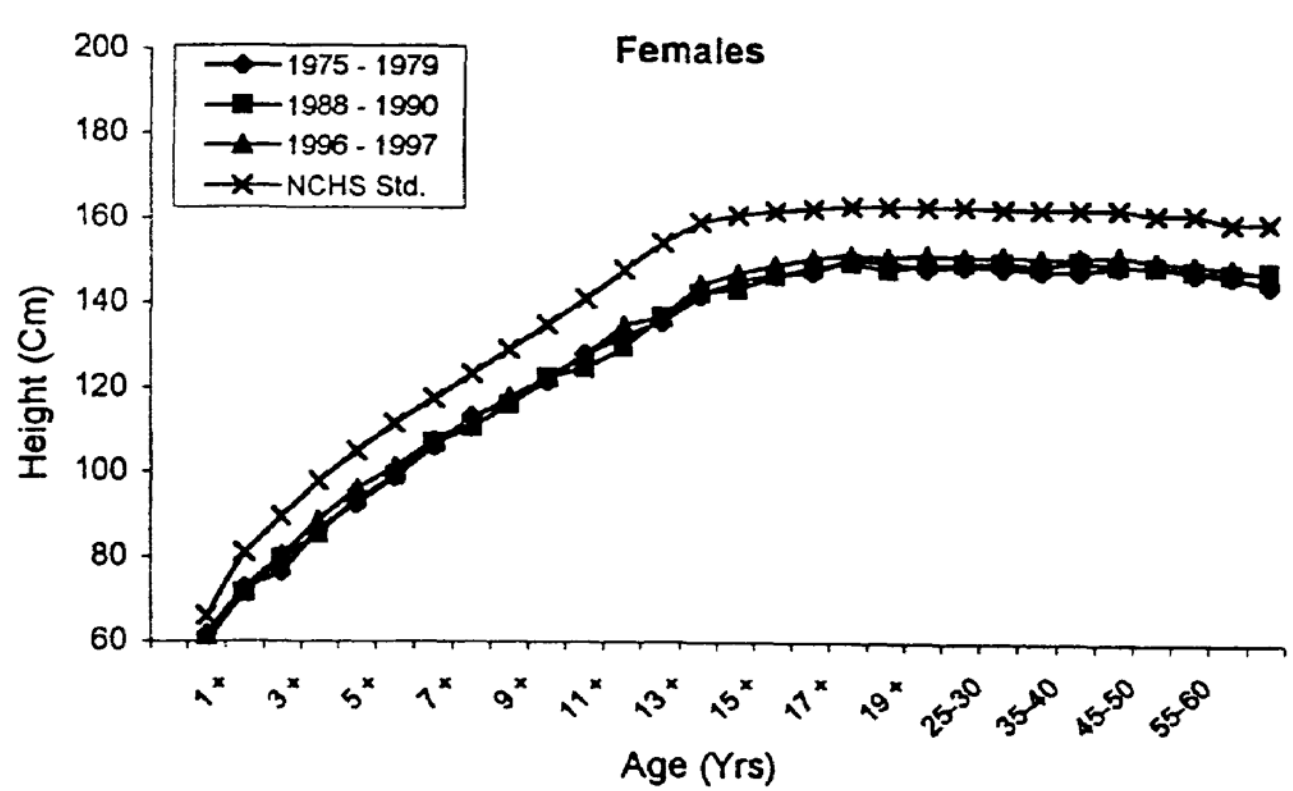
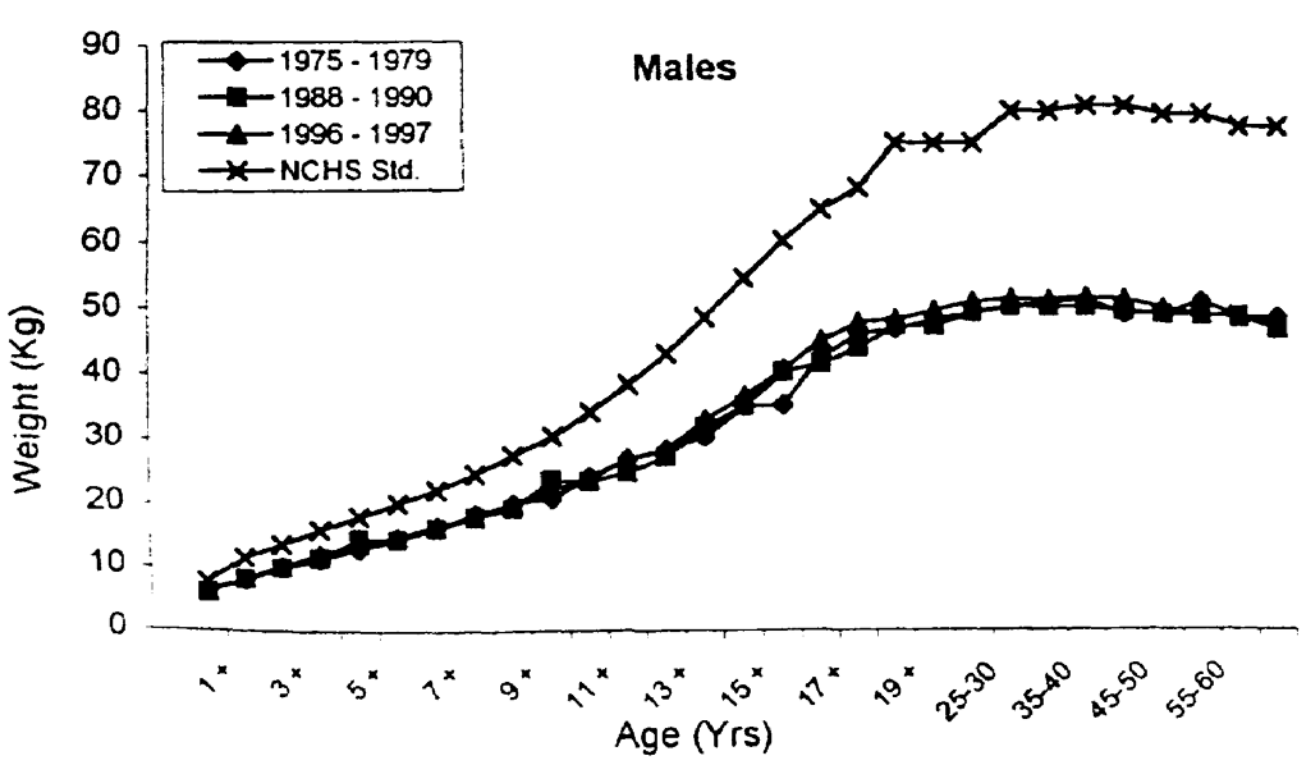


FIG.16 DISTANCE CHARTS FOR HEIGHTS AND WEIGHTS FOR MALES AND FEMALES - ORISSA







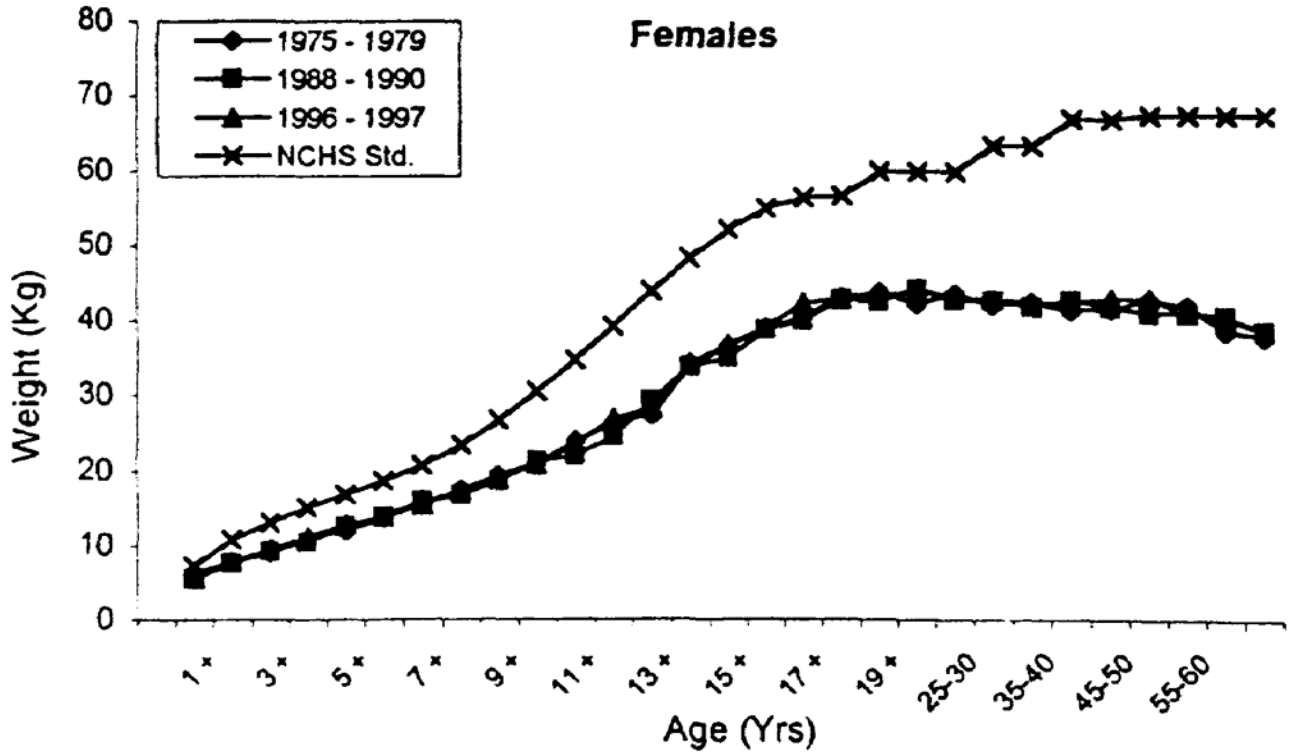
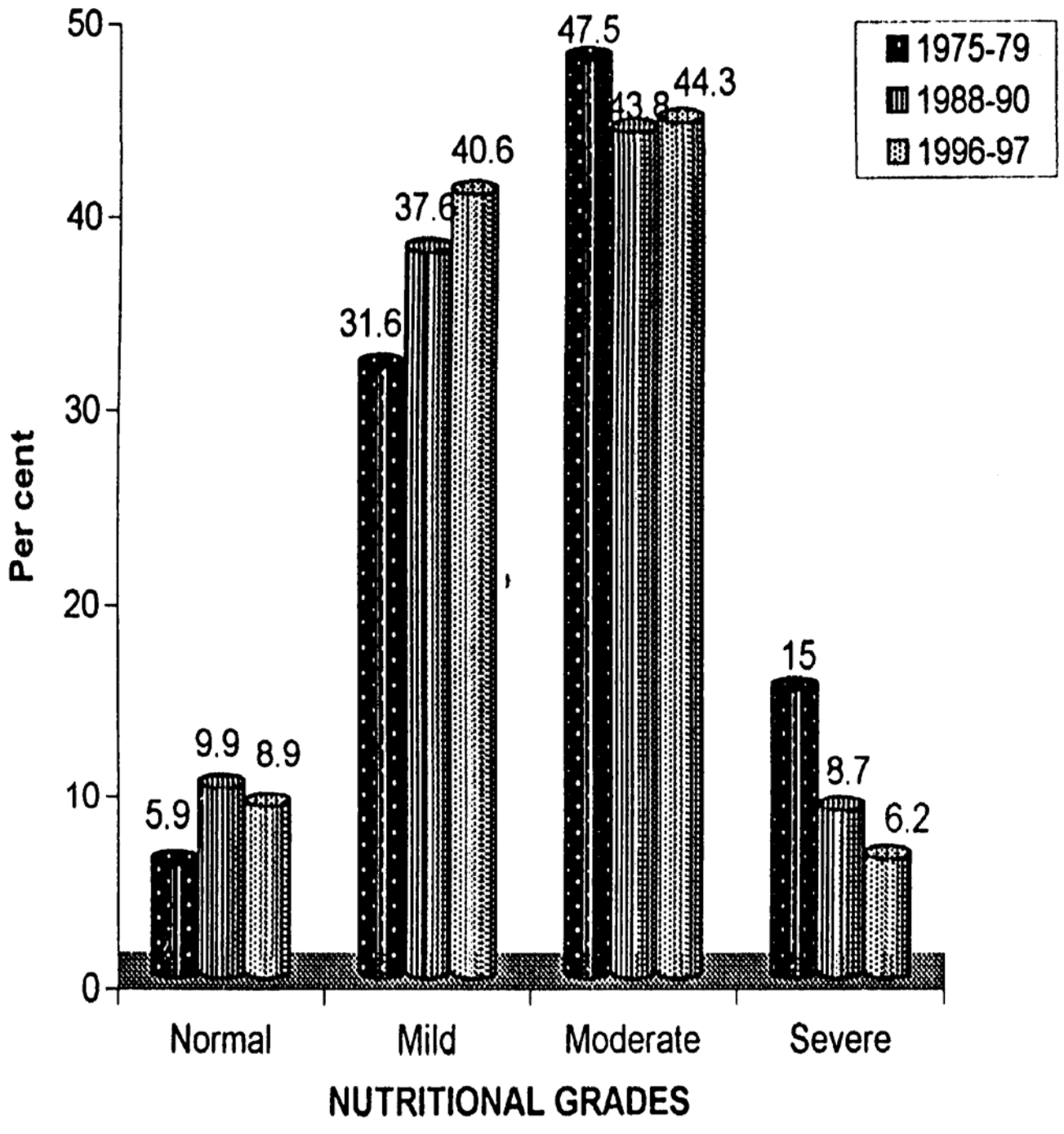


Fig.17
DISTRIBUTION (%) OF PRESCHOOL CHILDREN (1-5 yrs) ACCORDING TO GOMEZ CLASSIFICATION



3.6.2.1.2 *Underweight, Stunting and wasting in children*

The extent of different types of malnutrition, viz. stunting (height for age), wasting (weight for height) and undernutrition (weight for age) were computed by adopting standard deviation classification using NCHS standards **(Table-26).** All the children with any of the above anthropometric measurement less than Median -2SD of NCHS values were considered as undernourished.

It may be noted that there will be differences in the prevalence of undernutrition computed using Gomez classification and SD classification, as the cut-off values used are different.

Under weight (Weight for age)

The percentage of under weight children decreased from 76.5 in 1975-79 to 62.4 in 1996-97. It may be mentioned that their proportion was higher in the present survey as compared to the prevalence of 55.9% reported in NFHS surveys in 1993. The proportion of children with severe underweight decreased by about 25%.

Stunting (Height for age)

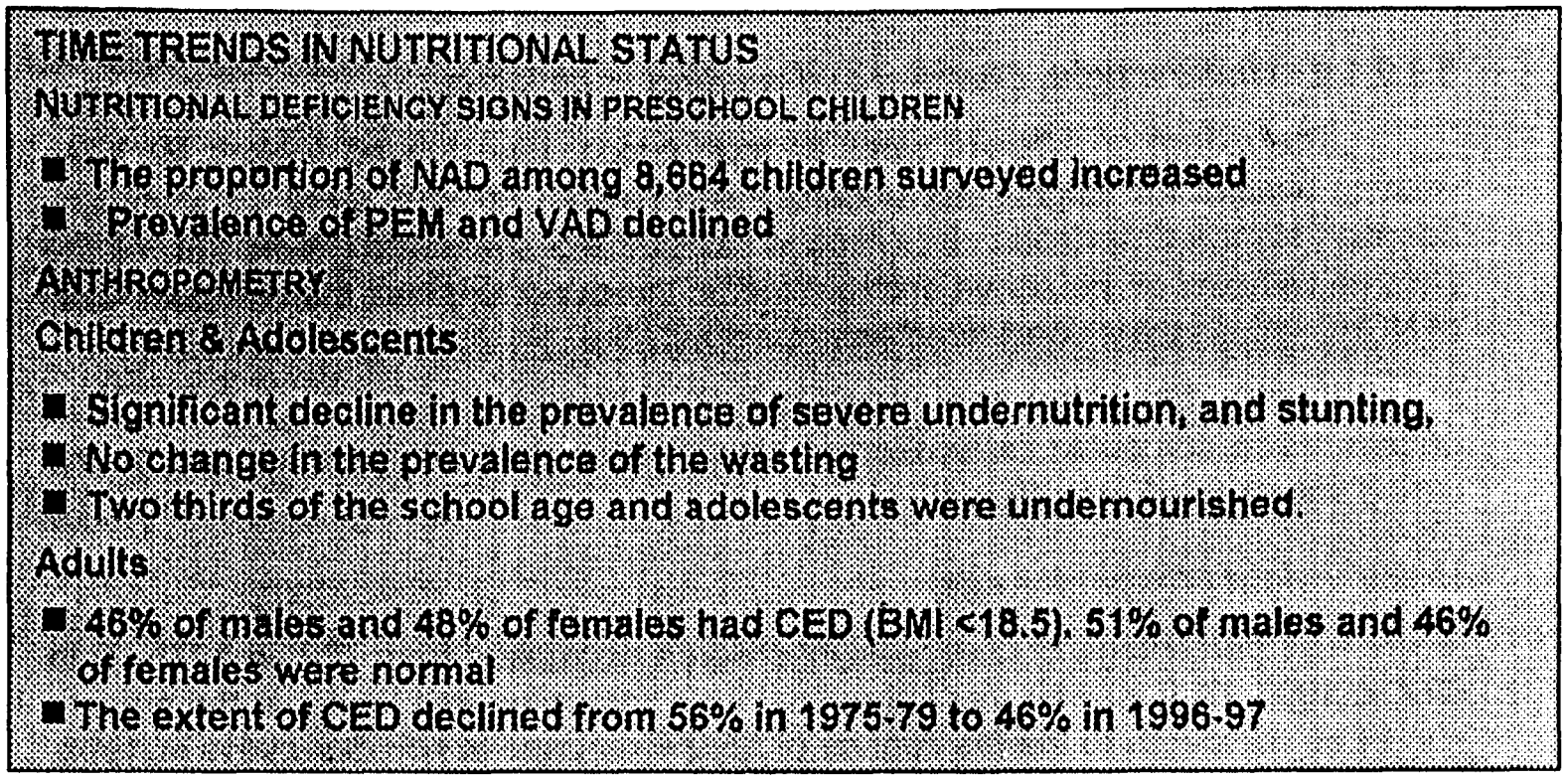
The proportion of stunted decreased from 78.6 in 1975-79 to 57.7 in 1996-97 with an increase in the percentage of normal children from 21.4 in 1975-79 to 42.3 in 1996-97. The extent of reduction was mostly in the prevalence of severe stunting decreased by (24.5%), while that of moderate stunting remained relatively similar between the periods.

Wasting (Weight for height)

The prevalence of wasting remained essentially similar between 1975-1979 and 1996-1997, though a marginal increase was seen during 1988-90.

Table 19 PERCENT DISTRIBUTION OF PRESCHOOL CHILDREN ACCORDING TO STANDARD DEVIATION (SD) CLASSIFICATION

INDICATOR	PERIOD	N	BELOW MEDIAN-3SD	MEDIAN-3SD TO MEDIAN -2SD	MEDIAN-2SD TO MEDIAN-1SD	MEDIAN-1SD TO MEDIAN	≥MEDIAN
Weight for age (underweight)	1975-79	6428	37.0	39.5	19.3	3.3	0.9
	1988-90	13432	26.6	42.0	24.2	6.0	1.2
	1996-97	8664	22.5	39.9	27.3	8.5	1.8
Height for age (Stunting)	1975-79	6425	53.3	25.3	14.6	4.8	2.0
	1988-90	13432	36.8	28.3	21.0	9.9	4.0
	1996-97	8654	28.8	28.9	24.2	12.8	5.3
Weight for Height (wasting)	1975-79	6422	2.9	15.2	44.3	29.0	8.6
	1988-90	13432	2.4	17.5	44.0	27.6	8.5
	1996-97	8654	2.5	16.0	42.8	30.2	8.5



3.6.2.2 School age children and Adolescents

Children with moderate and severe degree of undernutrition are considered as 'at risk' from public health point of view. The proportion of 'at risk' group among the children of school going age and adolescents was 71.8 percent. In the case of boys, the prevalence of 'at risk' group was 63.3% in 6-9 years and increased to 82.6% in the age group of 10-13 years with no change (82.2%) in 14-17 years. In the case of girls, the proportion of 'at risk' group increased from 63% in 6-9 years age group to 70.9% in 10-13 years and reduced to 61.8% in the age group of 14-17 years **(Table-20).** These results indicate that atleast two thirds of school age children and adolescents were undernourished.

Table 20 PERCENT DISTRIBUTION OF CHILDREN ACCORDING TO NUTRITIONAL STATUS : (WEIGHT FOR AGE) - GOMEZ CLASSIFICATION

Age Group (Yrs.)	Sex	N	Nutritional Grades*			
			Normal	Under nutrition	Moderate	Severe
6-9	Boys	3578	5.1	31.7	55.4	7.8
	Girls	3566	5.9	31.0	54.1	9.0
	Pooled	7144	5.5	31.4	54.7	8.4
10-13	Boys	2846	2.5	14.8	55.2	27.5
	Girls	3074	2.8	18.2	49.1	29.9
	Pooled	5920	2.7	16.6	52.0	28.7
14-17	Boys	2072	2.1	15.8	53.8	28.3
	Girls	2208	3.8	34.6	51.6	10.0
	Pooled	4280	3.0	25.5	52.6	18.9

* NCHS standards used

3.6.2.3 *Adults*

Body Mass Index (BMI)

The state-wise distribution of adult men and women according to their BMI grades is given in **Table-21.1.** At the aggregate level, about 51% of males and 46%

of females had normal BMI (18.5-25.0), while 46% males and 48% females had Chronic Energy Deficiency. About four percent of the adult males and 6% of adult females in rural areas were overweight **(Figs.18-19 & Table-21.2).**

A comparison between the periods revealed that the extent of CED declined from about 56% in 1975-79 to 46% in 1996-97 among males and from 52% to 48% among females. An increasing trend was also observed in the proportion of normals, over weight and obese adults between 1975-79 and 1988-90.

There was a decreasing trend in the prevalence of chronic energy deficiency in both the sexes. Similarly, the prevalence of overweight nearly doubled among adult males as well as females.

Table 21.1 DISTRIBUTION (%) OF ADULTS ACCORDING TO BMI CLASSIFICATION - 1996-97

BMI	Kerala	Tamil Nadu	Kama-taka	Andhra Pradesh	Maha-rashtra	Gujarat	Orissa	Pooled
MALES								
N	1789	1367	2643	1632	1349	1044	2927	12751
<16.0	6.3	8.0	9.9	10.2	7.0	16.7	6.1	8.6
16.0-17.0	7.2	9.4	12.8	13.8	9.9	17.3	9.2	11.0
17.0-18.5	17.7	25.0	27.2	28.4	25.6	28.9	27.7	25.9
18.5-20.0	20.0	22.4	22.4	20.9	25.9	17.5	37.8	25.3
20.5-25.0	39.0	28.9	23.5	23.7	29.1	17.5	18.1	25.2
25.0-30.0	9.1	5.9	3.9	2.9	3.2	1.8	1.0	3.8
≥30.0	0.7	0.4	0.3	0.1	0.2	0.2	0.1	0.3
FEMALES								
N	3480	1534	3394	2862	2022	1691	3039	18022
<16.0	5.1	9.7	16.1	14.6	9.7	15.4	13.0	11.8
16.0-17.0	6.4	11.7	15.4	15.5	13.1	14.1	14.1	12.8
17.0-18.5	13.1	19.0	25.5	26.8	27.4	26.4	26.1	23.2
18.5-20.0	16.5	21.6	19.3	19.5	20.8	19.3	24.4	20.0
20.5-25.0	43.2	29.3	20.3	20.0	25.8	21.8	20.8	26.4
25.0-30.0	13.4	7.4	3.0	3.3	2.9	3.3	1.4	5.2
≥30.0	2.4	1.2	0.4	0.3	0.3	0.7	0.2	0.8

Table 21.2 DISTRIBUTION (%) ADULTS ACCORDING TO BMI VALUES IN DIFFERENT PERIODS

BMI	Periods	Males	Females
<18.5	1975-79	55.6	51.8
	1988-90	49.0	49.3
	1996-97	45.5	47.7
18.5-25.0	1975-79	42.1	44.8
	1988-90	48.4	46.6
	1996-97	50.4	46.3
≥25.0	1975-79	2.3	3,4
	1988-90	2.6	4.1
	1996-97	4.1	6.0

Fig.18
DISTRIBUTION (%) OF ADULT MALES BY BMI STATUS IN DIFFERENT PERIODS

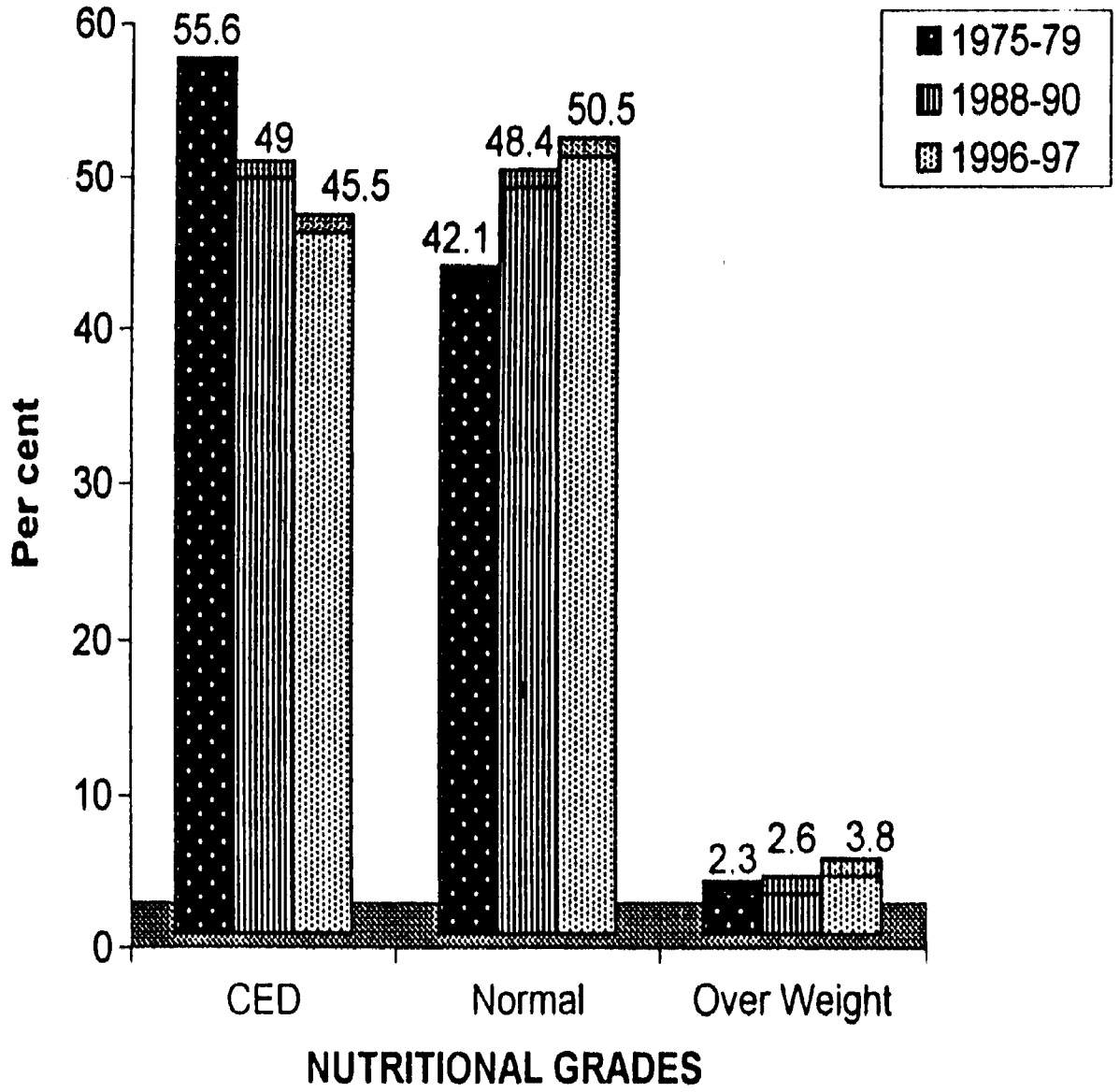
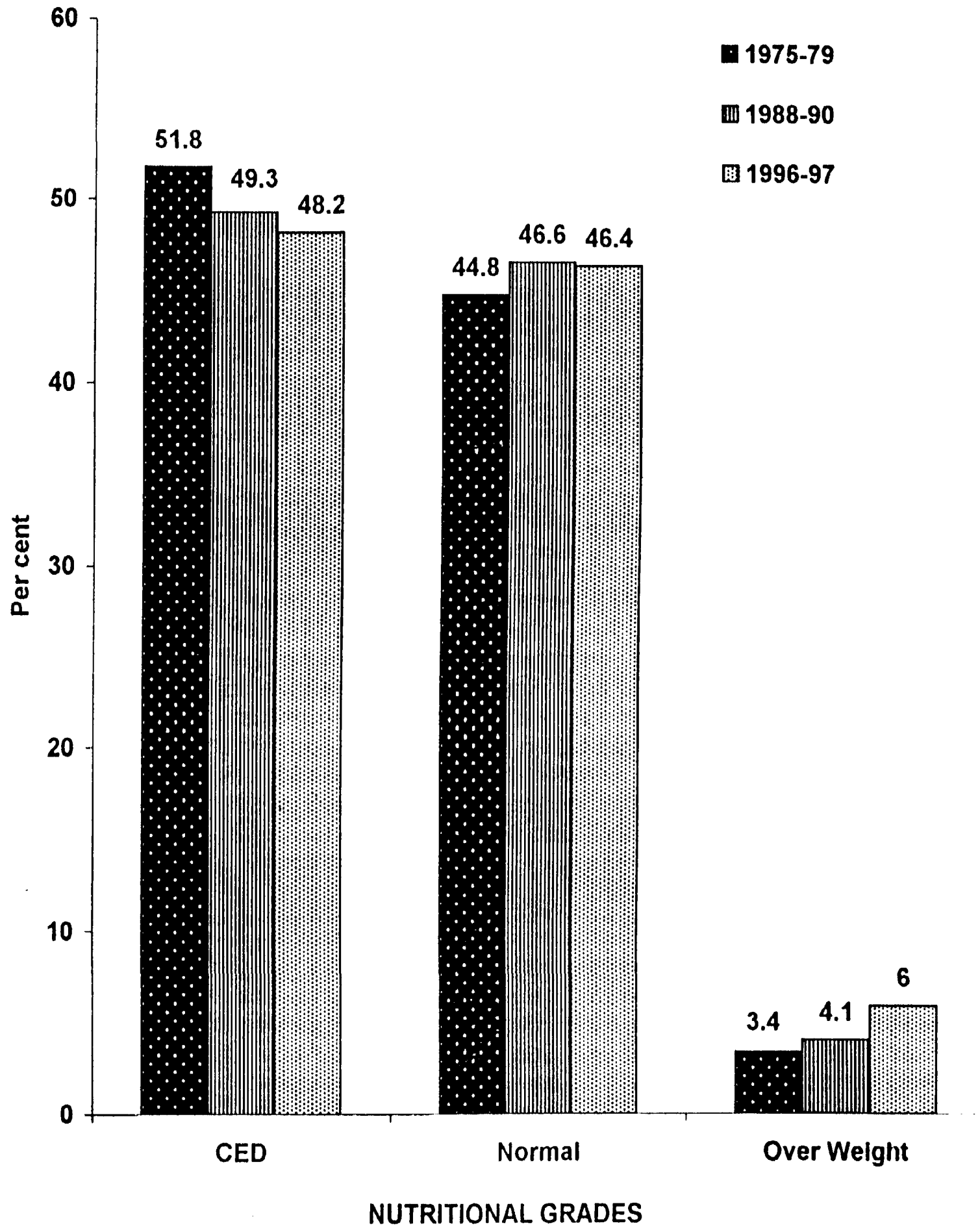


Fig.19
DISTRIBUTION (%) OF ADULT FEMALES BY BMI STATUS IN DIFFERENT PERIODS



4. COMMENTS

The main aim of the second repeat survey was to assess whether the time trends observed in 1988-90 persisted and the observations made during the earlier survey about time trends were true, to obtain current State level estimates of diet and nutritional status. The pooled data for all the States included in the analysis indicated that the intake of cereals and millets has declined from 505 g in 1975-1979 to 450 g/CU/day in 1996-97. Similar trends were noticed in other foodstuffs also. While the reduction of cereal intake with better socio-economic status has been observed earlier, an improvement in the intakes of protective foods also occurs simultaneously. In the present survey, there was improvement only in the intake of green leafy and other vegetables. This has been reflected in the intakes of energy, which decreased over the periods studied. A gradual increase was also observed in the proportion of HHs with protein energy adequacy status over the period. It was interesting to note that in the State of Kerala, there was increasing trend in the intakes of all the nutrients.

An appraisal of the changes in some of the socio-economic factors indicates that by and large, the improvement was only marginal. The improvement in the per capita income over almost two decades was about Rs.33/- per month. Since more than two-thirds of the HHs depend on agriculture, possession of land and its size per household determine the household food security in the rural areas. The results point out fragmentation of land holding, leading to increase in the proportion of HHs with small land holdings, as well as those without land, indirectly leading to household food insecurity. This perhaps, explains the possible reasons for absence of any changes in the dietary pattern in the States surveyed during the past 2 decades.

Inspite of no positive changes in the dietary status, there was an improvement in the nutritional status of preschool children (1-5 years). In general, in most of the States, there was an increase in percentage of normal children and a decrease in the severe grade undernutrition. Similar trends were observed in the case of stunting (low height for age) and under nutrition (weight for age). Since both height and weight recorded concomitant changes, the percentage of 'wasting' (low weight for height) was similar between periods. The prevalence of CED decreased over the period with concomitant increase in the prevalence of over weight among adult males and females. There was also reduction in the prevalence of clinical malnutrition like oedema, marasmus, vitamin A deficiency and B-complex deficiency signs among preschool children.

The improvement in nutritional status despite no change in overall food intakes at the household level may be due to changes in non-nutritional factors, such as improved water supply, reduction in infections, nutrition interventions, better health care. There might have also been increasing awareness and better child rearing practices and nutritional support provided through various National Programmes. However, it was interesting to note an increase by 3.7% in the prevalence of severe undernutrition among 1-5 year children in the State of Gujarat, the reasons for which are not clear.

The database on NNMB can thus be used to assess the nutritional status in the country and also monitor the changes over a period of time. However, this data does not allow us to assess the contribution of various factors influencing the nutritional situation. Collection of additional information to complement NNMB's effort is needed for setting up a National Nutrition Surveillance System.

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ANNEXURE

Table-A1.1

DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO PERCENT OF RDA

CEREALS & MILLETS, PULSES & LEGUMES AND LEAFY VEGETABLES

Per Cent of RDA		State							Pooled N=3357
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Maharash-tra	Gujarat	Orissa	
		n=592	n=270	n=560	n=576	n=411	n=404	n=544	
Cereals & Millets	<10	.0	.0	.0	.2	.0	.0	.0	.0
	10-20	.2	.0	.0	.0	.2	.0	.0	.1
	20-30	.0	.0	.0	.2	.0	.2	.2	.1
	30-40	1.0	.0	.0	.2	.2	2.0	.4	.5
	40-50	4.6	2.6	.5	1.0	1.2	3.0	.4	1.8
	50-60	12.3	8.1	2.3	2.8	2.2	8.2	.7	5.1
	60-70	20.9	13.7	4.1	5.2	8.3	11.4	2.2	9.1
	70-80	23.0	16.3	11.6	9.7	12.2	12.1	7.0	13.0
	80-90	17.2	17.4	15.9	11.5	16.3	12.9	7.5	13.8
	90-100	10.0	14.8	19.5	14.4	16.1	11.6	9.6	13.6
	>= 100	10.8	27.0	46.1	54.9	43.3	38.6	72.1	42.8
Pulses & Legumes	<10	52.0	23.7	10.9	37.0	23.6	28.0	51.3	33.8
	10-20	.7	3.0	.2	.2	.5	.5	.7	.7
	20-30	1.9	2.6	1.4	.3	.7	1.5	.7	1.2
	30-40	4.1	2.2	3.2	1.9	2.4	3.2	.9	2.6
	40-50	3.4	6.3	5.0	3.8	4.6	4.2	2.6	4.1
	50-60	6.1	7.4	6.6	4.9	5.8	5.0	4.8	5.7
	60-70	7.8	8.5	7.1	3.3	8.8	3.7	5.1	6.2
	70-80	3.7	10.0	7.1	6.8	5.6	5.4	4.0	5.8
	80-90	2.9	5.9	8.8	6.4	5.6	6.4	4.4	5.7
	90-100	2.5	7.4	5.2	4.2	5.1	5.7	3.7	4.5
	>= 100	15.0	23.0	44.5	31.3	37.2	36.4	21.7	29.7
Leafy Vegetables	<10	85.3	84.4	88.9	84.7	81.8	90.8	56.6	81.3
	10-20	.0	.0	.7	.0	1.7	.5	.0	.4
	20-30	.0	.0	.0	.5	1.5	.0	.0	.3
	30-40	.0	.0	.2	.2	.0	.2	.0	.1
	40-50	.3	.4	.4	.3	.5	.0	.0	.3
	50-60	.0	1.5	.2	1.2	.7	.2	.6	.6
	60-70	.3	1.1	.4	.9	1.0	.5	.4	.6
	70-80	.3	.4	.2	.5	.7	.0	.0	.3
	80-90	.5	.7	.5	1.4	.5	.0	.6	.6
	90-100	.2	.4	.9	.5	.7	.7	.7	.6
	>= 100	13.0	11.1	7.7	9.7	10.9	6.9	41.2	15.0

Table-A1.2
DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TO PERCENT OF RDA
OTHER VEGETABLES, ROOTS & TUBERS, MILK & MILK PRODUCTS

Per Cent of RDA		States							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Maharashtra	Gujarat	Orissa	Pooled
Other Vegetables	<10	32.4	38.9	57.9	67.4	42.6	44.3	41.2	47.3
	10-20	.0	4.1	.5	.3	.0	.2	.0	.5
	20-30	.7	4.1	1.8	.7	.0	.5	.4	1.0
	30-40	1.4	1.1	3.0	.9	.5	.0	.9	1.2
	40-50	2.9	3.7	3.2	.7	1.5	1.2	.6	1.9
	50-60	3.5	3.7	3.8	1.6	2.2	1.5	1.5	2.5
	60-70	2.7	1.5	2.3	1.9	5.6	2.5	2.8	2.7
	70-80	3.9	7.0	3.6	1.6	3.6	3.0	2.6	3.3
	80-90	3.4	3.0	2.5	.7	3.9	2.5	4.4	2.9
	90-100	3.4	2.2	3.2	2.4	4.1	4.7	1.8	3.1
	>= 100	45.8	30.7	18.2	21.9	36.0	39.6	43.9	33.6
Roots & Tubers	<10	5.1	8.5	15.7	11.3	15.3	46.3	20.8	16.9
	10-20	11.7	13.3	4.6	20.0	10.7	.0	3.7	9.2
	20-30	9.5	11.5	12.1	20.7	19.5	.0	2.8	11.0
	30-40	10.0	11.1	14.6	16.0	11.2	1.2	2.8	9.8
	40-50	10.3	7.0	10.2	9.5	7.5	1.5	2.2	7.2
	50-60	5.7	8.1	9.3	5.6	4.9	1.5	2.6	5.4
	60-70	4.6	3.3	7.1	3.3	4.9	1.7	2.8	4.1
	70-80	4.4	2.6	3.6	1.9	3.2	3.5	1.5	2.9
	80-90	4.2	1.1	3.0	2.1	1.9	3.2	3.3	2.9
	90-100	1.9	1.5	2.1	1.9	1.5	2.5	3.3	2.1
	>= 100	32.8	31.9	17.5	7.8	19.5	38.6	54.4	28.4
Mil and Milk Products	<10	25.2	39.6	22.3	33.2	26.5	19.6	86.9	36.7
	10-20	2.0	1.9	17.3	6.8	18.0	5.4	.9	7,6
	20-30	5.6	5.6	11.1	8.7	8.0	5.7	2.0	6.8
	30-40	6.1	2.6	5.0	8.3	6.8	6.7	2.2	5.5
	40-50	4.4	7.0	5.9	7.1	6.8	5.2	2.2	5.4
	50-60	7.4	7.8	5.4	5.0	4.1	4.7	.9	4.9
	60-70	6.6	3,3	5.7	4.7	4.6	4.0	1.1	4,4
	70-80	4.1	3.3	2.9	3.6	3.6	3.7	1.1	3.2
	80-90	4.2	3.3	3.8	3.3	3.2	4.2	.2	3.1
	90-100	3.7	2.6	2.7	3.5	1.7	3.5	.2	2.6
	>= 100	30.7	23.0	18.0	15.8	16.5	37.4	2.2	19.9

Table-A1.3

FREQUENCY DISTRIBUTION (%) OF HOUSEHOLDS ACCORDING TOPERCENT OF RDA

FATS & OILS AND SUGAR & JAGGERY

Per Cent of RDA		States							
		Kerala	Tamilnadu	Karnataka	Andhra Pradesh	Maharashtra	Gujarat	Orissa	Pooled
Fats & oils	<10	3.9	8.9	7.3	2.3	.5	4.5	6.6	4.7
	10-20	16.2	11.1	12.9	5.4	1.2	3.5	12.9	9.5
	20-30	24.2	20.4	21.6	11.3	4,6	8.7	22.8	16.7
	30-40	17.6	18.1	16.4	13.9	10.2	8.4	19.9	15 2
	40-50	12.2	7.8	10.9	13.4	11.2	6.7	15.3	11.5
	50-60	9.0	5.6	7.1	12.3	14.6	7.7	7.4	9.2
	60-70	4.9	7.0	5.0	9.7	10.9	6.2	6.1	7.0
	70-80	2.4	2.2	3.9	7.8	11.2	8.7	2.6	5.4
	80-90	2.7	4.1	2.7	7.5	5.8	6.7	1.3	4.3
	90-100	1.2	3.3	2.1	3.0	6.6	5.7	.7	2.9
	>= 100	5.9	11.5	10.0	13.5	23.1	33.4	4.6	13.6
Sugar & Jaggery	<10	3.9	36.3	19.5	39.9	6.6	6.7	64.5	25.8
	10-20	.0	.7	.2	4.9	.2	.7	1.1	1.2
	20-30	.3	1.9	.7	6.8	.2	2.2	5.3	2.7
	30-40	1.2	2.6	2.0	10.8	1.0	5.7	5.7	4.3
	40-50	3.9	2.6	3.2	8.3	6.1	4.5	4.2	4.8
	50-60	8.6	4.4	5.5	8.7	9.0	8.4	4.4	7.1
	60-70	11.0	3.0	3.9	7.8	9.0	5.9	3.7	6.6
	70-80	16.6	5.2	7.1	3.8	5.1	10.1	3.3	7.6
	80-90	17.9	6.7	7.0	3.3	7.3	5.4	2.0	7.3
	90-100	11.1	6.3	6.3	1.6	6.3	5.7	1.8	5.5
	>= 100	25.5	30.4	44.6	4.2	49.1	44.6	3.9	27.1

Table-A 2.1
FREQUENCY DISTRIBUTION OF HOUSEHOLDS ACCORDING TO CONSUMPTION OF PROTEIN, ENERGY AND CALCIUM

Nutrient	Class Interval	Percent frequency
Protein (g)	<20	0.4
	20-30	4.2
	30-40	16.6
	40-50	25.8
	50-60	22.8
	60-70	14.0
	70-80	8.9
	80-90	3.7
	90-100	1.7
	> = 100	1.8
Energy (Kcal)	< 1225	3.0
	1225-1425	4.4
	1425-1625	9.4
	1625-1825	14.3
	1825-2025	16.7
	2025-2225	15.0
	2225-2425	12.2
	2425-2625	9.3
	2625-2825	6.6
	2825-3025	3.9
	> = 3025	5.2
Calcium (mg)	< 100	2.4
	100-200	14.7
	200-300	18.6
	300-400	14.7
	400-500	11.0
	500-600	7.9
	600-700	6.5
	700-800	5.2
	> = 800	19.0

Number of Households : 3357

Table - A 2.2
FREQUENCY DISTRIBUTION OF HOUSEHOLDS ACCORDING TO CONSUMPTION OF IRON, VITAMIN A AND THIAMIN

Nutrient	Class Interval	Percent frequency
Iron (mg): (New Values)	<13	54.1
	13-16	13.3
	16-19	10.5
	19-22	8.2
	22-25	5.1
	25-28	3.2
	28-31	1.7
	31-34	1.1
	34-37	0.7
	37-40	0.4
	40-43	0.3
	43-46	0.4
	> = 46	1.0
Vitamin A (µg)	< 100	25.3
	100-200	36.3
	200-300	13.0
	300-400	4.9
	400-500	3.7
	500-600	2.9
	600-700	3.1
	700-800	2.0
	> = 800	8.8
Thiamine (mg)	<0.4	0.6
	0.4-0.5	1.9
	0.5-0.6	5.7
	0.6-0.7	10.1
	0.7-0.8	10.7
	0.8-0.9	9.2
	0.9-1.0	9.4
	1.0-1.1	6.3
	1.1-1.2	5.6
	1.2-1.3	4.8
	1.3-1.4	4.6
	1.4-1.5	4.2
	>=1.5	27.0

Number of households: 3357

Table-A 2.3
FREQUENCY DISTRIBUTION OF HOUSEHOLDS ACCORDING TO CONSUMPTION OF RIBOFLAVIN, NIACIN AND VITAMIN C

Nutrient	Class Interval	Percent frequency
Ribovlavin (mg)	<0.4	0.6
	0.4-0.5	2.1
	0.5-0.6	7.2
	0.6-0.7	10.9
	0.7-0.8	13.8
	0.8-0.9	13.9
	0.9-1.0	11.9
	1.0-1.1	9.6
	1.1-1.2	7.4
	1.2-1.3	5.9
	1.3-1.4	3.9
	1.4-1.5	3.7
	>=1.5	8.9
Niacin (mg)	<4	0.2
	4-8	9.4
	8-12	40.3
	12-16	31.5
	16-20	12.7
	20-24	3.8
	24-28	1.3
	28-32	0.7
	> = 32	0.3
Vitamin-C (mg)	<5	6.9
	5-10	9.0
	10-15	7.5
	15-20	8.1
	20-25	8.9
	25-30	8.0
	30-35	7.2
	35-40	6.7
	40-45	5.6
	45-50	4.4
	50-55	3.8
	55-60	3.2
	> = 60	20.7

Number of households: 3357

Table - A 2.4

FREQUENCY DISTRIBUTION OF HOUSEHOLDS ACCORDING TO CONSUMPTION OF FOLIC ACID AND TOTAL FAT

Nutrient	Class Interval	Percent frequency
Folic Acid (mg)	<50	2.4
	50-100	19.5
	100-150	32.7
	150-200	25.0
	200-250	11.8
	250-300	4.8
	300-350	2.1
	350-400	1.2
	400-450	0.3
	>=450	0.2
Total Fat (g)	<5	1.4
	5-10	10.8
	10-15	15.2
	15-20	13.5
	20-25	11.5
	25-30	9.6
	30-35	7.5
	35-40	6.4
	40-45	4.8
	45-50	4.4
	50-55	3.3
	55-60	1.8
	>=60	9.7

Number of households: 3357

Table A3.1
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: KERALA **SEX : MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
				1975-	1988-	1996-	1975-	1988-	1996-
	n	n	n	1979	1990	1997	1979	1990	1997
<1	39	95	70	65.1	64.5	65.4	6.6	7.1	7.0
1	27	86	87	74.0	74.5	75.8	8.4	8.9	9.2
2	82	116	93	81.4	85.6	85.1	9.8	10.9	11.1
3	62	86	130	87.9	94.0	92.6	11.2	12.6	12.8
4	103	95	172	93.3	99.0	99.8	12.5	13.8	14.3
5	99	68	145	100.3	102.9	105.7	13.9	14.7	15.7
6	90	73	139	106.2	108.8	111.2	15.5	15.8	17.0
7	90	66	116	110.5	116.4	116.6	16.4	18.4	18.6
8	121	68	141	115.1	120.4	120.5	18.2	19.2	20.4
9	78	68	146	119.5	124.0	127.2	19.4	20.6	23.0
10	137	89	104	123.9	129.5	130.4	21.1	23.1	24.5
11	100	63	77	128.0	132.8	134.0	23.3	25.1	25.5
12	195	87	108	131.1	138.9	139.5	24.3	282	28.9
13	132	70	79	135.7	141.5	144.1	26.8	28.9	31.9
14	138	49	95	141.8	148.0	150.4	30.1	34.2	35.9
15	78	47	56	147.2	155.3	156.1	33.2	39.2	39.6
16	91	42	70	151.7	160.4	162.5	37.1	43.3	47.0
17	60	39	50	157.0	162.1	164.6	40.8	45.3	50.3
18	55	65	52	160.5	163.5	165.9	43.4	47.3	51.0
19	36	50	42	160.8	163.7	163.2	44.9	47.8	50.4
20-25	193	224	199	161.9	165.4	165.4	47.4	50.8	53.9
25-30	152	132	196	161.8	164.4	164.4	48.7	53.0	55.4
30-35	91	131	187	160.6	164.6	165.0	48.8	52.9	56.9
35-40	102	137	174	161.0	163.3	163.8	47.6	52.6	56.0
40-45	107	82	157	161.6	164.5	163.6	48.5	54.8	56.5
45-50	80	87	155	159.9	161.8	162.6	46.6	51.7	56.9
50-55	66	70	118	160.4	161.5	161.8	47.9	51.8	54.4
55-60	52	89	150	159.2	161.3	162.4	47.1	49.3	53.7
60 & above	116	274	359	158.7	159.2	158.8	44.9	48.0	50.0

Table A3.2
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : KERALA **SEX** : **MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Arm Circumference (cm)			Fatfold at Triceps (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	39	95	70	12.7	14.1	13.7	9.1	10.9	9.4
1	27	86	87	13.1	14.3	14.3	9.1	10.3	8.9
2	82	116	93	13.3	14.8	14.6	8.1	10.4	9.1
3	62	86	130	13.8	15.2	15.1	7.8	10.5	8.8
4	103	95	172	14.2	15.3	15.3	7.8	10.5	8.5
5	99	68	145	14.1	15.2	15.5	6.8	9.7	8.1
6	90	73	139	14.5	15.3	15.7	6.5	9.1	7.8
7	90	66	116	14.5	15.6	16.1	6.5	8.3	7.4
8	121	68	141	15.1	15.7	16.3	6.1	8.2	7.4
9	78	68	146	15.4	16.2	17.1	6.2	8.4	8.3
10	137	89	104	15.5	16.7	17.4	5.5	8.3	8.2
11	100	63	77	16.0	17.4	17.6	6.0	8.8	7.8
12	195	87	108	16.6	17.9	18.7	6.0	8.3	8.1
13	132	70	79	17.2	18.2	19.2	5.9	8.6	9.1
14	138	49	95	17.9	19.7	20.1	6.3	9.2	8.4
15	78	47	56	19.2	20.9	21.7	6.3	8.2	8.5
16	91	42	70	20.0	21.7	23.3	6.1	9.1	8.4
17	60	39	50	21.2	22.8	24.1	5.6	9.3	8.5
18	55	65	52	22.1	23.4	24.6	6.7	8.0	7.8
19	36	50	42	22.8	23.6	25.0	6.7	8.0	7.7
20-25	193	224	199	23.3	24.8	25.8	6.2	8.0	8.4
25-30	152	132	196	24.1	25.6	26.3	5.9	8.3	8.3
30-35	91	131	187	24.7	25.7	26.7	6.3	8.2	8.7
35-40	102	137	174	24.0	25.4	26.7	6.0	8.4	8.5
40-45	107	82	157	24.3	26.2	26.7	6.2	9.1	8.6
45-50	80	87	155	23.8	25.5	26.7	6.4	8.5	8.2
50-55	66	70	118	23.6	25.4	26.3	7.0	9.1	8.3
55-60	52	89	150	24.0	24.6	25.9	7.2	8.5	8.0
60 & above	116	274	359	22.2	24.1	24.5	6.6	8.8	8.5

Table A3.3
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: KERALA **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	45	93	66	63.0	65.0	64.9	6.4	7.0	7.1
1	53	92	77	73.2	74.1	74.5	8.6	8.7	8.9
2	70	75	92	79.8	81.9	84.0	9.3	10.3	10.8
3	81	103	104	87.1	91.6	92.4	10.9	12.1	12.4
4	87	96	131	92.9	96.8	98.7	12.2	13.3	13.9
5	73	65	120	100.1	104.8	104.1	13.9	14.7	14.9
6	73	64	105	104.0	108.6	110.1	14.7	15.8	16.4
7	81	63	110	110.6	113.1	116.0	16.8	17.1	18.2
8	103	70	120	113.5	119.3	120.8	17.4	19.4	19.8
9	80	69	123	118.6	123.3	125.2	18.9	20.6	22.0
10	91	73	112	122.4	128.7	131.2	21.1	22.1	25.1
11	55	58	83	126.5	134.6	134.6	23.0	25.6	27.1
12	110	84	82	130.3	140.0	140.6	24.2	29.9	31.1
13	60	74	114	133.9	145.2	145.3	27.2	33.3	33.7
14	79	65	68	141.1	149.0	149.3	31.6	37.7	37.3
15	61	52	80	146.2	149.5	151.5	34.9	39.0	41.9
16	72	69	58	148.5	151.5	152.9	39.6	42.0	43.8
17	47	56	71	149.7	152.8	154.2	40.4	43.5	44.5
18	61	75	99	149.4	150.7	152.9	40.9	43.5	45.9
19	51	71	69	149.2	152.9	152.7	42.0	44.4	45.8
20-25	298	475	519	150.7	151.9	152.4	42.7	44.5	47.1
25-30	288	421	546	149.9	151.9	152.4	42.8	46.0	48.6
30-35	203	319	432	149.7	151.7	151.7	42.5	45.3	49.6
35-40	183	276	373	149.8	150.6	150.7	42.2	45.6	49.9
40-45	146	184	294	148.1	149.1	150.0	40.7	44.9	50.6
45-50	126	184	300	148.2	148.6	149.5	40.2	43.6	49.6
50-55	83	159	184	147.6	148.9	148.8	40.6	45.5	49.6
55-60	59	152	202	146.6	148.1	148.1	38.9	43.8	48.7
60 and above	147	348	462	146.0	146.6	146.2	38.5	40.9	44.5

Table A3.4
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : KERALA **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	ARM CIRCUMFERENCE (cm)			FAT FOLD AT TRICEPS (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996 1997
<1	45	93	66	12.7	13.9	13.5	9.2	10.8	8.9
1	53	92	77	13.1	14.4	14.1	8.1	10.4	9.2
2	70	75	92	12.9	14.5	14.4	7.6	10.8	9.1
3	81	103	104	13.7	15.2	15.0	8.4	11.4	9.2
4	87	96	131	14.2	15.1	15.3	8.9	10.7	9.6
5	73	65	120	14.4	15.2	15.1	7.6	10.2	8.5
6	73	64	105	14.2	15.3	15.6	6.7	9.6	8. 7
7	81	63	110	14.5	15.5	15.8	6.5	9.2	8.3
8	103	70	120	14.7	16.0	16.4	6.4	9.5	9.2
9	80	69	123	14.9	16.5	17.0	6.4	9.8	98
10	91	73	112	15.6	16.8	17.7	6.4	9.7	10. 3
11	55	58	83	16.5	17.4	18.2	7.7	9.8	10 4
12	110	84	82	16.8	18.8	19.2	6.6	10.7	10.
13	60	74	114	17.7	19.9	19.6	7.3	11.5	11.1
14	79	65	68	18.9	21.3	20.7	8.3	12.9	11.4
15	61	52	80	19.9	21.5	22.2	9.1	12.7	13.0
16	72	69	58	21.4	22.7	22.7	10.2	13.5	13.8
17	47	56	71	22.1	23.4	23.4	11.4	14.6	13. 3
18	61	75	99	21.9	23.1	23.9	10.8	13.8	14.3
19	51	71	69	22.3	23.4	23.8	10.0	13.6	14.3
20-25	298	475	519	22.5	23.4	24.2	9.5	13.2	13.9
25-30	288	421	546	22.4	24.4	25.0	8.7	14.2	14.2
30-35	203	319	432	22.9	24.3	25.7	8.8	13.8	14.9
35-40	183	276	373	22.9	24.7	26.1	8.8	14.2	15.3
40-45	146	184	294	22.5	24.6	26.3	9.5	13.6	15.9
45-50	126	184	300	21.9	26.0	26.0	13.3	15.3	15.2
50-55	83	159	184	22.0	24.9	25.8	9.7	15.0	14.9
55-60	59	152	202	21.7	24.5	25.9	8.7	14.1	15.5
60 and above	147	348	462	21.2	23.4	24.1	8.0	12.6	13.1

Table A3.5
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : TAMILNADU **SEX : MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	121	166	118	64.9	65.7	64.3	6.5	6.8	6.5
1	108	256	99	73.5	74.9	76.6	8.3	8.6	9.2
2	105	339	90	80.8	83.2	85.1	9.5	10.2	10.8
3	128	417	101	86.1	90.9	92.3	11.0	11.8	12.5
4	146	631	105	93.9	97.7	97.1	12.6	13.3	13.7
5	102	100	49	100.8	102.9	104.4	14.1	14.3	15.0
6	98	204	66	105.9	106.7	108.5	15.4	15.6	15.9
7	132	171	59	110.7	112.8	114.5	17.0	17.2	17.9
8	120	168	65	115.2	117.8	119.7	18.1	18.8	19.3
9	125	139	64	119.6	121.8	124.4	19.8	20.3	21.3
10	140	146	73	124.8	125.2	128.4	21.9	21.5	22.8
11	103	156	65	129.6	131.1	131.6	23.9	23.6	24.6
12	168	191	72	133.6	136.3	135.6	25.4	26.2	265
13	139	151	70	138.9	130.0	142.2	28.1	27.8	29.7
14	81	123	85	145.1	144.5	148.5	32.4	31.4	33.8
15	84	110	83	147.6	151.7	152.2	33.7	36.3	36.9
16	110	135	94	154.4	157.0	158.1	38.3	40.6	41.9
17	99	86	71	159.4	161.7	162.3	42.5	45.1	46.7
18	77	129	25	160.2	162.0	164.0	43.4	45.7	47.7
19	69	87	38	160.9	163.8	165.6	45.8	48.1	50.3
20-25	296	289	194	162.5	163.8	164.4	47.5	49.5	50.5
25-30	226	220	185	162.6	164.1	164.5	50.1	50.9	52.7
30-35	174	180	194	162.0	163.1	163.5	49.8	50.7	53.3
35-40	232	195	169	162.8	163.3	162.1	49.7	50.6	52.4
40-45	161	125	117	163.2	163.4	163.6	51.7	52.0	55.4
45-50	167	112	102	162.9	162.0	162.2	50.7	50.4	52.3
50-55	102	75	67	162.6	164.1	162.4	51.6	52.0	54.4
55-60	86	85	86	162.2	162.0	162.1	50.7	50.7	53.0
60 and above	152	151	194	161.2	161.0	161.3	48.1	48.4	49.0

Table A3.6

NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : TAMILNADU SEX : MALES

Age (Yrs.)	1975-1979	1988-1990	1996-1997	ARM CIRCUMFERENCE (cm)			FAT FOLD AT TRICEPS (mm)		
				1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
	n	n	n						
<1	121	166	118	11.7	12.6	13.4	8.9	7.7	7.3
1	108	256	99	12.3	13.2	14.0	9.0	7.7	7.7
2	105	339	90	12.6	13.7	14.5	8.5	8.3	8.3
3	128	417	101	13.2	14.3	14.8	9.4	8.7	8.2
4	146	631	105	13.4	14.4	14.9	9.0	8.1	8.1
5	102	100	49	13.7	14.3	15.0	8.5	7.3	7.3
6	98	204	66	13.9	14.7	14.9	7.8	7.3	7.0
7	132	171	59	14.1	15.0	15.3	7.4	7.0	6.6
8	120	168	65	14.1	15.2	15.5	7.2	6.6	6.1
9	125	139	64	14.7	15.5	16.0	6.6	6.6	6.5
10	140	146	73	15.2	15.9	16.5	6.7	6.2	6.6
11	103	156	65	16.0	16.4	17.2	7.0	6.5	6.4
12	168	191	72	16.2	17.1	17.6	6.9	6.7	6.9
13	139	151	70	16.8	17.5	18.2	6.8	7.1	6.5
14	81	123	85	17.8	18.6	19.1	7.2	7.3	6.9
15	84	110	83	18.2	19.6	19.8	6.9	7.1	6.7
16	110	135	94	19.3	20.8	21.1	7.1	7.0	6.9
17	99	86	71	20.5	22.1	22.4	7.4	7.0	6.2
18	77	129	25	21.1	22.5	22.8	8.0	6.8	6.7
19	69	87	38	21.8	23.3	23.6	7.4	6.7	6.3
20-25	296	289	194	22.3	24.0	24.1	6.9	6.7	6.4
25-30	226	220	185	22.9	24.5	24.9	7.7	7.1	7.0
30-35	174	180	194	23.0	24.8	25.3	7.9	7.1	7.9
35-40	232	195	169	22.7	24.3	25.1	7.6	7.0	7.5
40-45	161	125	117	23.2	24.8	25.6	8.2	7.5	8.1
45-50	167	112	102	23.0	24.1	24.9	7.7	7.8	7.2
50-55	102	75	67	23.5	24.7	24.8	8.6	7.5	8.3
55-60	86	85	86	23.1	24.2	24.8	7.9	7.6	8.6
60 and above	152	151	194	21.9	23.2	23.2	8.1	7.4	7.1

Table A3.7
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: TAMILNADU **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	115	191	121	63.0	63.8	62.0	5.8	6.2	6.0
1	97	209	119	72.1	73.1	75.0	7.7	8.1	8.5
2	126	344	116	79.3	81.9	83.7	9.4	9.7	10.2
3	142	379	86	85.8	89.2	89.6	10.5	11.2	11.8
4	137	563	103	92.8	96.0	96.5	11.9	12.8	13.2
5	92	99	53	100.2	101.5	102.3	13.6	14.1	14.3
6	84	167	70	104.7	106.5	108.1	14.5	15.1	15.7
7	108	160	50	109.0	110.8	113.6	16.2	16.4	17.4
8	117	152	73	114.6	116.8	118.5	17.7	18.6	19.2
9	87	147	65	118.9	121.7	123.5	19.5	20.2	21.0
10	126	126	77	125.8	127.6	126.0	22.2	22.8	22.3
11	92	108	88	129.5	131.6	131.9	23.9	24.6	24.6
12	129	142	73	134.1	137.2	138.3	26.4	27.4	28.3
13	88	103	75	140.1	142.3	143.9	30.0	31.6	31.5
14	77	99	97	146.1	146.7	148.2	35.5	35.4	35.9
15	59	65	76	147.1	147.7	150.6	37.4	38.4	39.1
16	91	116	76	148.4	150.7	152.0	40.0	41.4	41.9
17	64	69	58	150.2	151.1	151.0	41.2	42.4	43.3
18	81	87	48	151.0	151.8	152.1	42.8	43.5	44.0
19	57	57	52	151.9	151.6	152.1	43.4	43.8	43.3
20-25	273	390	324	151.1	150.9	151.9	42.9	42.7	44.0
25-30	302	363	322	150.9	151.3	152.1	42.6	43.5	45.2
30-35	209	194	170	150.1	151.4	152.5	43.1	43.6	47.6
35-40	232	183	162	150.4	150.5	151.4	43.8	43.5	46.9
40-45	129	75	83	150.5	150.0	150.9	42.8	44.9	46.4
45-50	127	83	115	150.4	150.8	151.1	44.0	45.1	48.0
50-55	82	67	85	148.3	150.7	151.1	41.5	46.0	47.2
55-60	76	58	55	149.4	151.3	151.2	42.2	42.4	44.4
60 and above	137	84	120	148.4	148.3	148.6	40.0	41.4	43.4

Table A3.8

NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: TAMILNADU **SEX: FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	ARMCIRCUMFERENCE			FAT FOLD AT TRICEPS		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	115	191	121	11.1	12.3	12.6	8.6	7.6	7.1
1	97	209	119	11.9	12.7	13.6	8.7	7.6	7.7
2	126	344	116	12.4	13.5	13.9	9.4	8.7	8.5
3	142	379	86	12.9	14.	14.6	9.9	9.0	8.8
4	137	563	103	13.3	14.3	14.9	9.3	8.6	8.6
5	92	99	53	13.7	14.7	14.9	8.8	8.1	7.8
6	84	167	70	13.9	14.6	15.2	8.2	7.7	7.6
7	108	160	50	14.2	14.9	15.3	8.1	7.4	7.1
8	117	152	73	14.5	15.5	15.7	7.6	7.4	7.2
9	87	147	65	14.9	15.8	16.2	7.8	7.5	7.3
10	126	126	77	15.8	16.8	16.8	8.1	8.0	7.7
11	92	108	88	16.0	17.0	17.2	8.1	7.6	7.1
12	129	142	73	16.9	17.9	18.1	8.6	8.0	8.4
13	88	103	75	17.8	18.8	18.9	8.7	9.0	8.1
14	77	99	97	19.0	20.0	19.9	10.2	9.5	9.0
15	59	65	76	19.9	21.2	20.6	10.9	11.0	9.5
16	91	116	76	20.7	21.8	21.7	12.2	11.3	10.1
17	64	69	58	21.3	22.3	22.6	11.9	11.4	11.5
18	81	87	48	21.4	22.4	22.6	12.3	11.1	10.7
19	57	57	52	22.0	22.5	22.1	12.5	11.8	9.9
20-25	273	390	324	21.0	22.1	22.6	11.5	11.0	10.1
25-30	302	363	322	21.1	22.5	23.0	11.1	11.0	10.7
30-35	209	194	170	21.5	22.8	23.8	11.4	11.2	11.9
35-40	232	183	162	21.8	22.8	24.0	11.9	11.4	12.4
40-45	129	75	83	21.6	23.2	23.8	11.5	11.8	12.0
45-50	127	83	115	22.2	23.4	24.4	12.2	12.5	12.7
50-55	82	67	85	21.3	23.7	23.9	11.8	12.2	12.5
55-60	76	58	55	21.3	22.6	23.2	11.7	10.6	11.5
60 and above	137	84	120	20.5	22.3	22.5	9.9	10.6	11.1

Table A3.9
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : KARNATAKA **SEX : MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cm.)			Weight (kg.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	114	121	191	62.7	63.0	63.6	6.3	6.3	6.4
1	101	200	204	72.7	73.8	75.0	8.0	8.0	8.7
2	84	225	196	80.7	82.2	83.9	9.5	9.9	10.6
3	139	208	243	86.5	89.1	90.4	10.8	11.3	11.7
4	152	264	215	94.1	95.8	97.1	12.4	12.7	13.2
5	85	169	166	100.4	102.1	101.5	13.8	14.3	14.0
6	126	128	228	106.9	106.4	106.9	15.4	15.0	15.4
7	100	147	157	113.1	113.2	113.1	17.1	17.3	17.0
8	128	144	209	118.6	118.7	118.2	18.9	18.9	18.5
9	73	120	204	122.6	124.8	123.6	20.4	21.1	20.3
10	129	141	214	126.1	128.0	128.5	22.1	22.3	22.4
11	74	93	130	132.2	132 0	133.4	24.4	24.4	24.6
12	155	183	239	136.4	136.8	137.4	26.8	26.3	26.6
13	79	145	150	141.5	142.6	142.7	28.8	29.8	29.7
14	88	129	127	146.8	148.4	148.8	33.1	33.8	33.8
15	56	93	93	152.5	155.7	154.2	36.6	39.3	38.4
16	95	110	152	157.3	158.8	158.6	40.3	42.1	42.0
17	56	90	83	159.7	160.5	162.4	42.6	44.3	45.0
18	110	177	118	163.0	163.1	163.1	46.1	46.3	47.3
19	36	79	46	163.4	163.9	164.1	48.0	47.6	479
20-25	204	178	336	164.6	164.9	164.2	48.7	49.6	49.6
25-30	152	211	370	164.6	164.2	164.9	49.5	50.4	51.6
30-35	152	251	327	164.5	163.0	165.2	49.6	50.0	53.1
35-40	209	229	367	164.2	164.1	164.5	50.1	50.9	52.9
40-45	163	124	270	163.7	162.8	164.3	48.7	49.7	53.3
45-50	132	103	206	163.9	163.1	163.7	49.4	49.5	52.2
50-55	92	64	178	163.7	162.3	163.1	49.1	51.1	49.7
55-60	86	63	119	162.7	163.8	163.5	46.4	52.0	52.1
60 & above	166	146	305	162.5	162.3	162.2	46.5	49.2	48.1

Table A3.10
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : KARNATAKA **SEX : MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Arm Circumference (cm)			Fatfold at triceps (mm		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996 1997
<1	114	121	191	12.6	12.5	13.0	8.6	7.3	6.1
1	101	200	204	13.1	12.9	13.7	7.7	6.7	6.6
2	84	225	196	13.4	13.5	14.1	8.3	7.4	7.3
3	139	208	243	13.9	13.9	14.3	8.6	7.3	7.5
4	152	264	215	14.2	14.2	14.4	8.2	7.1	7.5
5	85	169	166	14.2	14.3	14.5	7.2	6.4	7.3
6	126	128	228	14.3	14.4	14.4	6.7	5.7	6.9
7	100	147	157	14.7	14.9	14.8	5.9	5.4	6.9
8	128	144	209	15.1	15.3	15.1	5.7	5.2	6.8
9	73	120	204	15.6	15.8	15.4	5.5	4.8	6.9
10	129	141	214	15.9	16.2	16.1	5.6	5.0	7.1
11	74	93	130	16.7	16.6	16.6	5.7	5.0	7.4
12	155	183	239	17.3	17.3	17.3	5.8	5.0	7.5
13	79	145	150	17.8	18.2	17.9	5.2	5.1	7.7
14	88	129	127	18.9	19.2	19.2	5.4	4.9	7.8
15	56	93	93	19.5	20.8	20.3	5.2	4.8	7.9
16	95	110	152	20.8	21.4	21.5	5.1	4.7	8.4
17	56	90	83	21.5	22.4	22.3	5.1	4.7	8.4
18	110	177	118	22.8	22.9	23.1	5.1	4.5	8.4
19	36	79	47	23.6	23.6	23.5	5.8	4.6	9.0
20-25	204	178	336	23.7	24.2	24.1	5.4	4.8	8.6
25-30	152	211	370	24.3	24.8	24.7	5.5	4.9	8.8
30-35	152	251	327	24.2	24.6	24.9	5.5	5.2	9.5
35-40	209	229	367	24.4	24.8	25.0	5.7	5.1	9.6
40-45	163	124	270	24.0	24.2	25.1	5.4	5.2	9.8
45-50	132	103	206	23.9	24.2	24.6	6.1	5.3	9.4
50-55	92	64	178	23.6	24.7	24.0	6.3	5,8	9.3
55-60	86	63	119	22.9	24.5	24.3	5.6	5.7	9.8
60 & above	166	146	305	22.6	23.3	22.9	6.8	6.0	8.8

Table A3.11
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : KARNATAKA **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cm)			Weight (kg)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996 1997
<1	101	120	177	61.9	62.2	62.4	5.9	5.9	5.9
1	93	173	186	70.3	72.9	73.4	7.3	7.6	8.0
2	92	203	188	78.7	80.4	82.0	8.9	9.3	9.7
3	119	229	248	85.5	87.5	89.1	10.4	11.0	11.2
4	108	221	204	93.4	94.8	96.4	12.1	12.4	12.8
5	92	143	199	99.2	100.5	101.6	13.4	13.8	13.8
6	118	146	210	103.9	106.3	107.3	14.7	15.2	15.2
7	95	133	199	111.7	111.7	112.9	16.8	16.5	16.7
8	106	152	236	117.5	117.6	117.9	18.6	18.4	18.3
9	92	122	195	121.7	122.5	123.2	20.1	20.5	20.4
10	122	118	219	128.0	127.0	127.8	22.9	22.4	22.4
11	65	63	172	134.6	131.5	133.1	25.2	24.0	25.2
12	114	97	222	137.1	138.4	139.5	27.8	28.9	28.8
13	78	70	195	143.7	145.9	145.3	32.1	33.0	32.8
14	70	77	168	146.0	147.7	149.3	34.9	36.1	36.9
15	60	38	111	148.2	148.3	150.8	38.3	40.1	37.8
16	79	64	162	151.2	152.3	151.7	42.3	42.2	40.8
17	31	32	76	151.1	153.0	152.4	41.0	43.1	43.2
18	87	76	171	151.8	151.6	152.2	41.9	41.7	43.0
19	52	65	81	47.3	152.4	153.6	39.1	45.0	43.1
20-25	215	306	552	151.2	151.4	152.8	41.9	42.8	43.2
25-30	261	377	717	151.8	151.6	152.8	42.6	42.5	42.9
30-35	204	195	412	151.8	151.7	152.5	42.7	42.9	43.2
35-40	195	140	368	152.3	150.8	152.4	41.8	43.8	43.6
40-45	103	83	214	151.6	152.6	151.8	42.0	43.9	43.0
45-50	87	79	236	151.0	151.5	152.3	41.4	43.5	44.1
50-55	85	71	202	150.2	151.2	151.2	41.0	45.6	42.4
55-60	59	78	132	150.0	149.8	151.6	40.8	42.2	42.9
60 & above	134	132	332	148.2	148.4	148.4	38.4	40.6	40.4

Table A3.12
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : KARNATAKA **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Arm Circumference (cm)			Fatfold at triceps (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996 1997
<1	101	120	177	12.3	12.2	12.6	8.6	7.1	5.9
1	93	173	186	12.6	12.6	13.2	8.2	6.7	6.4
2	92	203	188	13.3	13.2	13.3	8.8	7.7	7.0
3	119	229	248	13.8	13.9	14.1	9.1	8.0	7.5
4	108	221	204	14.2	14.2	14.3	8.8	7.7	7.6
5	92	143	199	14.5	14.6	14.5	8.5	7.3	7.7
6	118	146	210	14.6	14.7	14.6	7.9	6.5	7.7
7	95	133	199	15.0	15.0	14.9	7.3	6.1	7.4
8	106	152	236	15.4	15.5	15.3	7.2	5.8	7.4
9	92	122	195	15.9	16.2	15.9	7.0	6.1	7.6
10	122	118	219	16.7	16.6	16.5	6.8	5.6	8.1
11	65	63	172	17.0	17.0	17.2	6.5	5.6	8.5
12	114	97	222	17.9	18.5	18.3	7.1	6.2	9.0
13	78	70	195	19.2	19.4	19.3	7.7	6.3	9.8
14	70	77	168	20.3	20.4	20.5	8.5	6.9	11.1
15	60	38	111	21.5	22.1	20.8	10.2	8.2	11.2
16	79	64	162	22.6	22.1	21.8	11.3	8.1	11.9
17	31	32	76	22.4	22.5	22.4	9.6	8.2	12.6
18	87	76	171	22.4	22.5	22.4	9.5	7.3	12.8
19	52	658		22.8	23.0	21.9	10.4	7.8	12.0
20-25	215	306	552	22.2	22.3	22.1	8.9	6.8	11.6
25-30	261	377	717	22.6	22.4	22.3	8.9	6.8	11.6
30-35	204	195	412	22.9	22.7	22.6	8.9	6.8	11.9
35-40	195	140	368	22.5	23.4	22.8	8.6	7.8	12.4
40-45	103	83	214	22.7	23.0	22.6	8.9	7.2	12.3
15-50	87	79	236	22.6	23.1	23.0	9.1	8.1	12.7
50-55	85	71	202	22.4	24.0	22.7	9.2	9.2	11.8
55-60	59	78	132	22.6	22.7	22.8	9.5	8.1	12.2
60 & above	134	132	332	21.4	22.0	21.9	7.8	6.7	10.8

Table A3.13
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : ANDHRA PRADESH **SEX : MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	71	149	279	65.8	64.3	63.3	6.2	6.8	6.4
1	61	213	264	73.4	74.5	74.8	7.7	8.4	8.4
2	67	279	257	79.4	81.8	83.2	9.2	10.0	10.2
3	98	310	265	85.9	88.8	90.1	10.8	11.3	11.5
4	113	419	248	92.9	96.4	97.5	12.3	13.1	13.1
5	88	245	193	99.8	102.5	104.0	13.9	14.4	14.7
6	69	200	181	105.3	107.9	109.8	15.2	15.8	16.2
7	104	191	166	111.4	113.7	116.2	16.9	17.4	18.2
8	119	177	123	116.8	118.8	121.7	18.7	19.1	20.0
9	94	143	103	120.8	123.5	124.6	20.1	20.6	20.7
10	99	176	123	126.6	128.7	129.4	22.9	23.0	22.8
11	64	161	63	129.8	133.2	132.9	23.0	24.8	25.4
12	108	184	76	135.4	136.7	140.1	26.2	26.6	28.4
13	75	126	55	140.0	143.0	144.3	28.7	30.3	32.1
14	87	126	44	145.6	148.3	149.1	32.1	34.0	33.9
15	69	98	25	149.7	155.0	155.9	34.6	38.8	39.3
16	79	124	32	157.5	158.1	159.6	41.1	42.3	42.4
17	55	56	23	159.6	161.7	159.8	41.1	42.3	43.2
18	67	108	46	160.6	161.8	162.9	44.8	47.4	46.3
19	48	62	28	161.9	162.1	164.8	46.2	46.4	46.4
20-25	189	279	159	163.4	163.9	162.8	48.5	50.2	49.0
25-30	154	258	331	164.0	164.0	163.4	50.1	50.8	50.4
30-35	152	249	306	163.1	163.4	163.6	49.8	51.3	50.3
35-40	160	205	219	162.7	163.1	163.0	51.0	51.2	51.8
40-45	127	148	139	162.5	163.9	163.5	49.7	52.5	51.5
45-50	107	126	92	162.6	163.3	163.3	49.8	50.3	51.1
50-55	69	93	89	164.0	163.7	162.4	50.4	50.8	51.3
55-60	55	69	72	161.8	163.0	162.1	47.9	50.0	50.6
60 & above	102	166	151	162.9	161.5	161.7	47.2	46.7	47.5

Table A3.14

NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: ANDHRA PRADESH SEX : MALES

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Arm Circumference			Fatfold at triceps		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	71	149	279	12.6	12.6	12.9	6.5	10.4	9.5
1	61	213	264	12.8	13.2	13.7	6.4	9.2	8.6
2	67	279	257	13.5	13.7	13.9	7.0	9.9	8.9
3	98	310	265	13.7	14.1	14.3	7.2	9.5	8.8
4	113	419	248	13.8	14.3	14.4	6.8	8.5	8.0
5	88	245	193	14.0	14.4	14.5	6.1	7.6	7.2
6	69	200	181	14.4	14.4	14.6	6.2	7.2	6.8
7	104	191	166	14.6	14.7	15.0	5.7	6.6	6.5
8	119	177	123	14.9	15.1	15.5	5.1	6.5	6.4
9	94	143	103	15.4	15.5	15.6	5.1	6.4	6.5
10	99	176	123	16.3	16.3	16.2	5.1	6.8	6.9
11	64	161	63	16.0	16.7	16.8	5.0	6.6	6.8
12	108	184	76	16.9	17.1	17.8	5.2	6.6	7.1
13	75	126	55	17.6	18.1	18.9	5.7	6.8	7.4
14	87	126	44	18.5	19.1	19.0	5.3	7.4	6.5
15	69	98	25	19.3	20.4	20.9	5.7	6.7	6.3
16	79	124	32	20.9	21.6	21.8	5.1	6.7	6.6
17	55	56	23	21.4	22.7	22.1	5.1	7.8	7.2
18	67	108	46	22.3	23.5	22.9	5.2	7.9	7.0
19	48	62	28	22.8	23.3	23.5	5.4	6.9	72
20-25	189	279	159	23.4	24.5	242	5.4	7.9	7.9
25-30	154	258	331	24.0	24.8	24.7	5.5	7.8	7.8
30-35	152	249	306	23.9	25.3	24.6	5.4	8.1	7.7
35-40	160	205	219	24.2	25.0	25.1	5.9	8.0	8.5
40-45	127	148	139	23.8	25.1	24.6	5.6	8.7	8.5
45-50	107	126	92	23.5	24.5	24.5	5.5	8.1	8.5
50-55	69	93	89	23.4	24.3	24.5	6.1	8.3	9.1
55-60	55	69	72	22.7	23.7	24.5	5.6	8.2	8.6
60 & above	101	166	151	22.1	22.6	22.6	5.4	7.9	8.3

Table A3.15
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: ANDHRA PRADESH **SEX: FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	56	129	239	65.4	62.6	60.9	6.1	6.1	5.6
1	72	246	222	72.9	72.5	73.4	7.3	8.0	8.0
2	56	232	223	78.7	80.8	82.3	8.9	9.6	9.7
3	85	323	244	85.1	87.4	89.0	10.4	11.0	11.2
4	95	366	239	92.8	95.2	95.7	12.3	12.5	12.7
5	74	205	179	100.3	101.3	103.4	14.1	13.9	14.6
6	80	188	166	105.0	106.0	109.3	14.9	15.1	16.0
7	99	203	212	110.4	112.5	115.4	16.3	17.0	18.1
8	104	178	171	115.8	118.3	120.5	18.1	18.9	19.6
9	80	144	110	122.1	124.0	126.4	20.1	20.9	21.9
10	100	144	117	127.3	129.1	131.7	22.7	23.5	23.9
11	43	113	87	132.3	134.0	136.1	25.1	26.1	26.5
12	76	135	80	137.1	139.4	141.1	27.9	29.0	30.4
13	50	83	68	143.0	145.0	146.6	32.2	33.6	33.4
14	54	91	55	146.7	147.9	148.1	36.1	35.7	36.4
15	40	68	39	151.0	151.2	150.9	40.5	39.0	39.2
16	56	70	46	150.2	151.5	153.1	40.2	40.9	40.7
17	20	44	34	152.3	151.6	152.6	42.8	41.5	40.8
18	72	97	89	151.0	151.7	150.8	42.0	41.4	39.9
19	20	43	81	149.6	152.9	152.0	41.7	44.1	41.6
20-25	177	327	753	151.5	151.4	152.0	42.7	42.3	42.2
25-30	203	428	749	151.6	151.6	151.8	42.7	42.5	42.6
30-35	164	235	339	150.5	151.2	152.0	42.0	42.4	42.8
35-40	152	217	177	150.5	151.7	152.0	43.0	42.9	44.1
40-45	88	115	143	150.6	151.1	150.9	41.7	42.3	44.9
45-50	99	123	123	151.0	151.1	151.5	43.0	43.7	45.4
50-55	40	93	115	151.7	150.3	150.1	42.9	43.9	42.2
55-60	58	68	101	152.6	150.5	149.3	42.9	42.9	44.3
60 & above	781	72	192	148.0	148.5	147.6	40.4	40.7	40.5

TableA3.16
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : ANDHRA PRADESH **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Arm Circumference (cm)			Fatfold at triceps (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	56	129	239	12.6	12.2	12.4	7.1	10.1	9.1
1	72	246	222	12.7	12.8	13.3	6.6	9.5	8.8
2	56	232	223	13.3	13.4	13.7	7.2	10.1	9.2
3	85	323	244	13.5	14.1	14.3	7.5	10.3	9.3
4	95	366	239	14.2	14.3	14.5	7.5	9.6	9.0
5	74	205	179	14.4	14.4	14.5	7.3	8.8	8.0
6	80	188	166	14.5	14.5	14.9	6.4	8.2	7.6
7	99	203	212	14.5	14.9	15.3	5.9	7.8	7.4
8	104	178	171	15.3	15.4	15.8	5.7	7.4	7.5
9	80	144	110	15.8	16.0	16.4	5.8	7.6	7.6
10	100	144	117	16.5	16.9	17.0	6.5	8.1	7.8
11	43	113	87	17.1	17.4	17.8	6.4	8.7	8.1
12	76	135	80	18.3	18.2	18.9	6.9	8.5	9.0
13	50	83	68	19.4	19.6	19.6	7.5	9.9	9.4
14	54	91	55	20.5	20.2	20.5	8.0	10.6	9.8
15	40	68	39	21.9	21.1	21.5	8.7	11.7	10.9
16	56	70	46	21.8	22.0	21.7	9.1	13.1	12.2
17	20	44	34	22.2	21.8	21.9	9.9	12.6	11.2
18	72	97	89	22.0	21.9	21.7	8.9	11.8	10.7
19	20	43	81	22.5	22.6	21.8	9.1	12.0	10.8
20-25	177	327	753	22.3	22.3	22.1	8.3	11.6	10.5
25-30	203	428	749	22.3	22.6	22.6	7.9	11.7	10.6
30-35	164	235	339	22.4	22.7	22.7	7.9	11.7	10.2
35-40	152	217	177	22.8	22.8	23.1	8.0	11.7	11.3
40-45	88	115	143	22.4	23.0	23.8	7.5	12.0	12.3
45-50	99	123	123	22.7	23.1	23.8	8.2	12.0	11.9
50-55	40	93	115	22.6	23.5	23.0	8.3	12.9	11.0
55-60	58	68	101	22.3	23.1	23.5	7.9	12.5	11.9
60 & above	781	72	192	21.7	22.0	22.2	6.6	10.6	10.2

TableA3.17

NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : MAHARASHTRA **SEX: MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	HEIGHT (cm.)			WEIGHT (Kg.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	100	130	101	62.8	65.1	64.0	6.1	6.9	6.7
1	63	129	139	71.8	74.3	73.9	8.5	8.5	8.4
2	85	177	144	78.1	80.9	81.7	9.1	10.0	10.1
3	87	179	123	84.8	88.0	88.4	10.7	11.4	11.6
4	116	287	123	90.3	95.8	95.0	11.8	12.7	13.1
5	80	86	124	97.9	102.2	100.2	13.4	14.2	14.1
6	82	182	111	103.3	106.0	105.4	14.5	15.2	15.3
7	97	134	117	110.6	111.5	111.8	16.3	17.1	17.4
8	111	157	119	115.2	117.5	116.3	18.2	18.6	18.4
9	76	123	103	120.8	121.8	121.5	19.7	19.8	20.4
10	97	164	115	125.5	126.1	126.8	21.7	21.6	22.4
11	69	109	62	130.7	131.1	132.9	23.5	235	24.8
12	99	144	86	134.0	136.6	135.6	25.3	26.3	26.4
13	87	113	70	139.8	142.6	140.3	28.7	29.6	29.7
14	90	123	75	145.3	149.7	145.9	32.4	34.4	32.6
15	55	107	42	152.3	153.9	152.4	36.3	377	37.1
16	70	97	54	156.4	157.3	156.1	39.8	41.0	40.6
17	78	113	31	158.7	160.6	159.2	41.4	45.1	44.5
18	87	102	57	159.9	161.1	162.4	45.1	46.1	476
19	67	93	21	162.7	163.9	163.9	46.5	48.1	48.7
20-25	170	209	160	162.8	162.1	163.1	48.0	48.6	50.6
25-30	126	205	179	162.3	162.7	161.7	49.2	40.8	50.4
30-35	124	219	192	163.3	162.3	162.8	49.6	49.8	518
35-40	179	165	172	162.0	162.5	161.7	49.7	49.5	50.3
40-45	106	140	134	161.7	162.2	162.2	47.9	50.0	51.9
45-50	112	79	111	162.2	161.4	161.2	47.6	51.0	52.6
50-55	77	68	66	162.2	160.8	161.0	47.5	49.1	503
55-60	54	57	82	161.3	162.3	159.7	49.9	48.1	50.5
60 and above	120	86	175	160.4	160.5	159.5	47.1	47.7	48.7

Table A3.18

NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: MAHARASHTRA **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	HEIGHT			WEIGHT		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	88	112	104	62.3	63.0	62.7	5.9	6.5	6.3
1	40	105	111	70.5	72.0	70.9	7.2	8.0	7.7
2	55	161	108	76.9	79.5	80.5	8.7	9.6	9.7
3	90	205	151	82.6	86.9	87.0	10.0	11.1	11.0
4	91	257	116	90.2	94.9	93.5	11.6	12.6	12.6
5	53	80	129	97.1	100.6	99.3	13.0	13.6	13.8
6	79	156	115	102.3	105.4	105.6	14.3	15.0	15.2
7	98	172	114	109.5	111.5	111.0	16.3	16.6	17.1
8	86	154	121	115.3	115.8	116.1	17.7	18.1	18.6
9	65	120	114	119.7	121.5	121.4	19.3	19.8	20.9
10	90	126	111	124.7	127.4	126.4	21.5	22.4	22.2
11	49	90	89	131.0	130.9	129.8	23.5	24.1	24.2
12	88	125	98	134.8	137.2	136.0	26.5	27.4	28.0
13	51	105	86	141.7	141.6	141.3	30.8	30.4	30.9
14	60	107	65	145.6	144.8	145.4	35.3	33.4	34.1
15	38	87	59	145.7	148.1	147.4	38.2	38.2	37.2
16	65	96	49	149.6	149.8	148.6	39.3	39.9	39.4
. 17	35	62	33	149.8	148.8	148.7	39.5	39.6	40.5
18	57	60	90	151.0	148.6	149.8	42.5	41.0	41.9
19	27	36	24	150.0	148.8	149.7	42.7	40.1	40.7
20-25	172	315	319	150.3	149.7	150.6	41.3	41.3	42.4
25-30	168	345	418	150.6	149.9	150.2	41.6	41.5	42.2
30-35	185	242	309	150.1	149.9	149.9	40.	40.8	42.2
35-40	124	150	227	150.0	149.2	149.5	41.1	41.5	42.5
40-45	114	84	179	149.1	149.5	149.5	39.6	41.5	42.8
45-50	94	81	106	148.6	148.5	148.9	39.0	40.6	43.9
50-55	73	93	100	148.0	148.2	148.4	39.1	40.8	43.4
55-60	49	36	81	147.7	148.9	148.4	40.4	41.5	44.0
60 and above	113	57	169	147.1	146.9	147.2	38.1	39.7	41.4

Table A3.19
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: MAHARASHTRA **SEX: MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	ARM CIRCUMFERENCE (cm)			FATFOLD AT TRICEPS (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	100	130	101	12.5	13.6	12.8	9.4	8.2	9.1
1	63	129	139	12.7	13.9	13.2	9.0	7.8	8.4
2	85	177	123	13.3	13.8	13.8	7.7	9.2	9.2
3	87	179	123	14.6	14.2	14.2	7.7	9.4	9.3
4	116	287	121	14.7	14.2	14.2	7.3	8.6	8.6
5	80	86	124	14.7	14.2	14.2	7.0	7.7	7.7
6	82	182	111	13.8	14.7	14.2	7.1	6.6	6.7
7	97	134	117	14.3	15.0	14.8	6.7	6.5	6.7
8	111	157	119	14.5	15.5	14.8	6.0	6.5	6.1
9	76	123	103	15.2	15.6	15.2	5.9	6.1	5.9
10	97	164	115	15.6	16.2	15.7	6.2	6.3	6.3
11	69	109	62	16.2	16.8	16.3	6.5	6.4	6.1
12	99	144	86	16.6	17.5	16.8	5.7	6.3	5.7
13	87	113	70	17.2	18.2	17.9	5.9	6.2	6.7
14	90	123	75	18.2	19.6	18.6	6.0	6.2	6.2
15	55	107	42	19.3	20.5	19.3	6.3	6.0	5.7
16	70	97	54	20.2	21.6	20.6	6.3	6.0	6.1
17	78	113	31	21.0	22.7	21.6	5.9	6.4	5.6
18	87	102	57	22.1	23.3	22.6	5.7	6.4	6.4
19	67	93	21	22.6	23.4	23.0	6.1	5.9	5.9
20-25	170	209	160	23.3	24.4	23.4	6.3	6.2	6.2
25-30	126	205	179	23.7	24.4	24.1	6.9	6.2	64
30-35	124	219	192	23.5	24.9	24.4	7.1	6.6	6.7
35-40	179	165	172	23.8	24.5	24.2	7.9	6.2	6.3
40-45	106	140	134	23.3	24.6	24.5	7.0	6.4	7.0
45-50	112	79	111	29.9	24.7	24.5	6.4	7.2	6.8
50-55	77	68	66	23.1	24.6	23.9	7.2	7.0	6.5
55-60	54	57	82	23.8	23.5	23.3	7.9	6.6	7.0
60 and above	120	86	175	22.4	23.1	22.9	7.2	6.5	6.9

Table A3.20

NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: MAHARASHTRA **SEX: FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	ARM CIRCUMFERENCE (cm)			FATFOLD AT TRICEPS (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	88	112	104	12.3	13.0	12.4	9.3	8.1	8.9
1	40	105	111	12.5	13.4	12.9	8.8	7.7	8.6
2	55	161	108	12.9	14.0	13.4	9.3	8.0	9.3
3	90	205	151	13.3	14.6	13.9	9.3	7.9	9.6
4	91	257	116	13.6	14.8	14.3	9.5	7.7	93
5	53	80	129	14.4	14.7	14.4	9.3	7.4	9.0
6	79	156	115	14.3	15.1	14.4	8.1	7.2	7.4
7	98	172	114	14.8	15.1	14.9	7.7	6.8	7.2
8	86	154	121	14.8	15.6	15.3	7.2	6.7	7.2
9	65	120	114	15.5	16.0	15.8	7.2	6.9	7.0
10	90	126	111	16.1	16.8	16.1	7.4	6.7	7.1
11	49	90	89	16.7	17.3	17.0	6.8	7.1	7.4
12	88	125	98	17.	18.1	17.9	7.9	7.3	7.4
13	51	105	86	18.5	19.1	18.7	8.2	7.6	8.0
14	60	107	65	19.8	20.2	19.5	9.5	8.0	8.8
15	38	87	59	20.9	21.7	20.2	10.8	8.6	8.9
16	65	96	49	21.0	22.4	20.8	10.9	9.0	10.3
17	35	62	33	21.8	22.4	21.3	11.6	9.1	9.8
18	57	60	90	22.4	22.7	21.5	12.8	9.4	9.5
19	27	36	24	22.3	21.6	21.3	13.0	8.8	10.2
20-25	172	315	319	21.9	22.7	21.6	10.6	8.4	9.1
25-30	168	345	418	22.1	22.8	21.7	10.5	8.7	9.2
30-35	185	242	309	22.0	22.7	22.1	10.2	8.3	9.4
35-40	124	150	227	22.2	23.0	22.2	10.4	8.7	9.7
40-45	114	84	179	22.1	23.2	22.5	10.0	9.6	10.0
45-50	94	81	106	21.8	23.2	22.9	9.8	9.1	10.7
50-55	73	93	100	21.9	23.2	22.9	10.8	9.3	11.1
55-60	49	36	81	22.3	22.6	23.1	12.3	8.5	11.3
60 and above	113	57	169	21.4	22.0	22.2	9.7	8.5	9.6

Table A3.21
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : GUJARAT **SEX: MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	85	129	79	63.4	63.8	64.9	6.0	6.3	6.3
1	65	134	86	73.0	72.6	73.5	8.1	7.9	7.7
2	85	110	94	79.9	80.5	79.6	9.6	9.5	9.4
3	71	129	73	85.5	88.8	89.2	10.7	11.2	11.6
4	107	143	82	93.6	95.4	94.9	12.4	12.5	12.7
5	45	123	73	99.4	101.2	101.4	13.5	13.9	14.1
6	51	126	68	104.7	107.1	107.3	14.7	15.3	15.8
7	80	131	72	110.1	112.5	114.7	16.1	16.8	17.5
8	77	115	66	114.3	117.8	119.7	17.5	18.4	18.9
9	53	87	52	118.6	123.0	123.3	18.4	20.1	21.0
10	89	97	61	123.1	127.6	129.1	20.5	22.2	22.3
11	48	95	42	128.4	132.0	133.2	22.8	23.6	24.8
12	90	97	62	131.7	134.5	136.6	24.3	25.7	26.6
13	86	130	24	136.4	140.9	145.3	26.0	28.2	30.3
14	75	100	24	141.9	146.2	148.8	29.0	32.0	33.0
15	56	68	48	149.1	152.5	155.2	33.6	36.2	37.8
16	63	49	30	156.9	157.0	160.7	38.8	41.4	41.8
17	52	54	19	159.2	161.6	164.8	42.4	43.5	46.8
18	59	32	31	161.1	158.0	163.2	43.7	43.4	46.6
19	47	27	15	163.9	163.6	166.4	48.5	49.1	47.0
20-25	145	126	165	163.5	163.2	164.8	46.8	48.0	47.9
25-30	133	121	160	163.6	163.6	164.3	48.5	49.1	49.4
30-35	102	114	118	163.9	163.4	163.1	47.4	49.0	49.4
35-40	153	119	108	162.9	163.7	164.9	48.4	48.6	50.6
40-45	99	66	100	163.2	164.3	164.5	47.2	49.2	52.1
45-50	113	58	103	162.0	163.6	163.0	45.9	48.5	48.0
50-55	46	37	86	163.3	161.4	163.1	48.5	46.4	48.7
55-60	49	30	51	162.4	162.3	162.7	47.1	45.6	48.9
60 & above	100	48	107	161.5	160.7	162.4	45.5	47.3	47.7

Table A3.22
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: GUJARAT **SEX : MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Arm Circumference (cm)			Fatfold at triceps (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	85	129	79	12.5	12.8	13.0	8.2	10.1	8.5
1	65	134	86	13.0	13.0	13.5	7.8	9.4	6.9
2	85	110	94	13.6	13.3	13.7	8.2	9.2	6.7
3	71	129	73	13.8	13.9	14.5	8.2	9.3	7.1
4	107	143	82	14.1	14.0	14.5	7.9	8.8	6.7
5	45	123	73	14.3	14.1	14.6	7.3	7.7	6.3
6	51	126	68	14.3	14.1	14.5	6.4	6.7	5.9
7	80	131	72	14.4	14.2	14.7	5.9	6.2	5.9
8	77	115	66	14.5	14.6	15.2	5.5	6.0	5.7
9	53	87	52	14.8	15.1	15.7	5.6	6.3	6.1
10	89	97	61	15.4	15.6	16.1	5.5	6.2	5.5
11	48	95	42	16.0	15.9	16.4	6.1	5.8	5.7
12	90	97	62	16.1	16.5	17.1	5.6	6.5	5.7
13	86	130	24	16.8	17.1	17.6	5.8	6.5	6.0
14	75	100	24	17.4	18.0	18.6	5.9	6.5	5.5
15	56	68	48	18.8	19.0	20.3	5.3	6.6	6.0
16	63	49	30	19.8	20.8	20.9	6.1	6.2	5.9
17	52	54	19	21.1	21.4	22.7	5.8	6.6	6.1
18	59	32	31	21.6	21.3	22.7	5.8	6.4	6.5
19	47	27	15	22.0	22.2	23.0	5.6	5.2	5.9
20-25	145	126	165	22.7	23.1	23.5	5.6	6.1	6.1
25-30	133	121	160	23.7	23.6	24.2	5.7	6.0	6.3
30-35	102	114	118	23.3	23.6	23.9	5.6	6.1	6.6
35-40	153	119	108	23.6	23.6	24.6	6.6	6.4	6.5
40-45	99	66	100	23.3	23.5	24.9	6.1	6.2	7.2
45-50	113	58	103	22.7	23.1	23.7	5.7	6.5	6.3
50-55	46	37	86	23.4	22.7	24.0	7.1	6.3	6.7
55-60	49	30	51	23.0	22.3	23.0	6.3	6.1	7.1
60 & above	100	48	107	22.4	22.9	22.9	7.1	6.5	6.6

Table A3.23
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE:GUJARAT SEX:FEMALES

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1996-1990	1988-1997
<1	69	91	94	62.0	62.0	63.1	5.7	5.9	5.8
1	65	113	47	71.4	71.9	72.1	7.3	7.5	7.5
2	72	118	104	78.1	80.4	78.8	8.9	9.4	9.0
3	68	126	88	85.2	86.8	87.8	10.4	10.7	10.8
4	89	123	73	92.4	94.0	95.4	11.8	12.4	12.4
5	51	143	79	99.3	100.9	101.6	13.3	13.6	14.1
6	72	103	65	104.4	105.8	108.2	14.3	14.8	15.7
7	56	116	76	109.6	111.3	112.0	16.0	16.4	16.4
8	64	116	64	114.4	117.9	119.0	17.3	18.6	18.9
9	42	92	47	119.6	123.2	125.6	19.3	20.9	21.3
10	59	75	59	121.7	127.4	127.7	20.0	22.0	22.8
11	39	72	50	125.9	130.9	134.9	21.7	23.9	25.8
12	65	88	57	131.7	135.0	138.8	24.1	26.1	28.8
13	53	73	39	137.6	141.4	143.4	27.1	29.6	31.2
14	46	73	37	143.6	145.7	146.5	32.4	33.3	34.6
15	43	43	46	147.5	148.6	152.2	34.7	35.7	40.7
16	58	68	37	149.6	149.5	152.3	37.2	37.9	40.8
17	35	41	34	149.9	151.7	153.6	38.9	41.0	43.1
18	56	45	43	150.6	152.1	153.0	41.3	41.2	44.7
19	37	35	33	150.8	150.8	155.0	41.6	42.4	45.4
20-25	173	199	322	151.7	151.8	152.8	43.1	42.6	42.8
25-30	139	163	268	151.2	151.5	152.4	41.3	42.2	42.7
30-35	137	184	234	150.5	151.8	152.7	42.5	43.1	43.7
35-40	129	115	201	151.0	152.1	153.5	42.1	42.9	44.7
40-45	108	83	161	149.7	150.9	153.6	41.4	42.4	44.5
45-50	86	57	150	150.9	150.5	151.7	41.5	41.2	44.5
50-55	38	47	84	149.9	150.1	150.7	44.2	42.5	42.3
55-60	45	28	70	149.9	149.6	151.4	41.0	43.2	43.7
60 & above	85	49	125	148.2	149.1	149.7	38.7	39.7	42.3

Table A3.24

NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : GUJARAT **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996 1997	Arm circumference (cm)			Fat fold at triceps (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	69	91	74	12.1	12.3	13.7	7.9	9.7	7.7
1	65	113	47	12.6	12.6	13.2	7.4	9.0	6.8
2	72	118	104	13.4	13.2	13.3	8.6	9.7	7.1
3	68	126	88	13.8	13.7	13.9	8.7	10.2	7.0
4	89	123	73	14.1	14.1	14.5	7.8	9.4	6.8
5	51	143	79	14.2	14.2	14.7	7.9	8.6	6.6
6	72	103	65	14.3	14.3	15.0	7.2	7.5	6.8
7	56	116	76	14.7	14.6	14.8	6.9	7.2	6.0
8	64	116	64	14.8	15.1	15.3	6.2	7.1	6.3
9	42	92	47	15.4	15.9	16.1	6.2	7.1	6.2
10	59	75	59	15.7	16.1	16.9	6.5	7.1	6.2
11	39	72	50	16.1	16.4	17.4	6.2	7.1	6.4
12	65	88	57	16.7	17.0	18.5	6.9	7.4	6.7
13	53	73	39	17.6	18.1	18.8	7.1	7.9	7.0
14	46	73	37	19.0	19.1	19.6	8.3	8.0	7.2
15	43	43	46	19.8	19.8	21.8	8.4	9.2	8.2
16	58	68	37	20.6	20.5	21.9	9.2	9.8	7.9
17	35	41	34	21.3	21.6	22.7	10.5	10.5	8.4
18	56	45	43	22.3	21.4	23.1	11.7	10.2	9.0
19	37	35	33	21.9	22.1	22.8	11.3	11.0	7.9
20-25	173	199	322	22.5	22.1	22.3	10.7	10.9	8.2
25-30	139	163	268	22.1	22.1	22.6	9.6	10.1	8.5
30-35	137	184	234	22.6	22.3	22.5	10.0	10.6	8.7
35-40	129	115	201	22.5	22.4	23.1	9.5	10.6	9.0
40-45	108	83	161	22.5	22.4	23.7	10.0	10.7	9.3
45-50	86	57	150	22.4	21.8	23.5	9.8	9.9	9.4
50-55	38	47	84	23.6	22.6	24.2	11.6	11.5	9.5
55-60	45	28	70	22.1	22.3	22.9	10.2	11.9	8.4
60 & above	85	49	125	21.4	21.7	23.3	8.7	9.8	8.5

Table A3.25
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : ORISSA **SEX : MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	Height (cms)			Weight (kgs.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	30	93	179	63.8	62.5	62.1	6.4	6.1	6.1
1	53	107	186	71.6	72.8	73.5	8.0	8.1	8.3
2	47	119	193	80.3	79.8	82.5	9.9	9.8	10.1
3	83	111	203	86.9	87.8	90.1	11.1	11.3	11.9
4	69	116	248	93.3	99.8	97.3	12.7	14.3	13.5
5	62	147	171	98.8	100.3	102.1	14.2	14.0	14.4
6	73	84	183	106.2	106.4	108.2	15.9	15.7	16.1
7	63	97	177	113.3	112.5	113.0	17.8	17.5	17.4
8	67	78	187	118.9	116.5	118.5	19.4	18.6	19.3
9	44	51	156	119.9	126.8	124.3	20.2	23.0	21.5
10	71	87	144	127.4	126.3	127.1	23.5	22.7	23.1
11	46	41	125	133.9	129.2	134.5	26.1	24.1	26.3
12	68	55	219	136.0	134.8	136.7	27.6	26.5	27.5
13	36	33	138	139.1	141.6	143.9	29.5	31.0	32.1
14	46	41	150	147.7	146.9	149.5	34.3	34.3	35.7
15	38	37	145	146.8	152.5	154.9	34.4	39.3	39.8
16	39	23	120	154.6	155.4	160.0	41.7	40.7	44.2
17	25	21	151	159.7	157.3	162.0	45.3	43.1	47.1
18	34	53	102	160.6	159.2	161.4	46.1	46.4	47.5
19	21	15	63	161.9	161.4	163.1	47.5	46.5	48.9
20-25	138	127	410	161.1	162.0	163.9	48.5	48.6	50.3
25-30	105	164	450	162.1	161.4	163.0	49.6	49.5	50.8
30-35	97	196	399	161.8	160.7	162.8	50.1	49.4	50.7
35-40	105	180	365	161.4	161.0	163.3	50.7	49.5	51.0
40-45	87	85	255	161.0	161.0	162.9	48.5	48.9	50.8
45-50	103	75	219	160.4	159.8	161.5	48.5	48.4	49.4
50-55	70	76	177	161.1	159.5	161.7	50.5	48.6	48.4
55-60	60	81	163	160.0	159.8	160.9	48.2	48.3	48.1
60 and above	115	157	324	160.2	158.2	159.7	48.2	47.0	46.5

Table A3.26
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : ORISSA **SEX: MALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	ARM CIRCUMFERENCE (cm.)			FATFOLD AT TRICEPS (mm)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	30	93	179	12.7	12.0	12.3	8.0	4.1	5.0
1	53	107	186	13.1	12.3	13.1	7.7	4.0	5.0
2	47	119	193	13.4	13.0	13.6	7.9	4.4	5.1
3	83	111	203	14.0	13.1	14.0	7.7	4.6	5.3
4	69	116	248	14.3	13.4	14.2	7.4	4.6	5.2
5	62	147	171	14.6	13.5	14.0	7.2	4.5	4.9
6	73	84	183	14.5	13.8	14.6	6.4	4.9	4.9
7	63	97	177	14.8	14.3	14.6	6.4	4.8	4.7
8	67	78	187	15.4	14.8	15.1	6.8	4.9	4.8
9	44	51	156	15.6	15.3	15.5	6.2	5.1	4.8
10	71	87	144	16.3	15.9	16.1	6.7	5.3	4.9
11	46	41	125	17.1	16.4	16.9	6.8	5.6	5.1
12	68	55	219	17.7	17.2	17.1	6.8	6.3	5.1
13	36	33	138	18.0	18.2	18.5	6.9	7.3	5.3
14	46	41	150	19.2	18.7	19.5	6.4	6.9	5.3
15	38	37	145	19.7	19.9	20.5	7.1	8.2	5.4
16	39	23	120	21.3	21.6	21.6	8.2	9.1	5.6
17	25	21	151	21.9	22.2	22.6	8.1	10.5	5.8
18	34	53	102	22.7	22.7	22.9	8.0	10.3	5.8
19	21	15	63	23.6	21.5	23.1	5.9	7.5	6.0
20-25	138	127	410	24.0	22.8	23.7	7.8	9.7	6.0
25-30	105	164	450	24.1	22.9	24.0	8.1	8.5	6.0
30-35	97	196	399	24.6	23.1	24.1	8.1	8.5	6.2
35-40	105	180	365	24.8	23.3	24.1	8.3	8.8	6.1
40-45	87	85	255	24.2	23.3	24.1	7.7	9.4	6.2
45-50	103	75	219	24.2	23.4	23.8	7.5	8.8	6.0
50-55	70	76	177	24.6	23.4	23.3	8.1	9.7	5.9
55-60	60	81	163	24.1	22.8	23.4	7.7	8.6	6.0
60 and above	115	157	324	23.6	22.2	22.6	8.1	7.8	6.0

Table A3.27
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : ORISSA **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	HEIGHT (cm)			WEIGHT (Kg.)		
	n	n	n	1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
<1	24	93	146	61.6	59.9	61.3	6.3	5.5	5.6
1	34	95	184	72.5	71.4	72.6	7.8	7.6	7.8
2	39	111	204	76.4	79.5	80.4	8.9	9.2	9.4
3	61	129	203	86.4	85.2	88.4	10.9	10.4	11.1
4	60	117	230	92.5	93.5	96.0	11.9	12.5	12.7
5	63	123	186	98.9	99.0	101.2	13.6	13.8	13.8
6	65	109	156	106.2	106.9	107.3	15.5	15.9	15.3
7	65	120	146	113.3	110.7	112.5	17.3	16.7	17.2
8	81	101	167	116.8	116.2	118.0	19.3	18.5	18.8
9	45	56	166	121.9	122.8	122.8	20.9	21.2	20.7
10	59	82	143	128.3	124.9	128.2	23.8	21.9	23.3
11	41	48	129	132.5	129.9	135.1	26.3	24.5	26.9
12	57	65	200	135.8	137.0	137.1	27.3	29.2	28.1
13	35	35	149	142.3	142.8	144.8	33.8	33.8	34.2
14	51	47	168	145.9	143.7	147.4	36.5	34.9	36.7
15	47	55	149	147.0	147.1	149.5	38.7	38.6	38.9
16	43	56	129	147.8	148.9	151.1	40.3	39.9	42.3
17	38	24	127	150.8	150.1	151.8	43.0	42.7	42.7
18	41	40	90	150.2	148.4	151.5	43.7	42.4	43.0
19	16	24	59	148.8	149.8	152.1	42.1	44.1	44.2
20-25	133	280	444	149.4	150.0	151.5	43.5	42.7	42.9
25-30	129	298	540	149.0	150.3	151.6	42.0	42.6	42.7
30-35	113	247	428	148.5	149.5	151.3	42.4	41.8	42.4
35-40	114	122	336	148.3	150.6	151.4	41.4	42.7	42.4
40-45	112	77	263	149.4	149.6	151.9	41.6	41.8	43.0
45-50	87	87	238	149.6	149.4	150.7	42.8	41.0	43.1
50-55	52	100	199	147.9	148.4	149.7	42.0	41.2	41.0
55-60	55	76	167	147.2	147.8	149.1	38.8	40.7	40.3
60 and above	101	173	276	145.0	148.2	147.7	38.0	38.8	38.8

Table A3.28
NNMB : MEAN ANTHROPOMETRIC MEASUREMENTS

STATE : ORISSA **SEX : FEMALES**

Age (Yrs.)	1975-1979	1988-1990	1996-1997	ARM CIRCUMFERENCE (cm.)			FAT FOLD AT TRICEPS (mm)		
				1975-1979	1988-1990	1996-1997	1975-1979	1988-1990	1996-1997
	n	n	n						
<1	24	93	146	12.4	11.6	12.0	8.3	4.2	4.7
1	34	95	184	13.1	12.1	12.7	7.4	4.1	4.8
2	39	111	204	13.1	12.6	13.3	7.7	4.2	5.0
3	61	129	203	13.9	13.1	13.7	7.6	4.4	5.1
4	60	117	230	14.2	13.7	14.1	7.9	4.7	5.1
5	63	123	186	14.5	13.5	13.9	7.6	4.6	5.0
6	65	109	156	14.5	14.3	14.3	6.8	5.0	4.8
7	65	120	146	14.8	14.2	14.8	6.2	4.8	4.8
8	81	101	167	14.4	14.4	15.1	6.7	5.0	4.9
9	45	56	166	16.3	15.4	15.7	7.1	5.5	5.0
10	59	82	143	16.8	15.8	16.4	7.2	5.4	5.0
11	41	48	129	17.6	16.2	17.3	8.1	5.4	5.3
12	57	65	200	17.6	18.1	17.7	7.7	6.8	5.4
13	35	35	149	19.7	18.4	19.2	9.0	6.6	6.0
14	51	47	168	20.4	19.1	19.8	9.5	7.8	6.1
15	47	55	149	21.5	20.2	20.5	10.4	8.7	6.4
16	43	56	129	21.9	20.7	21.7	10.7	8.8	7.4
17	38	24	127	22.5	22.1	21.7	11.3	10.4	7.1
18	41	40	90	22.7	21.4	21.9	11.3	9.7	7.1
19	16	24	59	22.8	21.9	22.1	10.4	9.9	7.2
20-25	133	280	444	22.5	20.5	21.8	10.4	7.7	6.7
25-30	129	298	540	22.3	20.8	21.8	10.1	7.7	6.6
30-35	113	247	428	22.6	20.9	21.9	10.5	7.7	6.7
35-40	114	122	336	22.4	21.2	22.0	9.7	8.9	6.7
40-45	112	77	263	22.8	22.3	22.2	10.3	9.7	6.8
45-50	87	87	238	23.1	21.7	22.4	10.2	9.1	7.1
50-55	52	100	199	23.4	21.1	21.6	11.2	8.2	6.7
55-60	55	76	167	22.1	20.7	21.6	9.4	8.4	6.4
60 and above	101	173	276	21.4	20.3	21.0	8.5	7.2	6.0