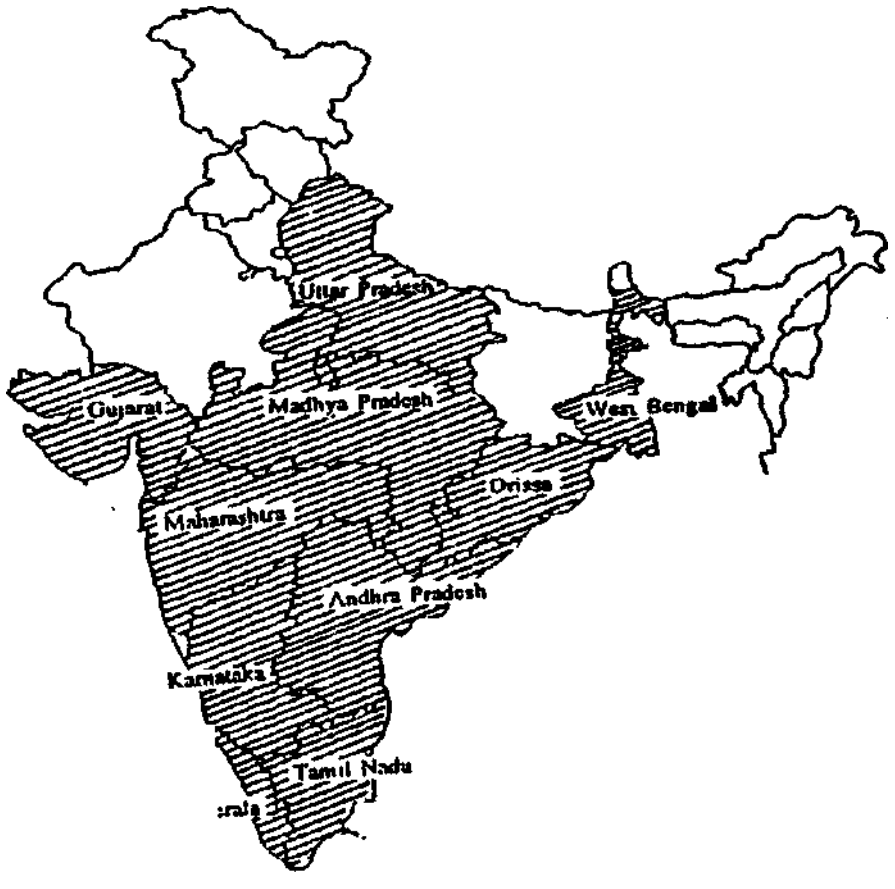
Tech. Report. NO. 14

NUTRITIONAL STATUS OF RURAL POPULATION

REPORT OF
NNMB SURVEYS
(1991-1992)



NATIONAL NUTRITION MONITORING BUREAU
NATIONAL INSTITUTE OF NUTRITION
Indian Council of Medical Research
Hyderabad-500 007

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CONTENTS

SUMMARY

The National Nutrition Monitoring Bureau (NNMB) has been undertaking diet and nutrition surveys in ten States of the country, since 1972. For the present survey, the sampling frame of the National Sample Survey Organization's (NSSO) 43rd round was adopted and in a sub-sample of the Central quota of NSSO sample, in each State, food consumption and nutritional status was assessed. Due to certain administrative reasons, the coverage was inadequate in the states of Madhya pradesh and Uttar Pradesh. Hence, comments on the results are confined only to the remaining States of Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Gujarat, Orissaa and West Bengal where the coverage was more than 80% of the target.

The average intake of protein in different States ranged from 46 g in Tamil Nadu to 59.7 g in Karnataka while energy intakes ranged from 1922 Kcal/CU in Maharashtra to 2397 kcal/CU in Orissa.

Analysis of households according to protein-calorie adequacy status has shown that the problem of dietary protein inadequacy is less (21%) compared to calorie inadequacy (44%).

The extent of deficit was more in case of vitamin A (57.8%) and riboflavin (42.9%) compared to other micronutrients.

The nutritional status of adults in terms of BMI and of children in terms of weight for age deficit seem to go hand in hand in almost all the States. In general, households having better socio-economic status (on the basis of household characteristics) had better levels of nutrition.

INTRODUCTION

The National Nutrition Monitoring Bureau (NNMB) since its inception in 1972, has been conducting diet and nutrition surveys in 10 States in the country. Until the year 1982, the bureau carried out surveys in four districts from each State in each year. These four districts were randomly selected from 4 strata formed on the basis of agro-economic particulars at the district level. The average food and nutrient intakes of households covered in these districts were presented in its Annual Reports. The main limitation in this sampling design was its inadequacy of spatial representation at the State level. Hence, the bureau has adopted the sampling design[1] of NSSO covering 16 strata (districts) from each State which overcomes this limitation. Also, unbiased estimates of the consumption could be arrived at using design based multipliers which were provided by the NSSO. A sub-sample of Central Quota of NSSO sample from each State was chosen. The objectives were:

i) To assess the food consumption pattern of the rural households in the States surveyed; and

ii) To determine the nutritional status of population in terms of anthropometry and clinical status.

METHODOLOGY

Sample Design

National Sample Survey Organization adopts a two stage stratified random sampling method; which was used in the present survey; villages forming the first stage units (FSUs), while households (HH), in each village, forming the second stage units (SSUs).

The NSSO classifies the State into different agro-economic regions. Each region, within a State, consists of group of contiguous districts having similar cropping pattern and population density. A district with a rural population less than 1.8 million forms a single stratum. Districts with rural population of more than 1.8 millions are divided into two or more strata by grouping contiguous talukas/tahsils having similar cropping pattern and population density.

Keeping in view the manpower resources available with the NNMB, it was decided to cover 16 strata (districts) from each State. These sixteen strata were surveyed in two sub- rounds. In sub-round I, eight strata were surveyed between July and December 1990, and the remaining eight strata in the second subround from January to June 1991. In the States of Maharashtra, Gujarat, Madhya Pradesh, Orissa, West Bengal and Uttar Pradesh where the surveys could not be completed,

the teams were advised to survey them during the period July 1991 to June 1992, so that the confounding factor of season of the survey was taken care of.

Selection of villages

The list of villages covered by NSSO formed the frame for NNMB surveys. From each of the selected stratum, five villages were randomly chosen. Thus a total of eighty villages were selected in each State with 40 villages to be covered in each sub-round.

Selection of households

The list of households (frame) prepared by the NSSO, for the selected village was used and ten households were identified using circular systematic random sampling procedure. Two out of these ten households were chosen from the "affluent" group of households and 8 households from the "not so affluent" group of households.

Investigations

a) In each selected village, one day weighment method of diet survey was done in all the ten households. Oral questionnaire (24 hours recall) method of diet survey was carried out in one "affluent" and two "not so affluent" households selected randomly.

b) Anthropometric measurements of height, weight, mid- upper arm circumference and fat fold at triceps were taken on all the available members of the families surveyed. These members were also examined for presence of specific clinical nutritional deficiency signs.

c) Socio-economic particulars like occupation of the head of the family, family income, land possession, type of family, type of dwelling were also recorded.

ANALYSIS

Diet Survey

a) Weighment Method

The food and nutrient intakes, assessed through weighment diet surveys were expressed on a per consumption unit (CU) basis and compared with Recommended Dietary Intakes (RDI).[2] Average food and nutrient intakes were estimated and presented at the State level.

The calorie consumption of an average adult man, weighing 60 kg, doing sedentary work is taken as one consumption unit, and the other coefficients are worked out on the basis of calorie requirement proportionately.

In addition, households were categorised according to their protein-calorie adequacy status adopting the following procedure :

The requirement of energy of 2350 kcal and protein of 46 g were taken to represent respectively the average for energy and proteins per CU.[2] The requirement curves were assumed to follow a Gaussian distribution with a coefficient of variation of 15%. To determine whether a particular household was consuming adequate amount of protein or energy, Mean - 2SE was used as the cut-off point. If in a given household the intake of protein or energy per CU was found to be above this cut-off level, the household was considered as consuming adequate amount of the particular nutrient. All the households were, thus, classifed into different categories of protein-calorie adequacy and inadequacy.

b) Oral Diet Survey

The food and nutrient intakes of individuals surveyed in different States were calculated according to the various physiological groups.

Multipliers/Weighing Factors

The present study was carried out on a sample of households in each State. The estimates of aggregates at State level were obtained, therefore, as weighed sums of the sample observations. The weights, called 'multipliers', were provided by NSSO. They were adjusted for differences in number of sample villages surveyed in the stratum and the number of sample households surveyed in the selected village. Ratios such as averages and proportions were obtained at State level by dividing the estimated aggregates of the numerator and the denominator. Similarly, distributions were obtained by weighing each sample household, household size or number of consumer units in the household by its corresponding multiplier.

Anthropometry

Means for height, weight, mid upper arm circumference and fat fold at triceps were computed according to age and sex.

The body weights of preschool children were expressed as percentage of NCHS standards[3] and their nutritional status was identified adopting Gomez classification[4] given below :

Weight for age (% of standard)	Nutritional Grade
≥ 90	Normal ('Normal' nutrition)
75-90	Grade I ('Mild' malnutrition)
60-75	Grade II ('Moderate' malnutrition)
< 60	Grade III ('Severe' malnutrition)

Body Mass Index

The Body Mass Index {weight in kg/(Height in meters)^2} was used as an indicator of nutritional status of the adults and grouped so as to reflect different degrees of chronic energy deficiency (CED) and obesity as given below.[5]

BMI	Nutritional Grade
< 16.0	Ill Degree CED
1 6 - 1 7	IIDegree CED
1 7 - 1 8 . 5	I Degree CED
18.5- 20.0	Low - Normal
20.0 - 25.0	Normal
25.0 - 30.0	Overweight (I Degree Obese)
> 30.0	Obese

RESULTS

Coverage

A total of 7373 households were covered for dietary assessment and 22619 subjects for clinical and anthropometric assessment (Table-1). In the case of Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, Gujarat and Orissa, the coverage was either complete or near complete, while in the States of Maharashtra and West Bengal, it was around 70% and in the remaining two States, Uttar Pradesh and Madhya Pradesh, it was much less and hence excluded from the analysis (Fig.1).

FOOD CONSUMPTION

The average consumption of foodstuffs (g/CU) are presented in Table-2.

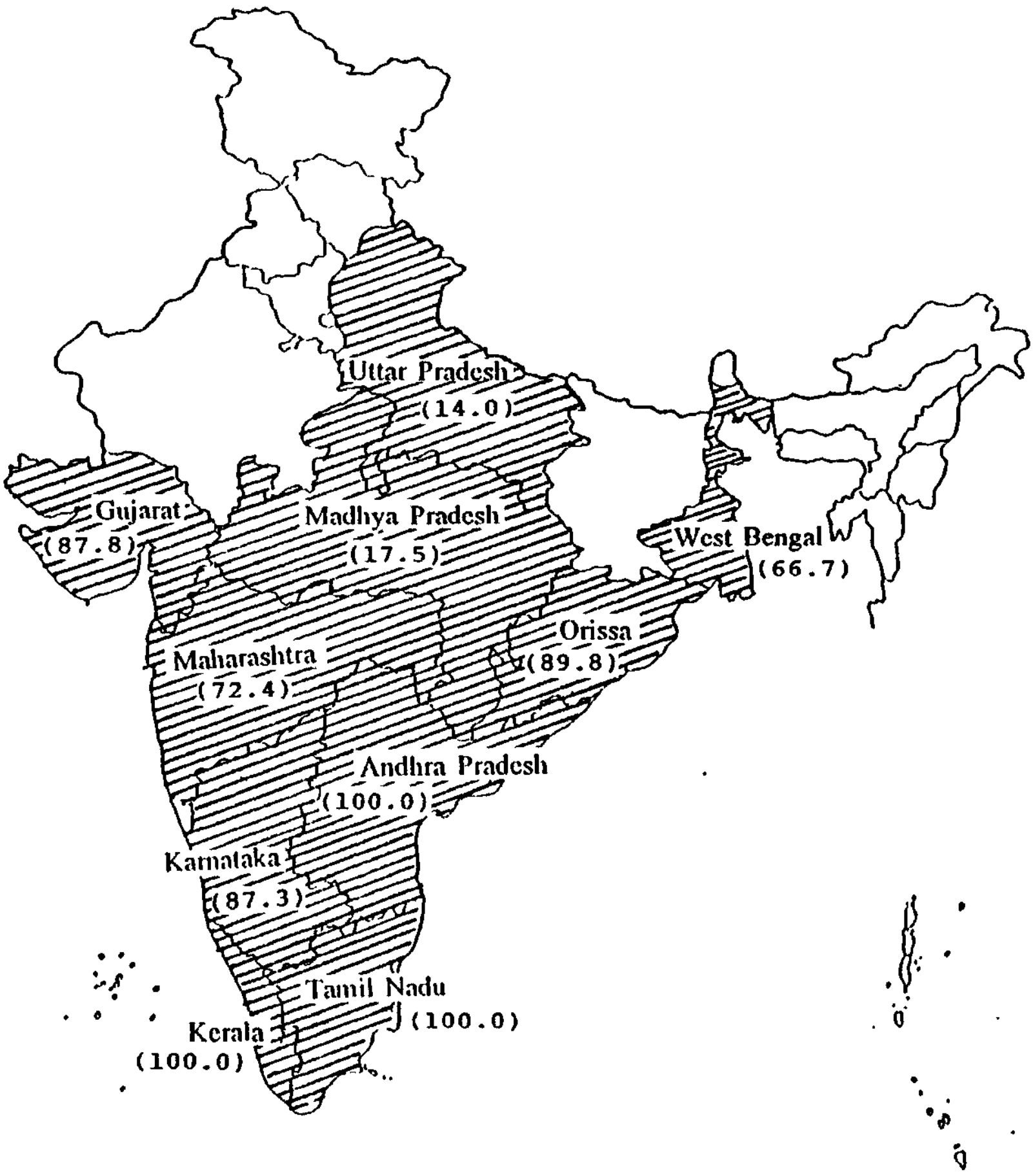
Cereals and Millets

Cereals and millets formed the bulk of the dietaries. The average intake (Fig.2) ranged from a low of 372 g in Kerala to the high level of 598 g in Orissa followed by Karnataka (530 g), West Bengal (528 g), Andhra Pradesh (523 g), Tamil Nadu (448 g), Gujarat (407 g) and Maharashtra (390 g) as compared to the suggested level of 460 g in the Balanced diet.

Pulses

Consumption of pulses was about 40 g in Karnataka and Maharashtra, a level recommended in balanced diet, while it was low in the States of Andhra Pradesh (29 g), Gujarat (28 g), Orissa (28 g), West Bengal (19 g), Tamil Nadu (26 g), and least in Kerala (14 g).

Fig.1 MAP SHOWING STATES COVERED



Figures in parentheses indicate
percentage of target covered

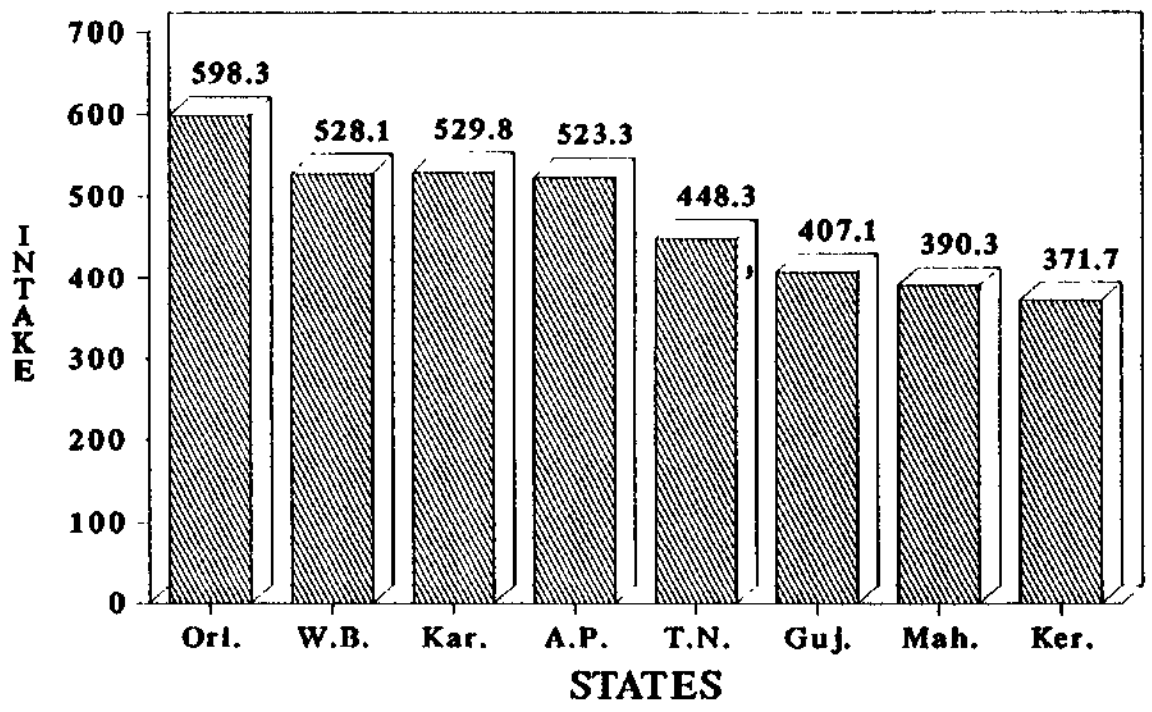

Average intake of cereals & millets (g/CU/day)
INTAKE
700
600
500
400
300
200
100
0
598.3
528.1
529.8
523.3
448.3
407.1
390.3
371.7
Ori.
W.B.
Kar.
A.P.
T.N.
Guj.
Mah.
Ker.
STATES

Figure - 2

Vegetables

The consumption of 'other' vegetables compared to green leafy vegetables was far better in all the States. The average intake ranged from 93 g in West Bengal and 66 g in Kerala to 29 g in Maharashtra with the intake of 54 g in Gujarat, 47 g in Orissa, 41 g in Tamil Nadu and 32 g each in Andhra Pradesh and Karnataka compared to the recommended level of 60 g. Consumption of green leafy vegetables (a rich and least expensive source of iron and β-carotene) was very low compared to the suggested level of 40 g. It was about 6 g each in Kerala, Andhra Pradesh, Maharashtra and Gujarat followed by Karnataka (13 g), Tamil Nadu (8 g) and 31 g in the States of Orissa and West Bengal.

Flesh Foods

Average consumption of flesh foods (including fish and poultry) was quite high in the State of Kerala (66 g) compared to the other States; Orissa (36 g), West Bengal (27 g), Tamil Nadu (11 g), Andhra Pradesh (7 g), Maharashtra (3 g), Gujarat (2 g) and Karnataka (2 g). Fish constitued the major component of this food group in the State of Kerala.

Milk and Milk products

Average consumption of milk and milk products, the only source of vitamin B_{12} for pure vegetarians and also a good source of Riboflavin, ranged from 17 ml in Orissa to 144 ml in Gujarat with 92 ml in Kerala, 91 ml each in Karnataka and Maharashtra, 80 ml in Andhra Pradesh, 78 ml in Tamil Nadu and 33 ml in West Bengal compared to 150 ml suggested in balanced diet.

Fats and Oils

Consumption of visible fat was low, less than RDI, and varied within a narrow range of 7 and 16 g.

Sugar and Jaggery

Consumption level of more than 30 g of Sugar/Jaggery was observed in the States of Maharashtra and Gujarat; while in other States the intake levels ranged from 8 g in Orissa to about 26 g in the States of Kerala and Karnataka.

Roots and Tubers

The State of West Bengal recorded higher consumption of Roots and Tubers (142 g) compared to other-States. Orissa showed a consumption level of about 66 g, while in Gujarat the intake was 36 g followed by Tamil Nadu (29 g), Andhra Pradesh (29 g), Karnataka (23 g) and Maharashtra (21 g). In Kerala, tapioca was the major tuber.

Fruits

Average consumption of seasonal fruits ranged from 4 g in West Bengal to 39 g in Andhra Pradesh with 28 g in Orissa, 18 g each in Tamil Nadu and Kerala, and about 12 g each in Maharashtra and Karnataka.

Nuts and Oil Seeds

The average intake of nuts and oil seeds ranged from 55 g in Kerala (mostly coconut) to less than one gram in West Bengal, Gujarat and Orissa followed by Karnataka (7 g), Maharashtra (6 g), Andhra Pradesh (4 g) and Tamil Nadu (3 g).

Condiments and Spices

Consumption of condiments and spices, which included chillies, tamarind, mustard, seeds, fenugreek and cumin etc., was higher in Andhra Pradesh and Tamil Nadu (around 20 g).than in Kerala and Karnataka (about 15 g each), Maharashtra (13 g), Gujarat (9 g), West Bengal (8 g) and Orissa (3 g).

Thus, the food consumption pattern showed that the diets were predominantly based on cereals and millets. The consumption of protective foods like pulses, milk, fruits, green leafy vegetables was very low. However, the diets in Kerala with better intake levels of fish and milk could be considered as qualitatively superior.

NUTRIENTS

The average intakes of various nutrients calculated (per CU/day) using Food Composition Tables[6] are presented in Table-3.

Protein

The average protein intake was below the RDI of 60 g in all the States. Only in Karnataka and Gujarat, the deficit could be considered as marginal

The distribution of sampled households according to protein intakes (Fig.3) showed that the percentage of households with less than 60 g protein varied from 47 in Karnataka to 80 in Tamil Nadu.

Energy

The average intake of energy varied from a low 1922 Kcal/CU in Maharashtra to 2397 Kcal in Orissa, 2297 Kcal in West Bengal, 2293 Kcal in Karnataka, 2247 Kcal in Andhra Pradesh, 2055 Kcal in Kerala, 1969 Kcal in Gujarat and 1950 Kcal in Tamil Nadu. Except in Orissa, in none of the States the mean intakes were equal to RDI level of 2350 Kcal.

Figure 4 depicts the distribution of sample households by the energy intakes in the 8 States. Eighty three percent of the households in Maharashtra were consuming energy deficit diets (from

Figure - 3

CUMULATIVE(%) DISTRIBUTION OF HOUSEHOLDS

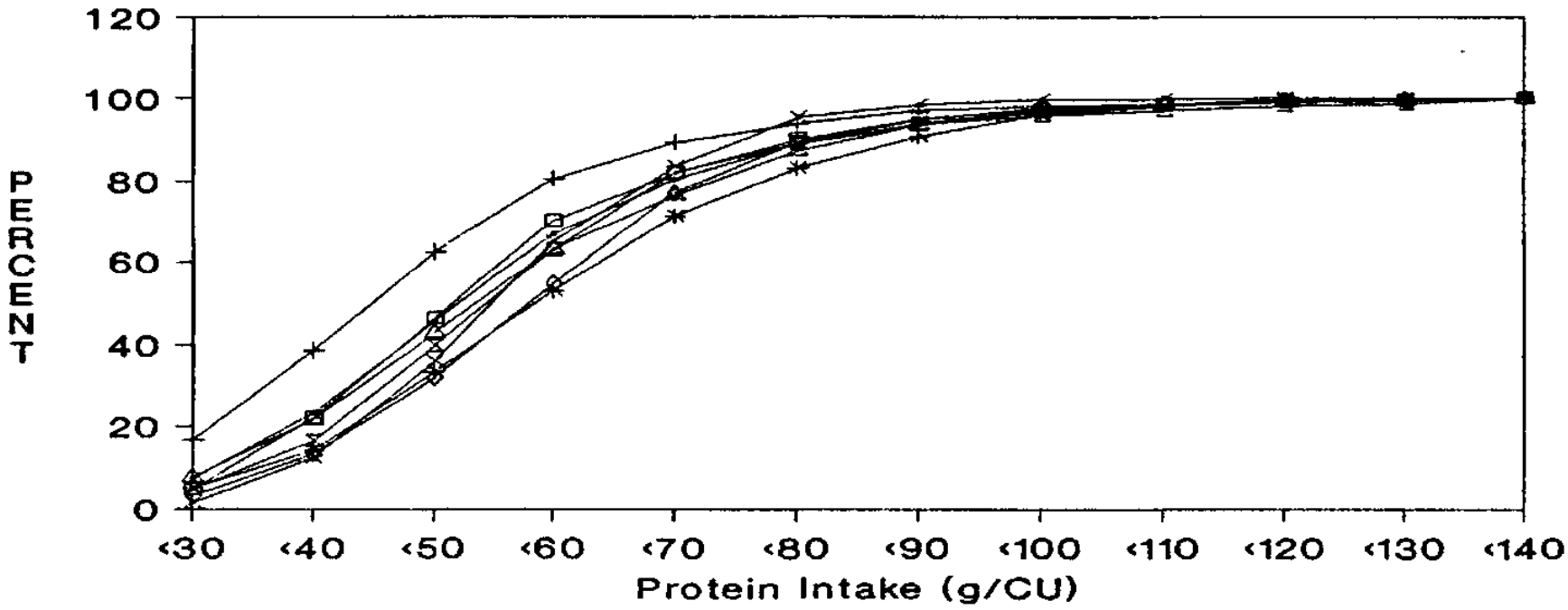
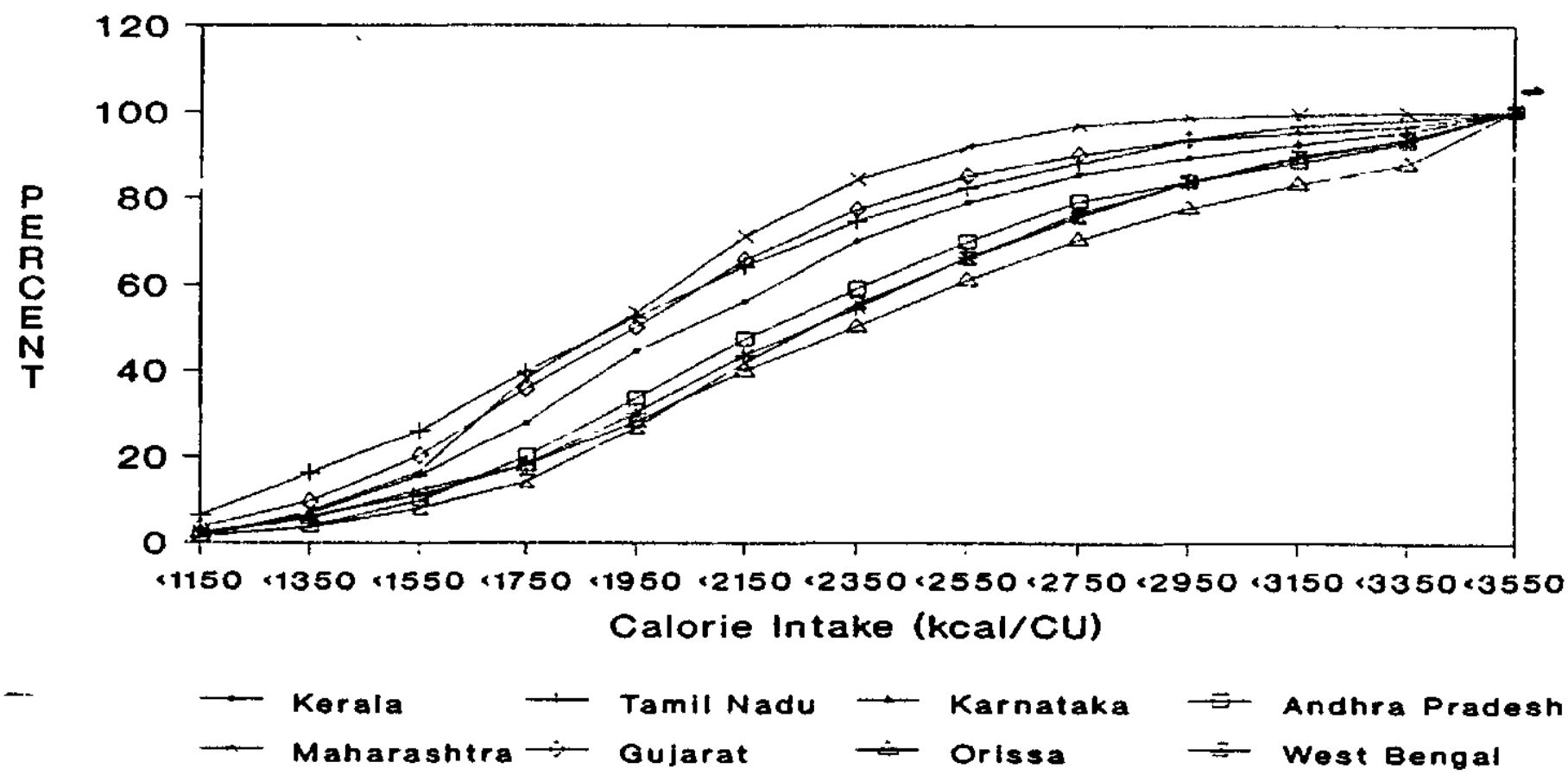


Figure - 4

CUMULATIVE (%) DISTRIBUTION OF HOUSEHOLDS



RDI level) as against 50% in Onssa with about 75% each in Tamil Nadu and Gujarat, 70% in Kerala, 59% in Andhra Pradesh and 55% each in the States of Karnataka and West Bengal.

Calcium

The average calcium intake in all the States, except in the State Orissa, was more or close to the RDI of 400 mg. It was 340 mg and 387 mg respectively in Orissa and Maharashtra.

Iron

The average intake of iron in the State of Karnataka was close to the RDI of 28 mg Percentage of households in which the iron intake (per CU/day) was below the suggested level of 28 mg, ranged from 39 in Karnataka to 84 in Kerala followed by Tamil Nadu (81%), Andhra Pradesh (71%), Gujarat (70%), West Bengal (64%), Maharashtra (61%) and Orissa (55%).

Vitamin A

In none of the eight States, the mean intakes of vitamin A were closer to the RDI of 600 *µg* The average intakes ranged from 197 *µg* in Kerala to 368 *µg* in West Bengal. Cumulative frequency distributions (Fig.5) suggested that in about 90% of the households in all States, except in the States of Orissa and West Bengal, Vitamin A intakes were below the recommended level of 600 ug while in Orissa and West Bengal, it was 79 and 83 percent respectively.

Thiamine

Except in the States of Karnataka, Maharashtra and Gujarat, in all other States the consumption of thiamine was less than the recommended level of 1.2 mg. The intakes ranged from 0.6 mg in Kerala to 1.7 mg in the State of Karnataka.

Riboflavin

In all the States, the consumption of riboflavin was less than the recommended level of 1.4 mg. Percentage of the households with inadequate riboflavin intakes (less than 1.40 mg) was more than 90 in all the States except in Karnataka and Gujarat where it was 87 and 74 respectively.

Niacin

Consumption pattern of Niacin showed a trend which was similar to that observed in the case of riboflavin intake.

Figure—5

CUMULATIVE (%) DISTRIBUTION OF HOUSEHOLDS BY VITAMIN A INTAKE

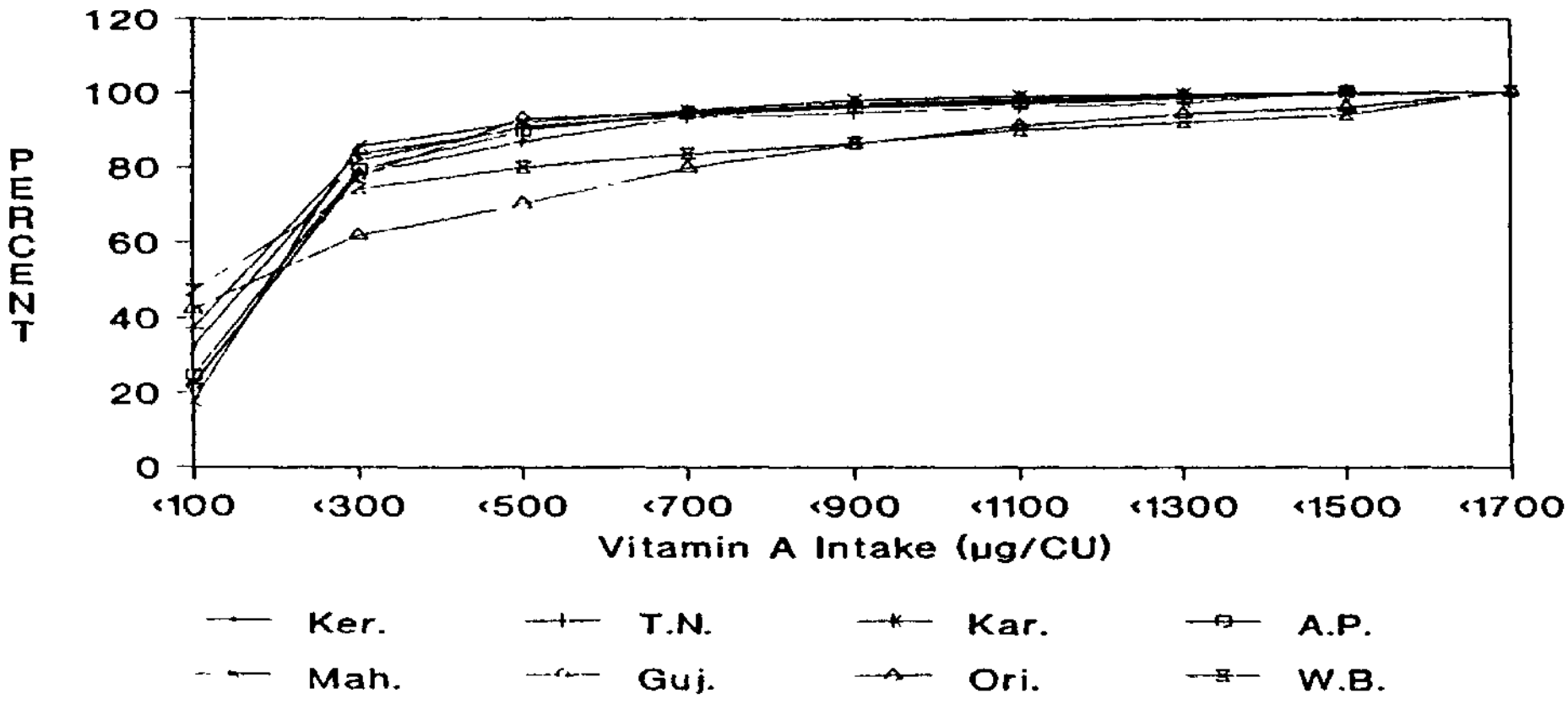
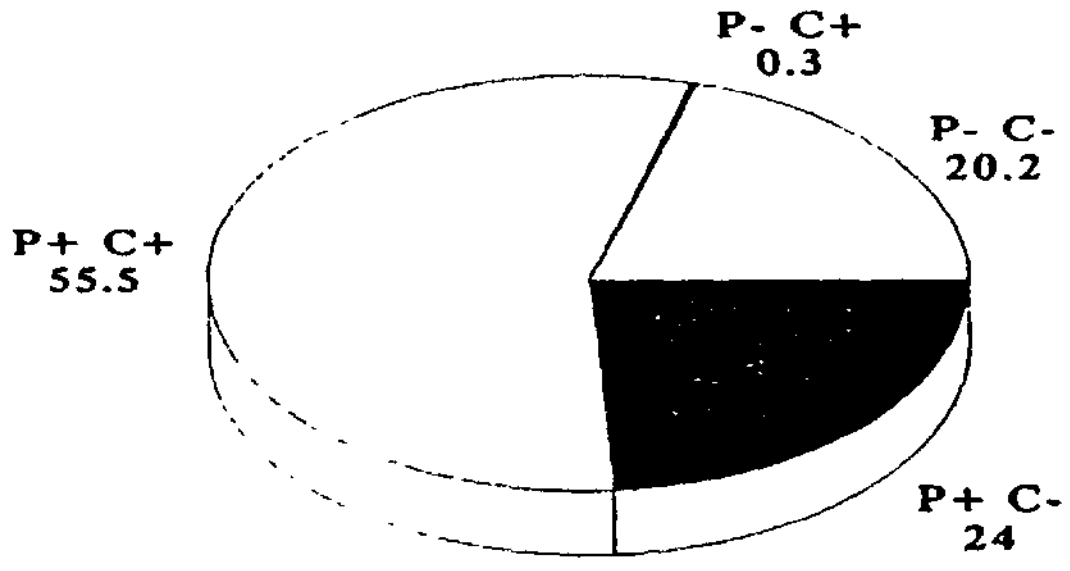


Figure - 6

Distribution of Households according to PCA status (Percentage)



Vitamin C

The average intake of vitamin C (Ascorbic acid) varied from 21 mg in Maharashtra to 73 mg in West Bengal followed by Orissa (51 mg), Kerala (43 mg), Gujarat (31 mg), Andhra Pradesh (31 mg), Tamil Nadu (30 mg) and Karnataka (28 mg). It may be mentioned here that in the computation of vitamin C intakes, the cooking losses were not taken into account.

Protein energy adequacy status of households

The distribution of households according to protein-energy adequacy status is presented in Table-4. The percentage of households showing adequate intakes of dietary protein and energy ranged from 68 in Orissa and West Bengal to 40 in Maharashtra followed by Karnataka (64%), Andhra Pradesh (63%), Kerala (51%), Tamil Nadu (46%) and Gujarat (45%). In the remaining households, the diets were deficient either in energy or protein or in both. In general, the households showing deficiency of protein with ertergy adequacy were negligible (less than 1%), and also the proportion of households with energy inadequacy was more than that of households with protein inadequacy indicating that the problem of energy deficit was of greater magnitude than that of protein in the Indian dietaries (Fig 6).

Socio-Economic factors and Food and Nutrient Intakes

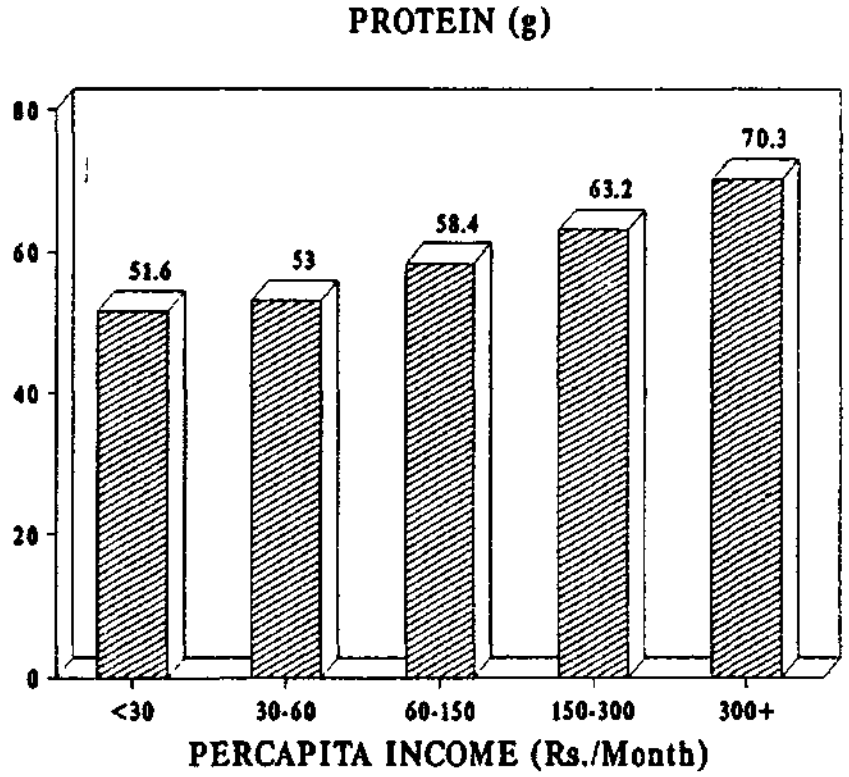
The food and nutrient intakes of families belonging to different socio-economic groups were studied, and the results are presented in Figs. 7-10. Food and nutrient consumption levels are known to be related to socio-economic conditions such as per capita income, type of house (Pucca/RCC or otherwise), landholding and occupational status of head of household. Therefore, an attempt was made to relate these factors with four nutrients viz., energy, protein, vitamin A and iron.

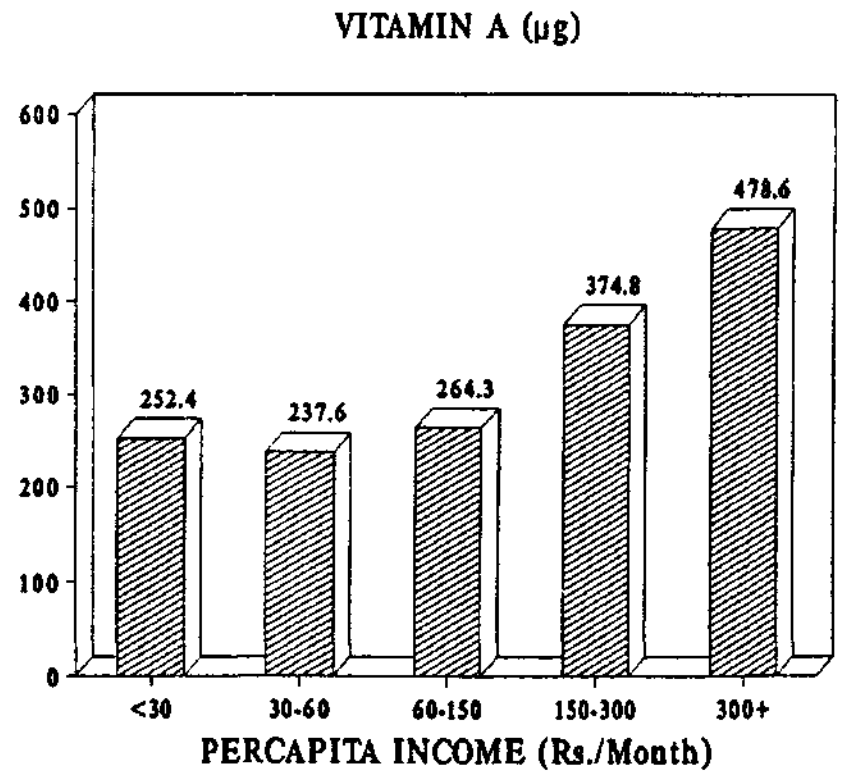
Intakes of protein, energy and vitamin A showed a clear-cut positive relationship with the above socio- economic indicators In other words, households with either higher per capita income or larger land holdings or cultivators (who possessed agricultural land) or those residing in Pucca/RCC roofed houses were consuming higher levels of nutrients compared to the rest of the community.

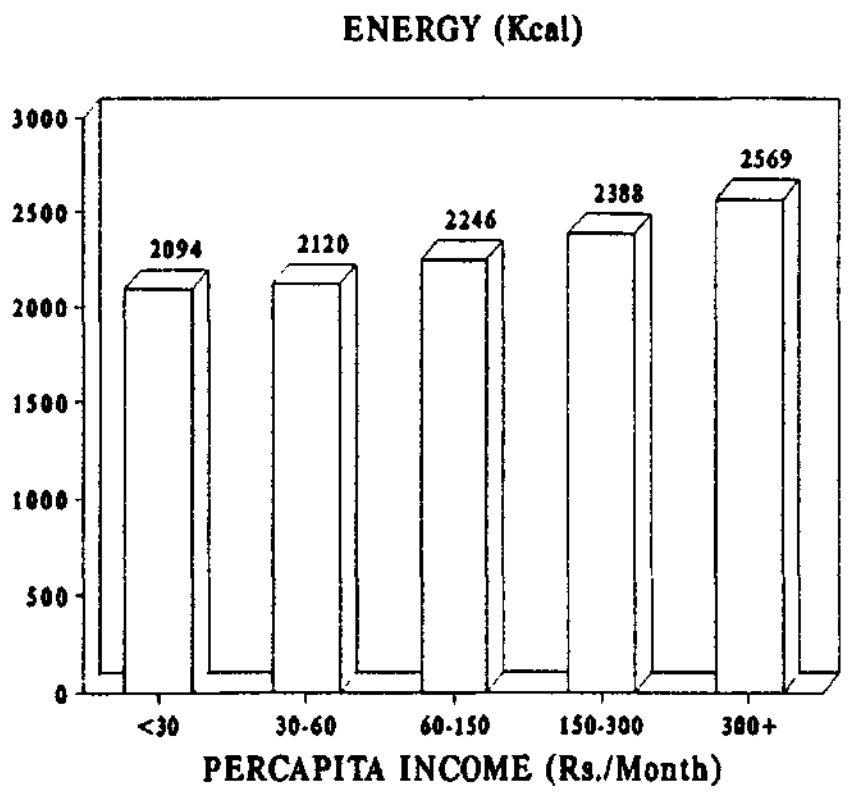
ANTHROPOMETRY

The mean values of height, weight, mid-upper arm circumference (MUAC) and fat fold at triceps (FFT) are presented according to age and sex for each State (Annexure). The distance charts for height and weight are also presented in Figs. 11 to 14. The anthropometric measurements for young children and adolescents were lower than those of NCHS values. There did not appear to be major inter-state differences in the mean values of anthropometric measurements.

NUTRIENT INTAKE (per CU/day) BY INCOME STATUS







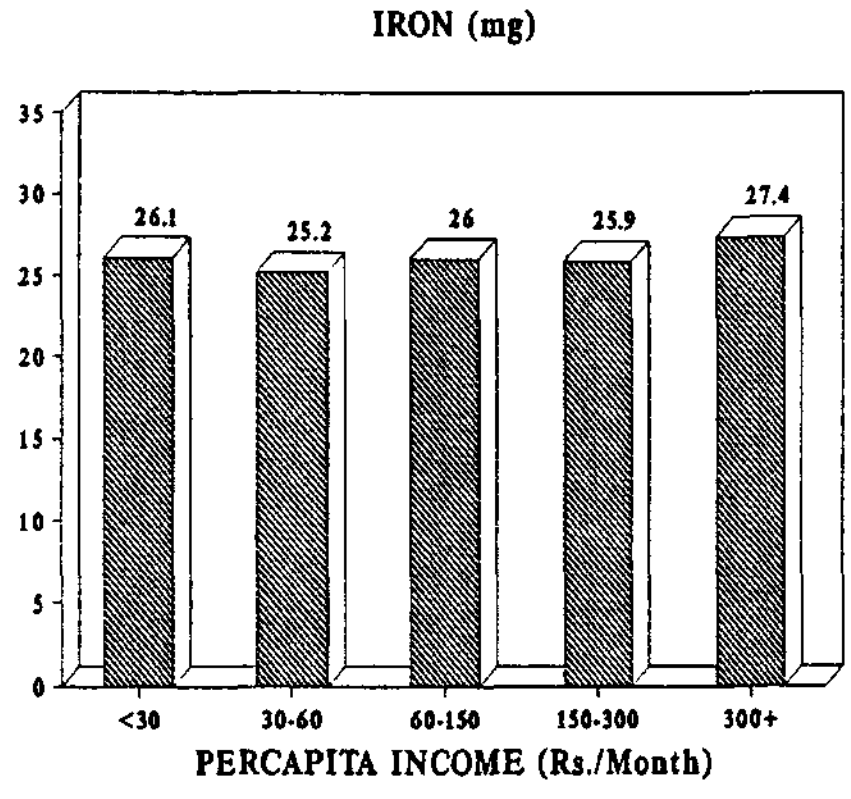
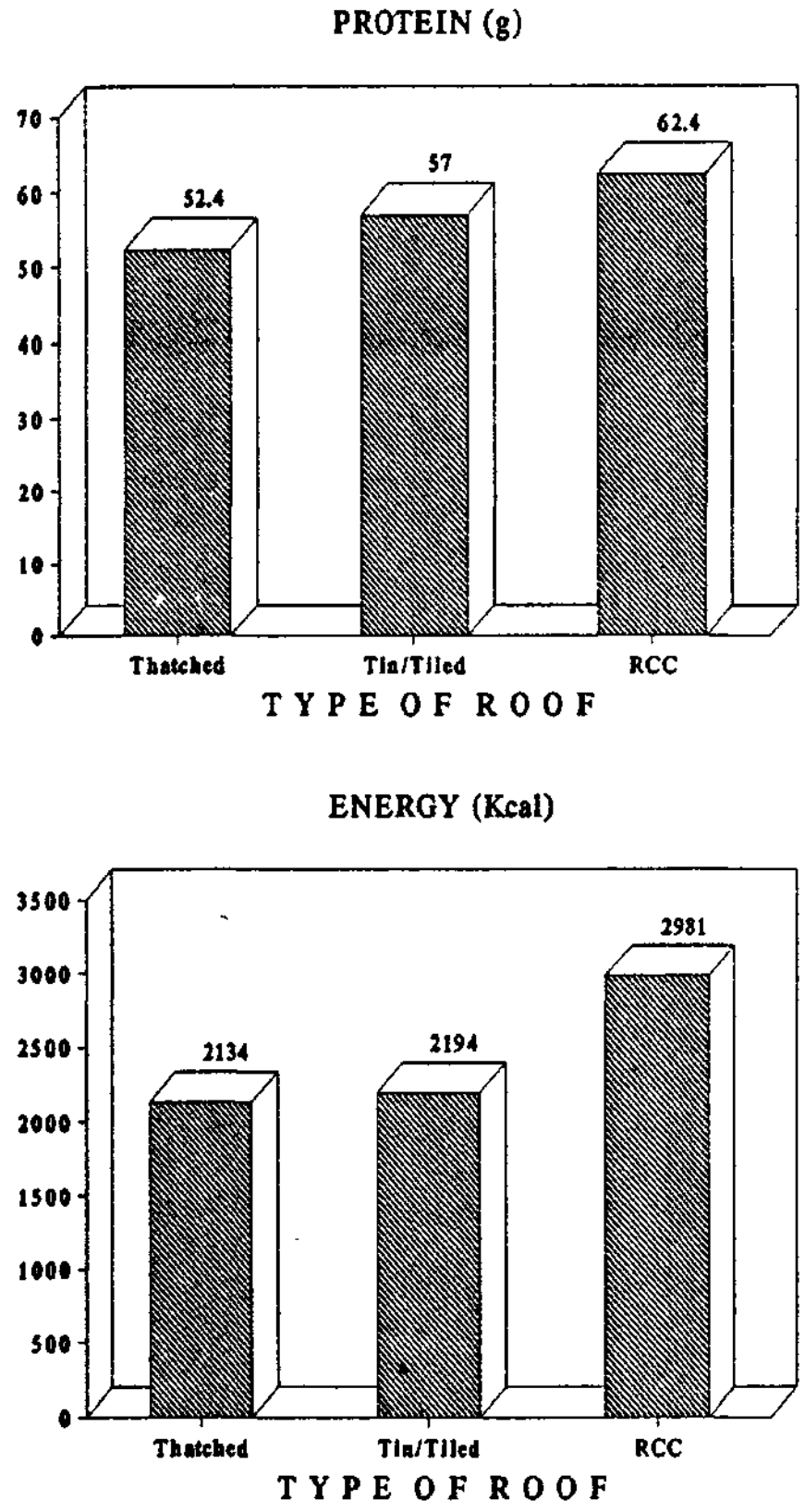


Fig. 7

NUTRIENT INTAKE (per CU/day) BY TYPE OF ROOF



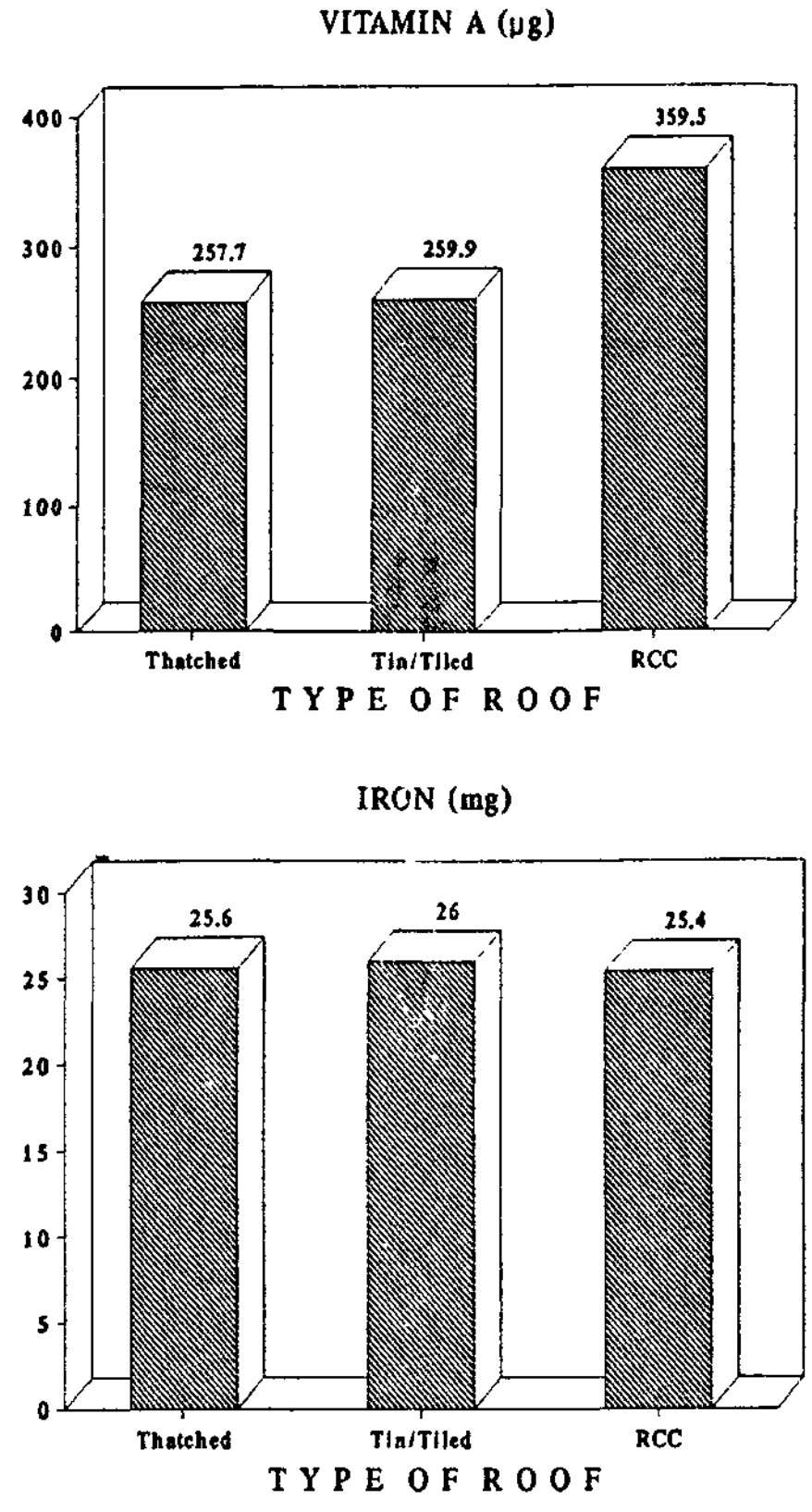
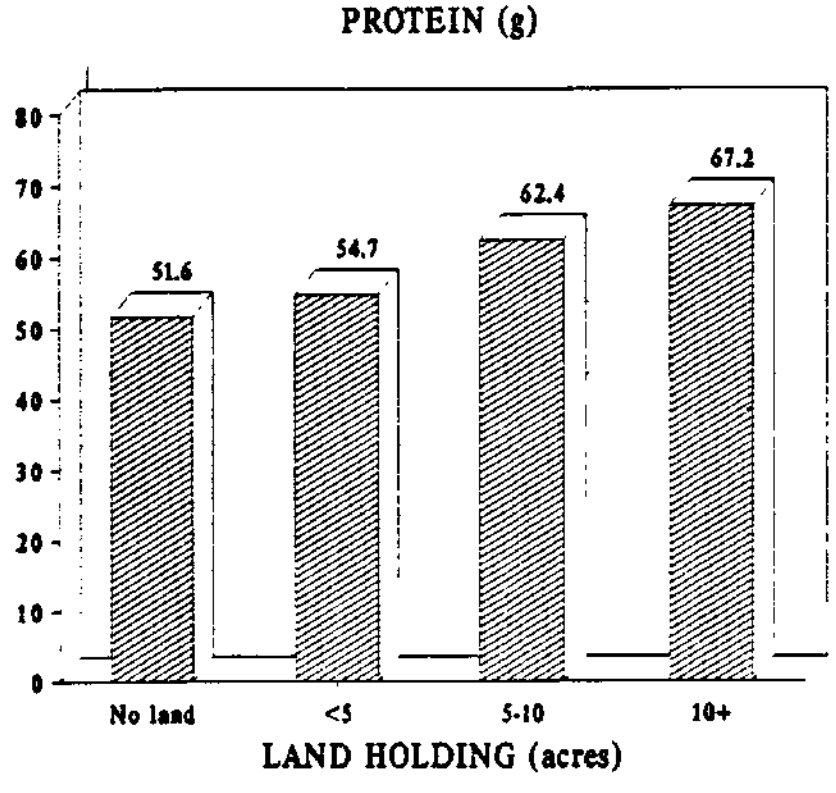
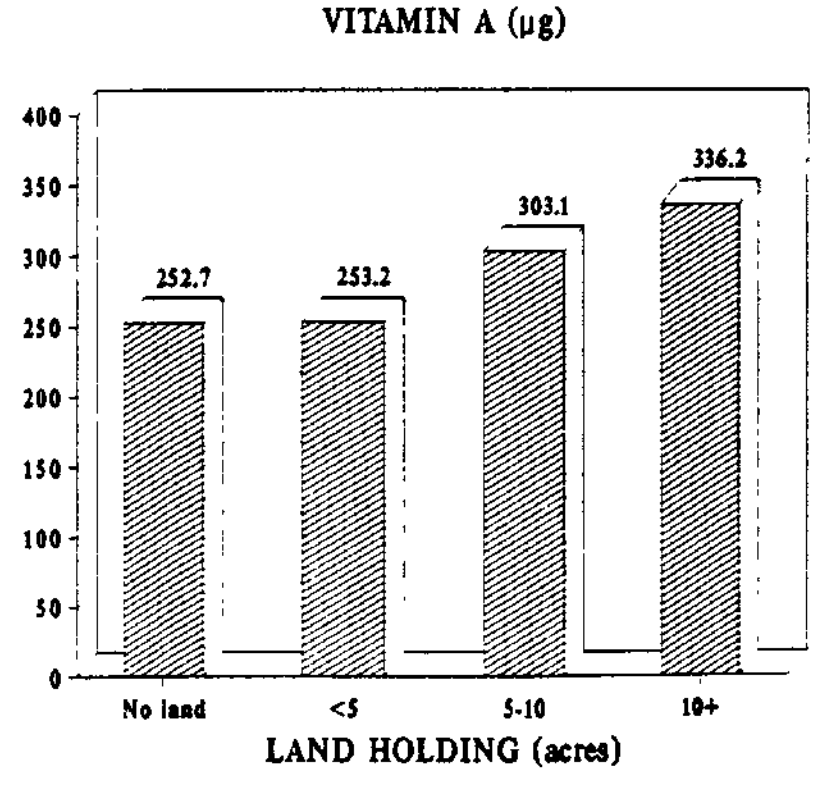
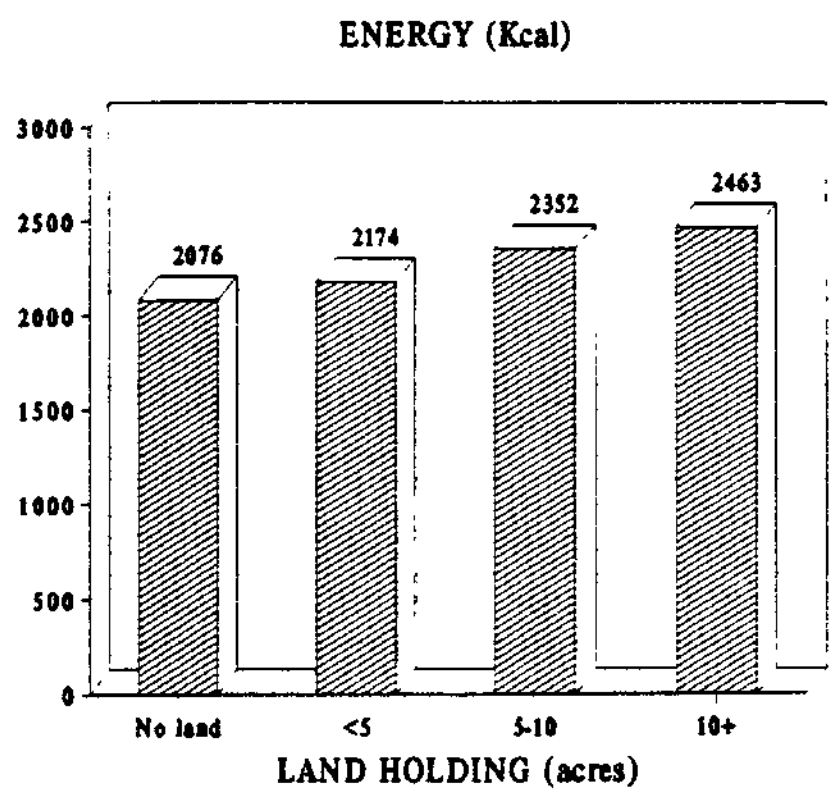


Fig. 8

NUTRIENT INTAKE (per CU/day) BY SIZE OF LAND







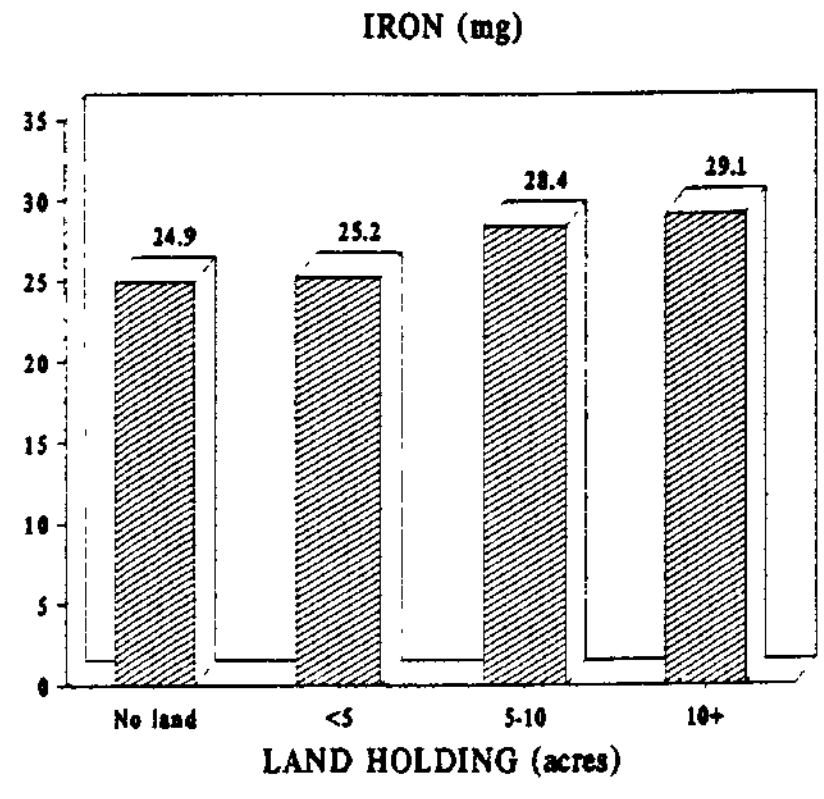
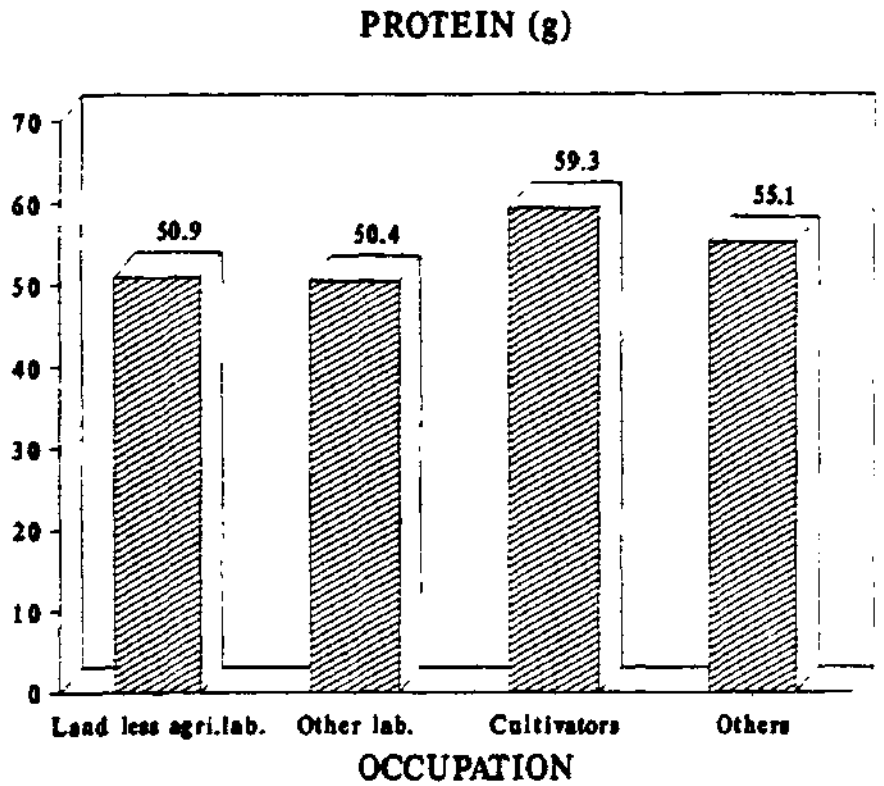
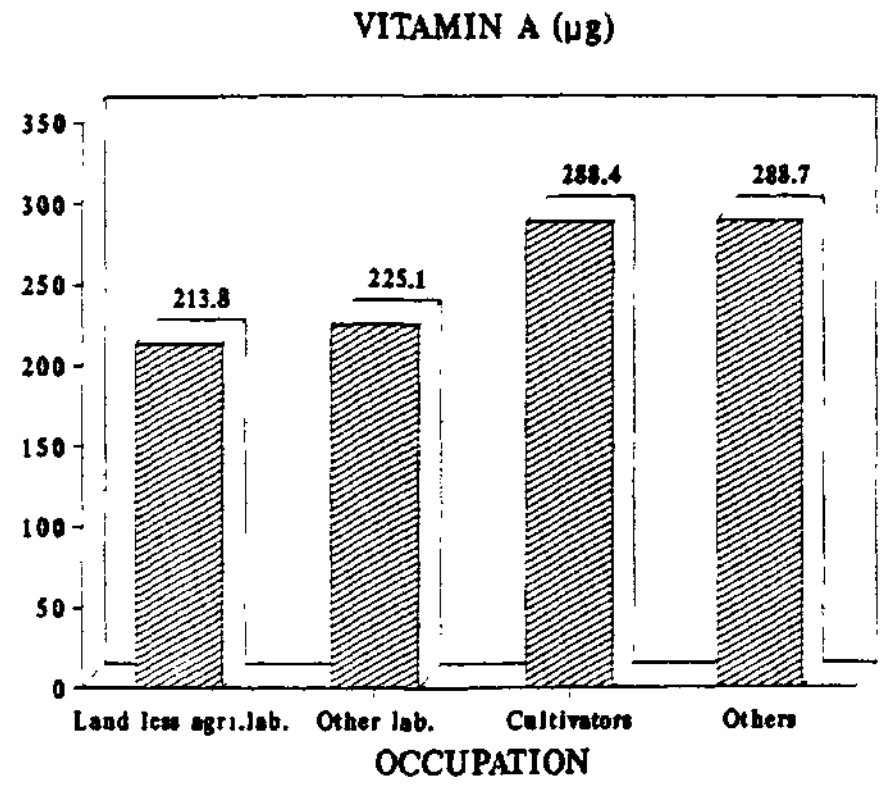
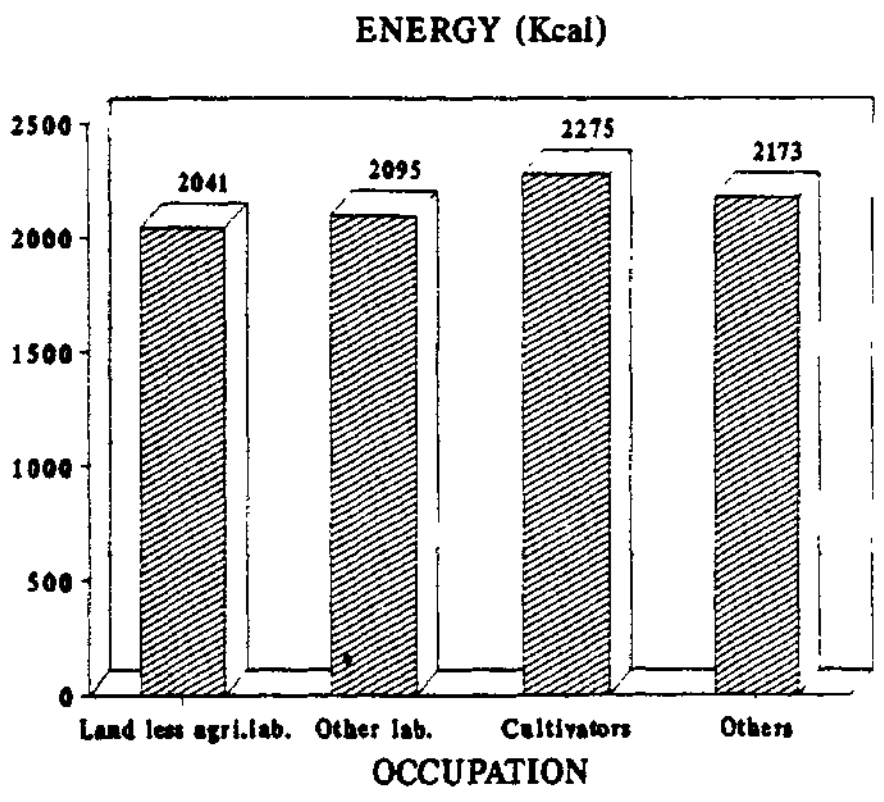


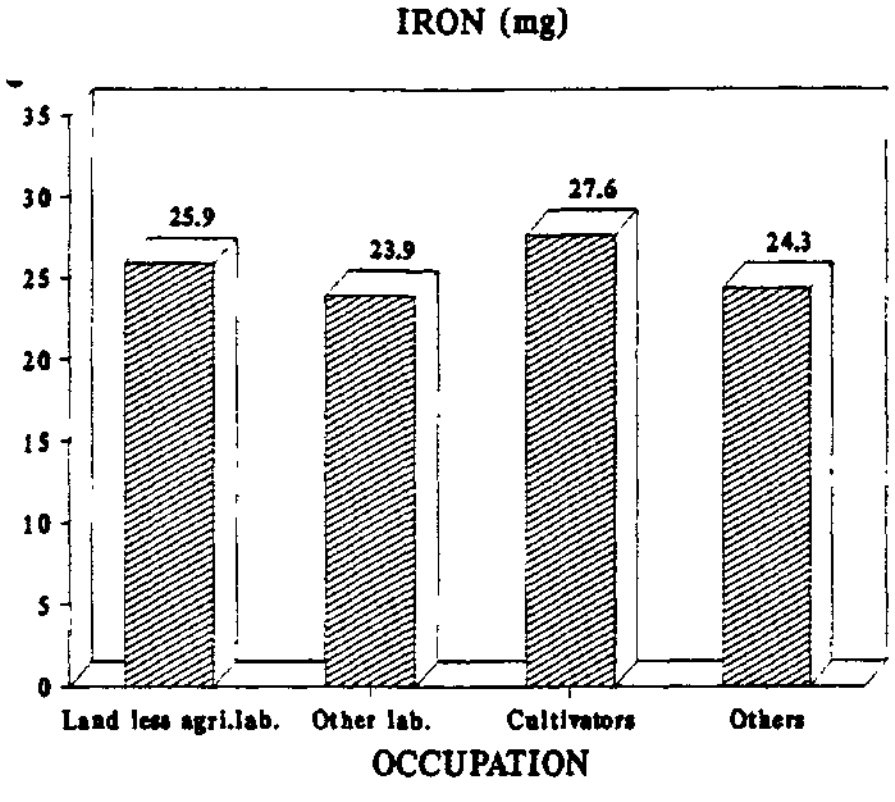
Fig. 9

NUTRIENT INTAKE (per CU/day) BY OCCUPATION*









* *Of Head of the family*

Fig . 10

Figure - 11

DISTANCE CHART - HEIGHT (cm) - MALES

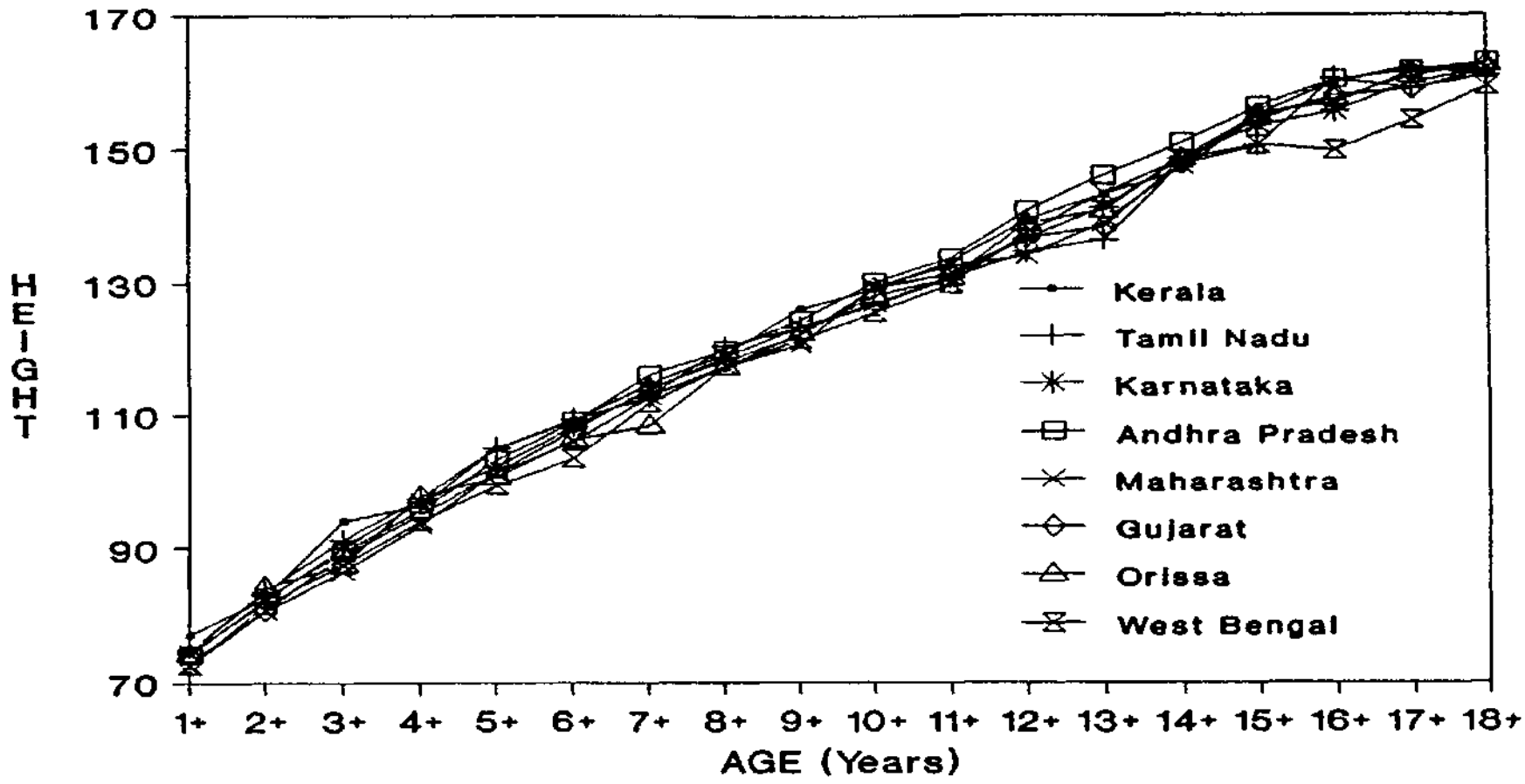


Figure - 12

DISTANCE CHART - HEIGHT (cm) - FEMALES

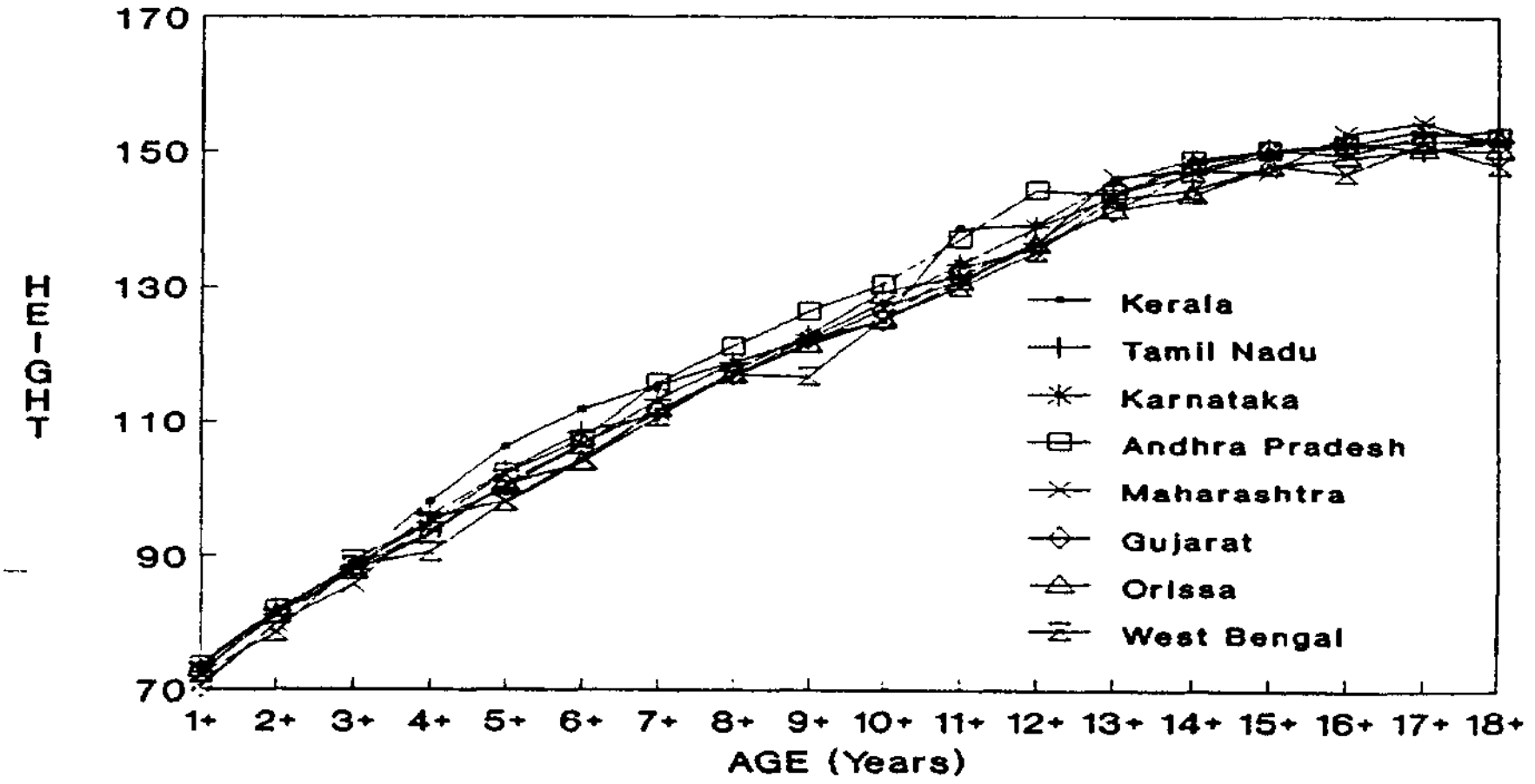


Figure — 13

DISTANCE CHART - WEIGHT (kg) - MALES

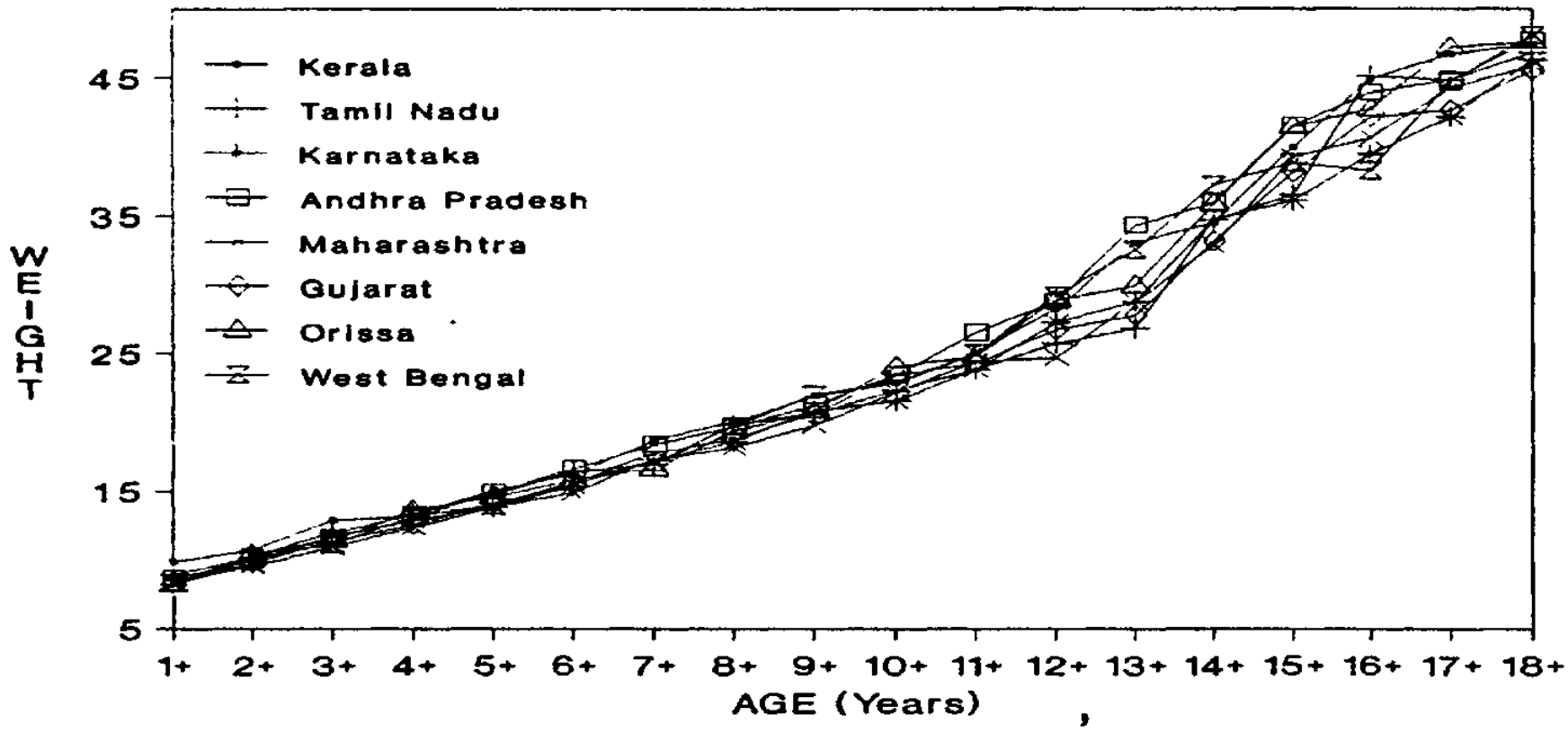
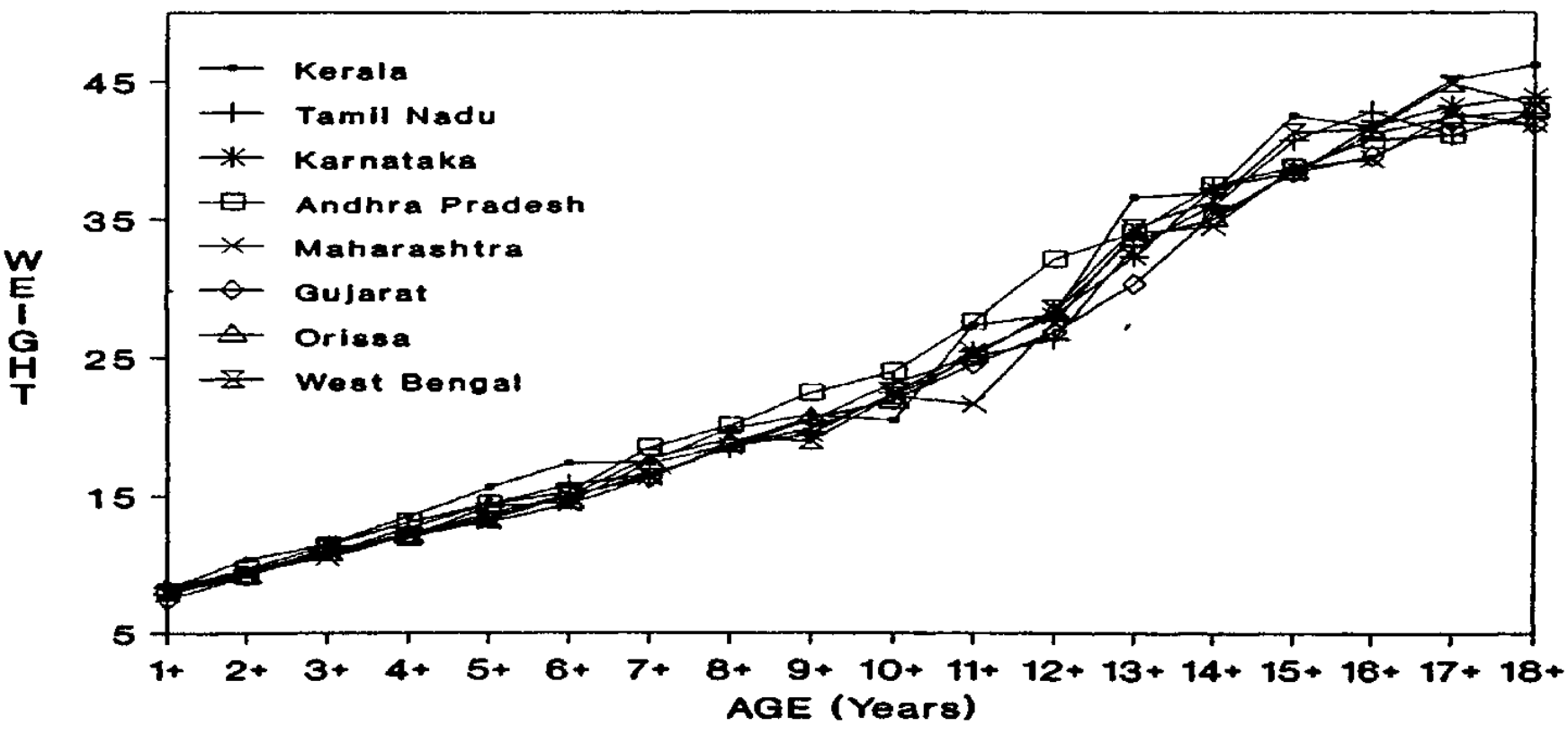


Figure — 14

DISTANCE CHART - WEIGHT (kg) - FEMALES



Weight for age

Children of 1-5 years were classified into different nutritional grades based on their body weights for age. The distribution of children according to different nutritional grades is presented in Table-5.

The highest proportion of "severe and moderate" forms of malnutrition (body weight less than 75% of standard) which constitutes the 'high risk' group from the stand-point of health, was observed to be 62.8% each in Karnataka and Gujarat followed by Maharashtra (62.2%), West Bengal (60.6%), Orissa (55.8%), Tamil Nadu (52.4%), Andhra Pradesh (50.8%) and Kerala (35.6%) (Fig. 15). Thus the children in Kerala had better nutritional (weight for age) profile than the children in the other States despite the average measurements being more or less same. The status of girls appear better in the States of Andhra Pradesh, Karnataka and Maharashtra while boys seemed to fare better in Tamil Nadu, Gujarat, Orissa and West Bengal. In Kerala, the proportion of malnourished children was almost same for boys and girls.

Among the preshcoolers, children of 1-3 years are generally identified as at higher risk of malnutrition than the 3-5 year old children. Hence, the pooled data over all the States are analysed for the prevalence of different grades of growth retardation among the 1-3 and 3-5 year old children (Table-6). No significant age differences are seen between 1-3 and 3-5 year age groups Almost 56% of the rural children of these two age groups fall in the categories of moderate or severe degree of growth retardation.

Body Mass Index (BMI)

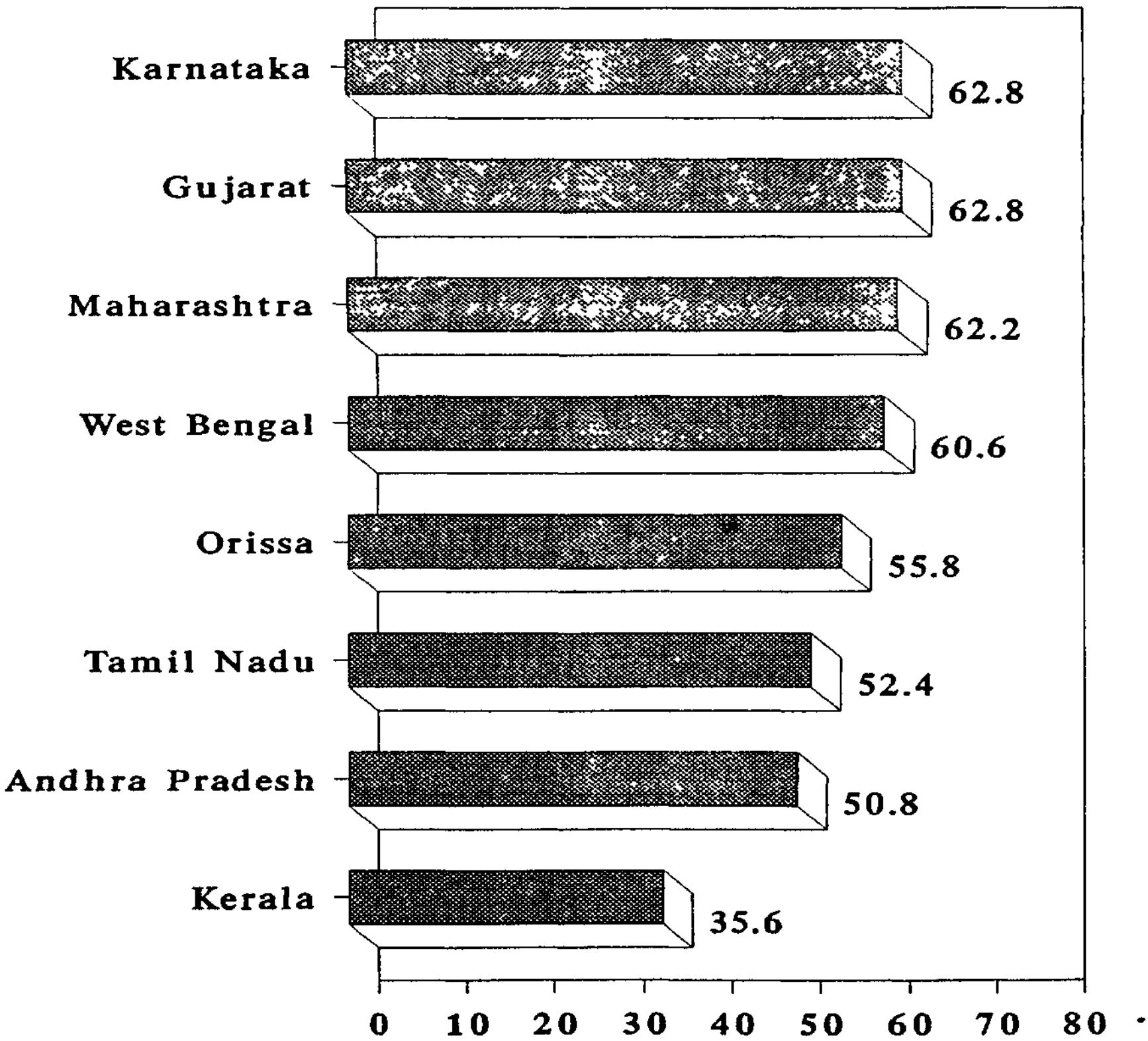
Distribution of adult men and women according to their BMI values are provided in Table-7 for each State.

At the aggregate level the proportion of adults with normal BMI values (18.5-25) was around 50%. The prevalence of chronic energy deficiency in males (BMI <18.5) was the highest in Gujarat (57%) followed by Maharashtra (53%), Karnataka (52%), Orissa (44%), West Bengal (43%), Tamil Nadu (42%), Andhra Pradesh (41%) and Kerala (37%). Chronic energy deficiency tended to be more in women than in men in all the States, except in Kerala and Gujarat. Among females, the proportion of over weight and obese population (BMI > 25) was low. It ranged from 1.5% in Orissa to 12.2% in Kerala. Among males, this proportion varied from 1.7% in Orissa to 6.1% in Andhra Pradesh (Table-7).

NUTRITIONAL DEFICIENCY SIGNS

Table-8 and 9 present the prevalence of clinical deficiency signs indicative of Protein Energy Malnutrition (PEM), Vitamin A and B-complex deficiencies etc. for preschool (1-5 years) and school age (5-12 years) children.

PREVALENCE OF MALNUTRITION* AMONG PRESCHOOLERS



* *Weight/age less than 75% of NCHS standards*

Figure — 15

Among the preschoolers, overt cases of PEM like kwashiorkor and marasmus were rarely seen. Only 17 children out of about 2450 preschoolers were identified as marasmic and these were observed in the States of Andhra Pradesh, Gujarat, Orissa and West Bengal. High prevalence of vitamin A deficiency was seen in Gujarat and West Bengal (11%) while it was less than one percent in Andhra Pradesh and Orissa. None of the children surveyed in Kerala exhibited clinical signs indicative of vitamin A deficiency (Table-8). The prevalence figures of B-complex deficiency signs were at a higher magnitude (0.5 to 23.9%).

Among the school age children (5-12 years), deficiency signs of vitamin A and B-complex were seen and their prevalence was higher than those of preschoolers. Dental mottling and caries were also noticed in this age group.

COMMENTS

The present survey covered 16 districts from each State, as against the 4 districts covered under the earlier NNMB sampling design. This shift has resulted in a better spatial representation of the population and more stable estimates of dietary consumption and nutritional status. In two out of ten States where NNMB is in operation, the coverage was partial and grossly inadequate. Hence, the results of these States were not included here.

Except in Orissa, in the other seven States the average intake of energy was much less than the RDI of 2350 Kcal/CU/day. Only in the State of Karnataka the protein intake was around the RDI of 60 g/CU/day. The diets were deficient in all the micronutrients (minerals & vitamins), except calcium which was above the RDA level (400 mg) in 6 out of 8 States surveyed. The magnitude of deficit for different nutrients showed wide variations - the extent of deficit being higher for vitamin A (57.8%) and riboflavin (42.9%) than for the other vitamins and minerals.

Relative positions of the States with respect to consumption is shown graphically in the frequency (cumulative) distribution curves The intakes (energy and vitamin A) were least in the State of Maharashtra. The position of Orissa appeared best among the 8 States while the remaining States held a mid-way position. However, when the nutritional status of preschool children (which reflects the community nutritional status) was considered, the picture appeared reversed. Karnataka and Gujarat, though had better diet intakes, showed highest proportion (62.8%) of undernourished children (Severe & Moderate degree) and in Kerala prevalence of malnutrition (35.6%) was the least among the 8 States. The other five States held intermediate positions.

In the States of Gujarat, Orissa and West Bengal, the prevalence of Grade - 3 malnutrition, among the preschool children, is more than 10 percent inspite of adequate calorie intake i.e. more than 1200 Kcal (Table-10). This may be due to the influence of non-nutritional factors like poor

environment and high infection rates. In Kerala, where the calorie intake is high in preschool children, the prevalence of grade-3 malnutrition is low (6%). It is surprising to note that in Tamil Nadu, the average calorie intake of preschool children is low inspite of large-scale supplementary feeding programme suggesting that part of this supplement is becoming a substitute for the home diet. However, grade-3 malnutrition is only 6 percent as in Kerala This is probably due to the better health care and education intervention in this State.

The pattern of adult nutritional status, expressed in terms of BMI, was more or less similar to that seen in children's nutritional status. In other words, the States having higher prevalence of malnourished children (severe and moderate together) showed higher proportions of adults with chronic energy deficiency. The prevalence of CED was observed to be higher in adult women than in men in all the States except in Kerala and Gujarat where more men were suffering from CED. Higher proportion of obese women (compared to men) was observed in the State of Kerala.

Considering 2150 calories as the cut-off level to define calorie adequacy at the household level, the States of Kerala, Tamil Nadu, Maharashtra and Gujarat have low intake of calories, while the rest (Karnataka, Orissa, Andhra Pradesh and West Bengal) can be considered to have adequate intake (Table-11). In States with low calorie intake like Maharashtra and Gujarat, the prevalence of Chronic Energy Deficiency (CED) is high (27 and 28 percent) and States with high calorie intake like Orissa, Andhra Pradesh and West Bengal, CED is less than 20 percent

However, in Kerala and Tamil Nadu with low calorie intake the prevalence of CED is low, while Karnataka with better calorie intake has 23 percent CED. It is known that apart from food intake, weight is also affected by the level of physical activity of the individual. It is possible that this lack of relationship between food consumption and nutritional status, is due to differences in levels of physical activities of the population covered.

In Kerala a larger percent of families were socio-economically better off than those surveyed in the other States. A reflection of this, however, was evident in terms of nutritional status though not in respect of nutrient consumption. This should not surprise because nutritional status is not dependent on diet alone.

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TABLES

Table -1
Coverage of Households

State	No.of strata		No. of villages		No.of HHs covered				Nutri-tional assess-ment
					Weighment		Oral		
	Target	Covered	Target	Covered	Target	Covered	Target	Covered	
Kerala	16	16	79	79	790	789 (100 0)	237	237 (100 0)	2444
Tamil Nadu	16	16	76	76	760	760 (100 0)	228	228 (100 0)	2745
Karnataka	16	14	79	69	790	690 (87.3)	237	202 (85 2)	3275
Andhra Pradesh	16	16	80	80	800	800 (100 0)	240	240 (100 0)	2918
Maharashtra	16	14	80	61	800	579 (72.4)	240	169 (70.4)	2551
Gujarat	16	15	69	62	690	606 (87 8)	207	185 (89 5)	2400
Madhya Pradesh	16	3	80	14	800	140 (17 5)	240	45 (18 8)	672
Orissa	16	15	80	72	800	718 (89 8)	240	216 (90.0)	2583
West Bengal	16	13	69	54	690	460 (66 7)	207	157 (75 8)	2387
Uttar Pradesh	16	3	80	14	800	112 (14 0)	240	40 (16 7)	684
Pooled	160	125	772	581	7720	5654	2316	1719	22619

Figures in parantheses indicate percentage of coverage

Table - 2
Average Intake of foods (G:CU,

State	No. of		Cereals and Millets	Pulses	Green leafy veg.	Other veg	Roots and tubers	Nuts & oil seeds	Conu.- ments & spices	Fruits	Fish & other flesh foods	Milk	Fats and Oils	Sugar and Jaggery
	CU/HH	Ind/ HH												
Kerala	5.12	5.60	3717	13.7	60	65 6	57.5	54 6	155	179	66.0	92.2	95	26 7
Tamil Nadu	4.14	4.44	448.3	26.1	75	40.6	29.2	3.3	195	17.5	109	77 9	7.5	176
Karnataka	5.51	6.07	529.8	40 2	13.1	32 2	22.8	7.3	147	108	1.8	91.3	7.5	25 6
Andhra Pradesh	4.56	4.86	523.2	29 3	5.9	32 7	28.5	3.5	215	38.5	6.8	80 1	10.8	106
Maharashtra	4.91	5.24	390 3	38.4	5.9	29 4	210	5.8	125	11.7	31	91.0	123	34 7
Gujarat	5.18	5.41	407.1	28.3	6.0	54 2	35 7	00	8.9	5.7	2.0	144 1	163	29 7
Orissa	4.81	5.21	598.3	27.7	30.8	471	65 8	06	31	27 5	10.8	167	6.7	77
West Bengal	5.14	5.51	528.1	18.5	31.1	93 2	142.1	0.1	7.9	4.0	20.8	33.1	11.2	11.9
Pooled			476.0	28.2	12.5	46 8	45.9	89	136	182	15.0	79 0	10.0	20 1
RDI			460	40	40	60	-	-	-	-	-	150	40	30

Note Data of Madhya Pradesh and Uttar Pradesh are not included due to inadequate coverage

Table - 3

Average Intakes of Nutrients (Per CU/day)

State	No.of HHs	Protein (g)	Total Fat (g)	Calories (Kcal)	Calcium (mg)	Phos-phorous (mg)	Iron (mg)	Vit.A (µg)	Thia-mine (mg)	Ribo-flavin (mg)	Niacin (mg)	Vit.C (mg)
Kerala	788	52.9	43.3	2055	608.2	1193.6	20.9	197.0	0.6	0.7	11.8	43.0
Tamil Nadu	757	46.2	17.9	1950	465.7	1067.1	21.8	203.9	0.7	0.6	10.6	29.6
Karnataka	690	59.7	23.2	2293	818.5	1463.9	32.5	266.3	1.7	0.9	13.4	28.0
Andhra Pradesh	799	531	22.4	2247	447.2	1205.4	24.8	235.7	0.9	0 7	12.9	30.9
Maharashtra	578	55 5	28.2	1922	386.6	1201.7	25.9	205 0	16	0.8	14.4	21.1
Gujarat	606	57.8	35.3	1969	470.6	1459.2	23.1	246.0	16	1.0	14.0	30.8
Orissa	718	55.1	128	2397	340.4	1217.3	27 3	352 1	0.7	0.6	14 0	514
West Bengal	460	55.6	18.9	2297	410.6	1240.8	27.1	368.1	0.9	0.7	153	73.0
Pooled		54.1	24.8	2139	494.0	1248.2	25.3	254.3	1.1	0.7	13.1	36.9
RDI		60.0	-	2350	400	-	28.0	600	1.20	1.40	16.0	40 0

Note Data of Madhya Pradesh and Uttar Pradesh are not included due to inadequate coverage

Table - 4

Percentage distribution of households by protein-calorie adequacy status

State	No. of HHs	P C - -	P C - +	P C + +	P C + -	P -	P +	C -	C +
Kerala	788	23.0	0.8	51.4	24.8	23.7	76 3	47.8	52.2
Tamil Nadu	757	37.1	01	45.6	17.2	37 3	62.7	54.3	45.7
Karnataka	690	14.1	01	64 2	21.6	142	85.8	35.7	64.3
Andhra Pradesh	799	20.3	00	62.5	17.2	20 3	79.7	37.5	62.5
Maharashtra	578	11.1	00	40 0	49 0	11.1	88.9	60.0	44.7
Gujarat	606	12.9	0.0	44 7	42.4	12.9	87.1	55.3	44.7
Orissa	718	21.2	0.6	68.2	10.0	21.7	78.3	31.2	68.8
West Bengal	460	16.1	0.4	68.0	15.4	16.5	83.5	31.5	68.5
Pooled		20.2	0.3	55.5	24.0	20.5	79.5	44.2	55.8

Note : Data of Madhya Pradesh and Uttar Pradesh are not included due to inadequate coverage.
P Stands for Protein intake C stands for calorie intake
+ represents adequacy; - represents inadequacy

Table - 5

Percent distribution of preschool children (1-5 Years) according to weight for age status

Status	Sex	n	Weight for age (% of NCHS standard)			
			≥ 90 Normal	75-90 Mild	60-75 Moderate	< 60 Severe
Kerala	Boys	112	19.6	44.6	29.5	63
	Girls	87	14.9	49.4	29.9	57
	Pooled	199	17.6	46.7	29.6	6.0
Tamil Nadu	Boys	140	10.0	41.4	42.1	6.4
	Girls	160	6.3	38.1	50.6	5.0
	Pooled	300	8.0	39.7	46.7	5.7
Karnataka	Boys	207	3.4	31.9	57 0	7.7
	Girls	180	3.9	35.6	51.7	8.9
	Pooled	387	3.6	33.6	54.5	83
Andhra Pradesh	Boys	207	97	34.8	44.9	106
	Girls	196	10 2	43.9	38.8	7 1
	Pooled	403	9.9	39.2	41.9	8.9
Maharashtra	Boys	165	4.2	29.7	43.0	23.0
	Girls	147	4.8	37.4	46.9	10.9
	Pooled	312	4.5	33.3	44.9	17.3
Gujarat	Boys	166	3.6	31.9	54.8	96
	Girls	129	0.8	38.8	45.7	14.7
	Pooled	295	2.4	34.9	50.8	11.9
Orissa	Boys	146	6.2	41.1	41.8	11 0
	Girls	155	5.8	35.5	43.2	15.5
	Pooled	301	6.0	38.2	42.5	13.3
West Bengal	Boys	109	12.8	26.6	41.3	19.3
	Girls	137	6.6	32.8	43.8	16.8
	Pooled	246	9 3	30.1	42.7	17 9
Pooled	Boys	1252	7.9	34.9	45.6	11 6
	Girls	1191	64	38.5	44 6	10.5
	Pooled	2443	7.2	36.7	45.1	11 1

Note. Data of Madhya Pradesh and Uttar Pradesh are not included due to inadequate coverage.

Table - 6
Percent distribution of preschool children (1-5 years) according to weight for age status

Age in years	Sex	Number	Weight for Age as % of Standard*							
			Normal		Mild		Moderate		Severe	
			n	%	n	%	n	%	n	%
1-3	Boys	620	56	9.03	205	33.06	293	47.26	66	10.65
	Girls	592	51	8.62	218	36.82	256	43.24	67	11.32
	Total	1212	107	8.83	423	34.90	549	45 30	133	10.97
3-5	Boys	632	43	6 80	232	36.71	278	43.99	79	12.50
	Girls	599	25	4.18	241	40.23	275	45.91	58	9.68
	Total	1231	68	5.53	473	38.42	553	44.92	137	11.13
1-5	Boys	1252	99	7.91	437	34.90	571	45.61	145	11.58
	Girls	1191	76	6.38	459	38.54	531	44.58	125	10.50
	Total	2443	175	7.16	896	36.68	1102	45 11	270	11.05

* : NCHS values served as Standard.

Table - 7

Percentage distribution of adults according to Body Mass Index (BMI)*

BMI	Kerala	Tamil Nadu	Karna-taka	Andhra Pradesh	Maharash-tra	Gujarat	Orissa	West Bengal	Pooled
				MALES					
Number	606	623	804	656	630	491	621	626	5057
< 16.0	6.44	6.90	11.19	8.08	12.70	13.64	7.08	6.87	9.08
16.0-17.0	8.91	10.76	11.82	7.93	14 29	15 48	7.73	10.38	10.82
17.0-18.5	21.62	24.40	29.10	25.30	25 87	27 70	28.99	25.40	26.12
18.5-20.0	21.78	21.51	20.65	26.07	20.63	17 72	30.76	23.01	22 84
20.0-25.0	36.14	31.46	24.38	26.52	23.81	19.76	23.69	29.71	26.99
25.0-30.0	4 95	4.49	2.74	5.49	2.38	5.29	1 45	4.15	3.80
≥30.0	0 16	0.48	0.12	0.61	0.32	0.41	0.32	0.48	0.35
				FEMALES					
Number	1062	930	972	923	787	781	824	715	6994
< 16.0	6.12	10.43	12.35	10.62	15.12	10.76	9.71	9.09	1041
16.0-17.0	6.50	11.72	15.02	12.79	13.47	13.06	12.74	11.61	11.98
17.0-18.5	15.16	22.90	25.82	23.94	26.30	25.22	26.70	23.77	23 45
18.5-20.0	19.58	19.89	19.65	21.45	19.70	21.51	27.06	21.26	21.16
20.0-25.0	40.40	28.93	23 15	25.57	22 49	25.61	22 33	30.07	27.67
25.0-30.0	10.92	5.27	3.50	4.33	2 41	3.46	1.46	3.64	4.62
≥30.0	1.32	0.86	0.51	1.30	0.51	0.38	0.00	0.56	0.71

Note : Data of Madhya Pradesh and Uttar Pradesh are not included due to inadequate coverage.

*BMI = Weight (kg)/Height^2(m)

Table - 8

Prevalence (%) of nutritional deficiency signs in preschoolers (Boys and girls)

Nutritional deficiency signs	Kerala	Tamil Nadu	Karna-taka	Andhra Pradesh	Maharash-tra	Gujarat	Orissa	West Bengal
Number	199	300	387	403	313	296	301	247
NAD	98.5	84.3	85.8	85.9	94.9	71.6	93.0	48.6
Oedema	0.0	0.0	0.0	0 0	0.0	0.0	0.0	0.0
Marasmus	0.0	0.0	0.0	0.7	0.0	3.0	0.7	2.0
Total Vitamin A	0.0	1.0	2.8	0.5	2.2	11.8	0.3	11.3
Total B-complex	0.5	11.0	11.6	6.2	0.3	11.5	2.0	23.9

Note: Data of Madhya Pradesh and Uttar Pradesh are not included due to inadequate coverage.

Table - 9

Prevalence (%) of nutritional deficiency signs in 5-12 (Boys and girls)

Nutritional deficiency signs	Kerala	Tamil Nadu	Karna-taka	Andhra Pradesh	Maharash-tra	Gujarat	Orissa	West Bengal
Number	220	491	624	562	493	453	503	488
NAD	91.4	62.3	67.5	85.2	80.7	506	84.9	24.8
Total Vitamin A	0.0	2.7	5.0	1.1	3.7	29.1	2.0	22.1
Total B-complex	0.0	14.9	24.8	8.9	1.2	22.5	2.6	40.6
Caries	5.5	24.9	2.2	3.0	14.2	7.3	9.9	36.6
Mottling	0.9	2.0	0.8	2.7	0.2	197	1.2	4.1

Note: Data of Madhya Pradesh and Uttar Pradesh are not included due to inadequate coverage.

Table-10

Relationship between calorie intakes and nutritional status of preschoolers

Calorie Status	States	Calorie Intake of Preschoolers (kcal)	Prevalence of grade - 3 malnutrition*
< 2150 Kcal/cu	Kerala	1430	6.0
	Tamil Nadu	1140	5.7
	Maharashtra	1010	17.3
	Gujarat	1260	11.9
≥ 2150	Karnataka	1330	8.3
	Andhra Pradesh	1190	8.9
	Orissa	1450	13.3
	West Bengal	1450	17.9

Median weight for age.
* : Children with weight less than 60% of the median weight for age (NCHS standards)

Table-11

Relationship between food intake (calories) and nutritional status of Adults

Calorie status	States	% of Adults with CED
< 2150 Kcal/cu	Kerala	15.3
	Tamil Nadu	17.7
	Maharashtra	27.0
	Gujarat	29.1
≥ 2150	Karnataka	23.0
	Andhra Pradesh	16.0
	Orissa	14.8
	West Bengal	17.3

CED: Chronic Energy Deficiency (Body Mass Index < 17)

ANNEXURE

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: KERALA **SEX: MALES**

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	29	63.5	6.77	6.8	2.38	13.6	1.88	9.6	2.03
1	29	77.1	4.62	9.9	1.60	14.6	1.25	10.3	2.37
2	29	82.7	4.91	10.7	1.58	14.4	1.03	9.6	2.17
3	24	94.0	5.87	12.9	1.54	15.0	0.88	9.6	1.84
4	30	96.4	6.67	13.2	2.39	14.7	1.34	8.4	1.88
5	17	105.0	8.09	15.1	2.95	15.2	1.41	8.6	2.01
6	18	109.2	6.05	16.1	2.56	14.8	0.93	8.1	2.32
7	20	114.5	7.16	18.6	3.58	15.9	1.59	7.9	2.22
8	17	119.0	7.82	20.0	2.87	15.5	1.36	7.8	1.81
9	8	125.9	7.19	21.9	5.03	16.3	1.79	7.1	2.23
10	14	129.0	6.09	22.9	3.36	16.3	1.05	7.0	0.97
11	23	133.0	7.75	25.0	3.40	16.8	1.41	7.3	1.78
12	14	139.3	9.28	28.2	5.04	18.0	1.60	9.0	2.71
13	21	143.0	6.16	33.0	7.94	18.7	2.18	7.5	2.58
14	17	146.6	11.74	34.5	8.27	19.4	2.35	8.2	2.09
15	32	155.0	7.87	39.9	6.96	21.0	2.02	7.6	2.11
16	22	160.0	10.15	44.8	9.98	21.3	2.43	7.3	2.69
17	18	162.3	8.10	46.7	7.73	22.1	1.45	6.8	1.74
18	22	161.1	7.86	47.4	5.68	22.9	1.87	7.6	2.04
19	17	165.1	6.52	50.9	7.50	24.1	1.97	7.4	2.79
20-24	88	165.8	6.97	53.4	7.25	24.7	1.98	7.1	2.81
25-29	64	164.4	7.42	53.5	9.36	25.1	2.48	7.0	3.27
30-34	48	162.6	7.11	52.4	7.76	24.8	2.43	6.4	2.10
35-39	48	161.9	6.77	52.4	9.96	25.0	2.67	6.9	3.33
40-44	40	163.2	6.57	56.8	8.82	26.0	2.20	8.2	4.00
45-49	47	161.2	6.76	53.2	9.70	25.3	2.92	7.4	2.89
50-54	46	162.4	5.94	54.0	11.61	25.5	3.16	7.5	3.12
55-59	37	160.6	5.93	50.7	9.95	24.3	3.04	7.1	2.88
> = 60	149	160.1	6.63	51.2	9.48	24.4	2.51	7.8	2.90

* Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: KERALA **SEX: FEMALES**

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ.(cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	35	63.5	6.20	6.7	1.81	13.2	1.56	9.6	1.87
1	21	73.5	4.99	8.3	1.79	13.3	1.17	8.7	2.10
2	24	81.5	3.64	10.4	1.21	14.2	1.31	9.6	1.96
3	21	88.7	4.73	11.5	1.46	14.3	1.09	9.4	2.30
4	21	97.9	3.77	13.5	1.74	14.7	0.90	9.0	1.58
5	23	106.0	6.36	15.6	2.29	15.3	0.82	9.3	2.25
6	8	111.6	7.72	17.4	2.97	15.2	1.69	7.9	1.36
7	13	115.3	7.33	17.5	3.21	15.4	1.13	7.7	1.93
8	17	118.7	5.21	19.9	2.36	15.9	1.14	8.1	1.96
9	15	121.8	5.89	20.9	2.82	16.3	1.38	8.9	2.30
10	12	124.8	6.97	20.5	4.44	15.6	1.96	7.7	1.81
11	15	138.6	5.32	27.4	6.01	18.1	1.53	9.2	2.45
12	22	139.1	8.20	28.1	5.55	17.6	1.57	8.6	2.46
13	24	145.8	9.80	36.7	8.82	20.4	2.76	11.5	3.57
14	22	148.9	7.31	37.0	5.62	20.4	1.70	10.8	2.95
15	26	150.2	7.87	42.5	6.47	21.6	2.09	11.3	3.61
16	31	149.6	6.90	41.7	7.28	22.0	2.39	10.9	3.02
17	25	152.5	6.07	45.1	5.59	23.0	1.86	13.7	4.27
18	37	153.1	6.21	46.2	6.01	23.6	2.16	13.0	4.34
19	35	152.5	4.58	44.9	6.59	22.9	2.49	11.8	3.48
20-24	174	152.6	5.77	46.6	7.40	23.5	2.39	12.6	4.50
25-29	138	151.3	5.91	46.7	8.05	23.9	2.49	12.9	4.99
30-34	80	152.0	6.24	47.8	8.83	24.6	3.03	13.5	5.02
35-39	116	150.6	5.15	48.5	9.68	24.8	3.11	13.3	5.05
40-44	80	149.9	5.91	49.0	9.87	25.3	3.54	14.4	6.16
45-49	106	149.8	5.22	47.0	9.12	24.7	3.04	13.4	4.92
50-54	63	148.8	6.24	49.3	10.02	25.4	3.23	15.2	5.62
55-59	75	147.6	6.66	47.9	10.09	24.6	3.37	14.1	5.26
> = 60	158	146.6	5.65	43.8	9.12	23.4	3.21	11.2	4.87

* Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: TAMILNADU SEX: MALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<l	30	65.0	6.51	6.5	1.95	12.2	1.32	6.4	1.00
1	31	74.9	4.53	8.9	1.32	13.2	1.17	6.3	0.94
2	42	83.5	6.09	10.2	1.52	13.5	0.97	6.4	1.45
3	35	91.2	4.76	12.0	1.62	14.0	1.01	7.0	1.04
4	32	97.5	4.90	13.3	1.74	14.3	1.19	6.7	1.33
5	41	105.1	4.86	14.8	1.48	14.2	1.02	6.0	0.77
6	34	109.3	5.84	16.3	2.30	14.7	1.01	6.0	0.95
7	35	112.6	5.19	16.8	1.98	14.7	1.15	5.9	0.92
8	34	120.2	6.03	19.8	2.62	15.5	1.20	5.8	0.80
9	34	123.1	6.92	20.6	2.45	15.8	1.32	6.1	0.97
10	40	126.5	6.23	22.3	3.42	16.1	1.87	6.1	0.93
11	25	130.7	7.76	23.8	3.51	16.2	1.29	6.2	0.85
12	34	134.5	7.69	25.7	3.92	16.8	1.31	6.3	1.31
13	29	136.3	5.90	26.8	2.98	17.3	0.98	6.4	0.99
14	25	147.6	8.53	34.7	7.40	19.5	2.38	6.5	1.23
15	24	150.4	10.85	36.5	7.93	19.5	2.08	6.4	0.88
16	15	160.6	8.40	45.1	9.16	21.7	2.42	7.1	1.03
17	10	159.0	7.43	44.8	4.81	21.6	1.85	7.0	1.89
18	17	161.1	5.94	46.4	5.21	22.5	1.71	6.4	0.80
19	19	161.9	6.36	48.5	4.15	23.0	1.97	6.4	1.43
20-24	80	164.4	6.75	51.1	5.46	23.8	1.78	6.8	1.86
25-29	71	163.7	7.46	51.2	7.82	24.2	2.32	6.8	2.02
30-34	65	162.1	6.34	316	8.62	24.4	2.82	7.0	2.01
35-39	69	163.5	5.37	54.0	8.52	24.9	2.41	7.7	2.00
40-44	51	161.2	6.70	53.5	10.59	24.8	3.09	7.5	2.16
45-49	65	162.5	6.16	52.3	8.67	24.4	2.53	7.2	2.10
50-54	42	162.7	8.20	53.9	10.28	24.6	2.43	7.6	1.81
55-59	57	163.3	6.59	54.5	11.40	24.5	3.11	7.8	2.49
>=60	86	161.8	6.51	49.2	8.82	22.9	2.72	7.0	1.85

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: TAMILNADU SEX: FEMALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	35	64.1	5.71	5.9	1.23	12.2	0.99	6.4	0.94
1	35	74.1	2.78	8.4	1.15	12.8	0.83	6.5	1.07
2	42	81.9	4.71	9.6	1.44	13.3	1.07	6.5	1.02
3	41	87.9	4.98	10.9	1.69	13.8	0.99	6.7	1.17
4	42	95.7	5.42	12.7	1.77	14.3	1.07	6.4	0.94
5	38	102.3	4.28	14.4	1.68	14.4	0.96	6.3	0.97
6	34	108.2	6.39	15.8	2.14	14.6	1.22	6.5	1.08
7	31	110.8	6.26	16.5	2.20	14.7	1.24	6.4	1.09
8	38	117.4	5.46	18.5	2.04	15.2	1.13	6.2	0.98
9	37	122.7	6.99	20.5	2.74	15.7	1.21	6.3	0.88
10	40	129.1	6.58	23.2	3.53	16.8	1.63	6.7	0.98
11	30	131.5	7.07	25.1	4.00	17.3	1.59	6.7	1.12
12	36	136.6	7.66	27.4	5.61	17.6	1.64	6.6	1.05
13	25	143.8	7.76	33.0	6.19	18.9	2.05	6.9	2.00
14	26	146.8	4.84	36.0	5.60	20.1	1.76	7.9	1.72
15	34	149.8	6.32	40.7	7.21	21.6	2.14	8.4	1.71
16	33	151.4	5.99	42.8	6.03	22.4	2.11	8.6	1.89
17	28	150.2	5.59	41.1	5.28	22.1	1.87	8.5	1.84
18	34	151.6	5.33	42.7	5.95	22.5	2.33	8.6	1.44
19	34	152.2	5.68	43.0	4.93	22.1	1.92	8.3	1.77
20-24	124	151.5	5.90	43.7	5.60	22.2	1.90	8.5	1.65
25-29	158	151.2	5.63	443	6.88	22.9	2.48	9.0	2.17
3034	85	151.8	5.68	44.8	8.33	23.0	2.67	8.8	2.34
35-39	105	151.9	5.82	46.1	8.13	23.5	2.73	9.3	2.50
40-44	66	150.4	5.20	44.5	9.02	23.3	3.07	9.4	2.51
45-49	102	150.6	5.74	44.4	8.87	23.3	3.07	8.9	2.54
50-54	65	150.0	6.29	45.6	9.36	23.6	3.18	9.7	2.64
55-59	62	149.8	6.06	46.1	10.25	23.5	2.95	9.4	2.47
>=60	95	148.7	5.27	41.4	8.92	22.0	3.21	8.3	2.70

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: KARNATAKA SEX: MALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ.(cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<l	44	64.6	5.33	6.7	1.46	12.9	1.18	8.0	2.13
1	44	74.4	3.79	8.2	1.16	12.8	1.14	6.8	1.71
2	58	82.1	5.06	9.7	1.24	13.4	1.13	7.6	1.57
3	45	90.0	5.07	11.7	1.35	14.1	0.91	8.1	1.51
4	60	97.0	5.49	12.9	1.74	14.3	1.06	7.3	1.97
5	36	102.3	5.95	13.8	1.87	14.2	1.24	6.5	1.28
6	54	108.3	5.75	15.4	2.13	14.3	1.08	6.0	1.32
7	57	113.6	5.51	17.2	2.14	15.0	0.98	5.8	1.29
8	52	118.5	5.85	18.5	2.39	15.1	1.07	5.7	1.60
9	52	123.2	6.83	20.8	2.79	15.7	1.23	5.5	1.35
10	40	126.7	6.47	21.5	3.03	15.8	1.15	5.1	1.35
11	32	130.8	6.16	23.8	2.59	16.8	1.10	5.1	1.26
12	62	136.6	7.39	27.2	4.58	17.6	1.54	5.8	1.56
13	27	141.1	7.58	28.7	4.20	17.7	1.31	5.0	1.60
14	36	148.5	8.19	34.7	5.07	19.8	1.71	5.5	1.56
15	18	153.5	12.83	36.1	7.33	19.6	1.88	4.9	1.13
16	25	155.6	9.57	39.4	7.68	21.1	2.47	4.8	1.21
17	11	159.9	7.94	42.1	10.07	20.9	3.00	4.5	1.21
18	51	162.0	6.58	46.3	4.90	23.4	1.80	5.2	1.92
19	12	166.9	8.37	49.8	5.19	24.3	1.43	5.3	2.10
20-24	102	163.9	6.74	49.2	7.36	24.3	2.03	5.5	2.54
25-29	91	164.8	6.39	51.8	6.72	25.2	2.03	5.7	2.01
30-34	87	165.2	6.89	52.1	7.91	25.2	2.32	5.7	2.65
35-39	81	164.6	6.01	51.4	8.21	24.7	2.45	5.6	2.52
40-44	64	164.9	6.17	50.8	8.90	24.4	2.35	5.7	2.82
45-49	55	164.3	6.71	53.6	9.40	25.4	2.55	6.6	2.84
50-54	72	163.3	6.03	49.9	8.15	24.4	2.38	5.7	2.62
55-59	61	163.7	6.09	52.3	9.34	24.6	3.17	6.9	3.49
>=60	128	162.5	6.53	49.1	8.23	23.1	2.97	6.2	2.82

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: KARNATAKA

SEX: FEMALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	41	63.5	6.14	6.1	1.36	12.3	1.41	7.8	1.72
1	42	72.6	4.24	7.9	1.32	12.8	1.33	7.4	1.75
2	45	81.2	4.78	9.4	1.14	13.4	1.12	8.0	1.94
3	43	88.5	5.19	11.0	1.29	13.8	1.16	8.3	1.55
4	50	94.7	4.58	12.3	1.63	14.3	1.17	8.3	1.92
5	41	99.9	5.85	13.4	1.68	14.4	0.92	7.2	1.93
6	41	106.3	7.69	15.0	2.02	14.7	0.93	6.9	1.63
7	39	113.1	5.23	16.5	1.70	14.7	0.94	6.3	1.35
8	55	118.6	5.71	18.6	2.32	15.6	1.15	6.3	1.50
9	46	122.2	6.76	19.5	2.78	15.8	1.13	6.4	1.37
10	46	127.5	7.43	22.5	4.19	16.7	1.22	6.0	1.25
11	33	133.2	8.78	25.5	5.15	17.5	1.76	6.4	1.00
12	49	138.8	7.79	28.0	4.83	18.3	1.77	6.4	1.64
13	38	143.3	8.68	32.3	5.65	19.7	1.92	7.2	2.02
14	46	148.3	7.10	37.3	5.86	20.9	1.85	7.3	2.29
15	34	150.2	5.32	38.4	5.09	21.2	1.78	7.8	2.00
16	44	151.1	5.27	41.7	4.35	22.1	1.57	8.1	2.26
17	10	153.1	5.66	43.2	6.29	22.7	2.43	8.0	1.76
18	60	151.9	6.76	43.9	5.28	23.0	1.69	8.7	2.99
19	18	154.2	4.80	44.1	5.98	22.7	1.53	8.8	2.43
20-24	150	152.8	6.16	43.1	5.25	22.4	1.86	7.3	2.52
25-29	155	152.2	5.65	42.7	6.19	22.7	2.15	7.3	3.13
30-34	105	151.6	5.16	42.9	7.27	22.9	2.57	7.7	3.95
35-39	107	151.7	5.85	44.5	7.87	23.4	2.41	8.5	4.36
40-44	71	152.7	5.68	44.0	7.57	23.2	2.22	7.6	3.16
45-49	101	150.3	6.53	43.5	8.31	23.3	2.90	8.4	4.67
50-54	66	149.4	6.38	43.5	9.04	23.4	2.62	7.7	3.47
55-59	53	150.7	6.24	45.1	9.28	23.8	3.11	9.7	5.58
>=60	86	147.4	6.30	41.2	9.31	22.6	3.59	8.3	4.83

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: ANDHRAPRADESH SEX: MALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	46	62.7	6.41	6.5	1.71	12.5	1.19	9.3	1.79
1	51	74.0	4.55	8.6	1.32	13.2	1.03	8.1	2.01
2	57	82.5	4.83	10.0	1.70	13.5	1.09	8.0	1.79
3	53	89.4	5.95	11.6	1.70	14.0	0.88	7.7	2.07
4	46	95.7	7.06	13.0	2.18	14.1	1.10	6.9	1.92
5	35	103.3	6.63	14.9	2.03	14.4	0.84	6.4	1.83
6	45	109.0	5.82	16.5	2.18	14.5	0.87	6.4	1.47
7	45	115.9	7.42	18.3	2.45	14.7	0.85	5.4	1.19
8	28	119.7	8.12	19.6	2.60	15.2	0.93	5.6	1.29
9	43	124.2	6.24	21.2	2.63	15.5	0.90	5.7	1.33
10	39	130.0	6.67	23.4	2.60	16.1	1.04	5.6	1.36
11	20	133.6	5.94	26.5	3.51	17.3	1.31	6.4	1.68
12	41	140.6	6.12	28.7	3.18	17.6	1.16	5.7	1.17
13	15	145.9	9.40	34.3	7.12	19.3	2.23	6.5	2.60
14	17	150.9	9.92	35.9	5.73	19.4	2.06	6.0	1.63
15	20	156.3	11.40	41.5	9.06	21.2	3.03	5.9	1.31
16	19	160.4	9.57	43.9	7.73	21.7	2.26	6.4	2.23
17	11	161.7	7.63	44.8	4.05	21.9	1.75	5.9	1.56
18	27	162.9	6.54	47.7	6.36	23.4	2.14	6.6	2.66
19	13	161.4	6.76	47.5	6.18	23.1	2.61	6.7	2.49
20-24	72	165.1	6.72	52.1	8.19	24.7	2.10	7.2	3.24
25-29	102	164.6	7.08	52.1	7.81	25.1	2.26	6.8	3.62
30-34	57	164.3	5.85	54.5	9.67	25.7	2.59	7.8	4.05
35-39	71	163.2	5.97	52.2	9.67	25.0	2.96	6.9	3.78
40-44	59	162.5	6.18	53.3	11.20	25.3	3.12	7.9	4.51
45-49	72	163.3	5.05	55.7	12.03	25.8	2.90	8.3	4.30
50-54	54	162.3	8.01	51.7	8.50	24.5	2.27	7.1	3.39
55-59	38	162.3	6.04	52.5	9.53	24.9	2.62	8.2	4.72
>=60	91	162.3	6.95	49.0	9.49	23.2	2.87	7.9	4.09

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: ANDHRAPRADESH SEX: FEMALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	40	60.8	5.13	5.6	1.28	11.9	1.26	8.8	2.07
1	52	73.6	5.50	8.1	1.52	12.8	1.06	8.0	1.83
2	51	82.0	5.02	9.7	1.42	13.2	1.05	8.5	1.93
3	43	89.4	5.18	11.4	1.46	14.2	1.01	8.9	2.17
4	50	94.8	7.27	13.1	1.95	14.1	1.25	8.0	2.16
5	46	102.0	6.49	14.4	1.97	14.3	1.09	7.0	1.57
6	55	107.1	6.03	15.3	2.11	14.4	1.13	6.8	1.86
7	59	115.7	7.16	18.5	2.97	15.1	1.20	6.7	1.97
8	42	120.9	5.75	20.1	3.02	15.7	1.23	6.3	1.55
9	36	126.2	7.05	22.5	3.57	16.4	1.64	7.0	1.89
10	46	130.3	8.32	24.0	3.86	16.9	1.39	6.7	1.70
11	23	137.0	8.89	27.6	4.88	17.5	1.70	7.1	2.09
12	36	144.3	6.34	32.1	4.75	18.9	1.51	7.4	1.89
13	26	143.7	5.03	34.1	5.43	20.0	2.38	9.2	3.72
14	33	148.8	5.92	37.5	5.32	20.5	1.95	8.9	3.13
15	28	150.2	6.98	38.5	6.02	20.9	2.36	9.5	4.00
16	39	151.0	5.29	40.7	5.38	21.8	1.65	10.0	2.86
17	18	151.5	7.35	41.1	4.69	21.9	1.68	10.2	3.52
18	44	152.1	7.01	42.8	6.63	22.4	2.11	11.1	4.41
19	19	150.3	6.85	43.3	6.35	22.6	2.24	11.6	4.22
20-24	129	152.0	5.79	43.3	6.12	22.3	2.02	10.0	3.88
25-29	149	151.9	6.38	44.1	6.74	22.9	2.24	10.4	4.59
30-34	82	151.2	5.38	43.2	6.12	22.6	2.24	10.0	4.56
35-39	118	151.3	5.46	44.6	7.92	23.6	2.71	7.1	4.97
40-44	77	151.8	5.41	46.4	10.71	24.0	3.45	11.4	5.32
45-49	58	151.2	5.77	44.8	9.59	23.5	2.91	11.9	4.97
50-54	57	150.9	4.92	46.5	11.17	23.8	3.40	11.9	5.71
55-59	48	151.8	6.29	45.5	8.89	23.7	3.15	11.1	5.40
>=60	142	148.3	6.52	41.5	9.17	22.5	3.21	9.9	4.64

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: MAHARASHTRA SEX: MALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	16	65.9	2.98	6.9	1.27	13.0	0.89	10.1	2.05
1	33	72.4	6.62	8.4	2.41	12.7	1.40	8.9	2.15
2	43	80.7	5.32	9.5	1.51	13.2	0.84	9.5	1.98
3	43	86.4	6.28	10.9	1.80	13.5	0.97	9.9	2.01
4	46	93.4	5.57	12.4	1.73	14.0	1.09	9.3	2.30
5	53	101.4	5.84	13.8	1.85	14.0	0.96	8.6	1.96
6	35	106.0	6.49	14.9	2.01	14.3	0.98	7.6	1.93
7	47	112.7	7.74	17.2	2.50	14.5	1.05	7.0	1.64
8	42	117.2	6.71	18.1	2.54	14.5	1.07	6.4	1.42
9	25	120.3	7.71	19.7	2.44	15.0	1.22	6.7	1.67
10	28	129.3	5.47	22.2	2.90	15.2	1.12	5.7	1.19
11	23	132.5	7.27	24.4	4.48	16.4	1.29	7.5	2.12
12	28	133.9	7.01	24.7	3.34	16.1	1.41	6.8	1.45
13	17	138.8	6.79	28.7	4.61	16.9	1.35	7.0	1.94
14	27	147.3	10.47	32.8	6.94	18.1	1.80	6.6	1.74
15	26	155.3	8.64	39.2	6.71	19.8	2.18	7.0	2.51
16	23	156.9	6.73	40.6	6.33	20.3	1.81	6.5	1.59
17	12	161.6	9.94	44.2	5.66	21.0	1.71	6.8	1.60
18	19	161.9	8.18	45.9	7.17	22.1	2.01	7.7	2.90
19	16	163.6	6.36	48.7	6.53	22.7	1.81	7.1	1.95
20-24	80	164.9	5.69	50.1	7.59	23.2	2.29	7.4	2.89
25-29	63	164.4	5.71	51.7	8.66	23.4	2.40	7.9	3.11
30-34	74	162.8	6.60	49.3	6.89	23.1	2.10	7.0	2.42
35-39	83	163.2	5.87	49.9	8.61	23.1	2.29	7.4	3.56
40-44	48	162.1	6.19	49.5	8.06	23.1	2.54	7.5	3.05
45-49	58	161.9	5.76	50.5	9.63	23.4	2.41	8.4	3.33
50-54	47	162.0	5.38	50.7	10.28	23.0	3.23	8.1	3.54
55-59	49	160.7	7.08	48.5	8.46	22.9	2.56	7.8	2.77
>=60	93	161.3	6.27	47.8	8.64	21.6	2.66	7.2	3.24

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: MAHARASHTRA SEX: FEMALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	11	63.4	2.84	6.1	1.05	12.6	1.20	10.2	2.48
1	41	70.8	5.28	7.9	1.32	12.7	1.00	10.2	2.48
2	36	79.8	5.92	9.5	1.53	13.3	1.37	9.9	2.40
3	36	85.7	5.51	10.5	1.27	13.5	1.15	10.5	2.13
4	34	95.3	5.93	12.2	1.67	13.8	0.92	9.8	2.12
5	32	97.9	7.12	13.1	2.43	14.2	1.29	9.3	2.44
6	46	104.2	6.90	14.4	1.93	14.2	0.96	8.3	2.27
7	38	111.3	6.61	16.3	2.32	14.3	0.91	7.5	1.82
8	35	116.5	7.02	18.6	2.76	15.0	1.08	7.3	1.69
9	28	121.5	8.20	19.9	3.57	15.0	3.22	7.8	2.19
10	42	126.6	9.63	22.3	4.22	16.3	2.36	8.0	2.26
11	17	130.9	6.88	24.7	3.94	16.7	1.47	8.5	1.87
12	34	136.3	9.65	27.5	6.57	17.1	1.96	8.6	2.53
13	23	146.3	7.11	34.1	6.41	19.3	2.06	9.7	2.70
14	25	147.2	6.10	34.5	6.15	19.2	1.81	9.5	2.52
15	13	147.1	5.13	38.8	5.25	20.6	1.92	10.0	2.45
16	20	152.6	4.54	39.4	4.05	20.9	1.56	11.4	1.64
17	16	154.3	4.76	42.7	3.23	21.9	2.10	10.8	2.37
18	30	151.3	4.65	41.9	5.38	21.2	2.14	10.4	3.08
19	10	149.8	7.28	40.5	5.70	21.9	1.94	11.8	2.62
20-24	103	150.4	5.54	41.3	4.99	21.3	1.80	10.7	2.97
25-29	113	150.3	5.67	41.9	5.42	21.2	1.55	11.1	3.36
30-34	105	150.5	4.98	41.4	5.47	21.3	2.08	10.7	3.39
35-39	82	151.8	5.06	43.2	6.63	22.0	2.35	11.1	3.56
40-44	83	149.3	5.60	42.8	8.05	22.1	2.67	12.0	4.39
45-49	74	149.8	5.56	42.6	8.75	21.7	3.03	11.5	4.35
50-54	42	150.3	4.89	43.6	8.17	22.4	2.10	12.3	4.22
55-59	45	148.7	5.86	43.4	10.84	22.4	3.54	12.3	4.68
>=60	100	148.3	5.85	40.3	8.24	21.3	2.92	10.8	4.52

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: GUJARAT SEX: MALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	47	63.1	4.60	6.2	1.29	13.0	1.16	9.4	2.24
1	32	72.9	4.29	8.4	1.40	13.4	1.19	8.9	2.69
2	47	80.8	4.26	9.8	1.17	13.8	1.01	9.2	2.18
3	52	88.8	5.45	11.3	1.56	14.0	1.03	9.5	2.01
4	35	95.0	6.72	12.8	1.90	14.3	1.05	8.7	2.27
5	31	101.4	5.64	14.1	1.84	14.5	0.97	7.4	1.63
6	43	107.7	5.32	15.5	1.65	14.7	0.96	7.7	2.27
7	36	114.0	8.03	17.7	3.15	14.7	1.23	6.9	2.02
8	43	117.9	6.34	18.7	2.07	15.1	1.12	6.7	2.09
9	25	121.8	7.41	20.6	3.32	15.5	1.45	6.0	2.01
10	31	129.1	8.01	23.4	3.56	16.3	1.14	6.8	1.92
11	26	131.3	7.05	24.3	4.31	16.5	1.73	6.8	2.31
12	32	136.7	7.84	26.7	3.87	17.2	1.47	8.1	2.70
13	22	138.3	7.44	27.7	4.34	17.5	1.44	6.6	1.50
14	24	148.0	8.46	33.1	5.27	18.7	1.97	7.0	3.01
15	24	154.3	8.24	38.1	6.88	20.2	2.19	7.3	2.38
16	23	158.0	6.67	42.1	5.73	21.3	1.85	7.0	2.45
17	15	158.9	7.95	42.6	8.48	21.5	2.22	7.3	2.10
18	14	161.9	8.50	45.5	7.92	22.8	1.78	7.6	2.36
19	15	162.5	8.76	46.6	7.87	23.0	2.10	6.5	2.08
20-24	60	163.0	5.97	49.1	6.33	23.7	1.85	7.2	3.22
25-29	58	163.1	6.61	49.0	7.85	23.5	1.75	7.0	3.60
30-34	61	162.3	6.44	48.7	8.42	23.9	2.82	7.5	4.97
35-39	52	162.4	7.62	50.1	9.20	23.8	2.65	7.2	3.17
40-44	40	162.8	5.94	52.9	10.58	24.3	2.81	8.1	4.48
45-49	62	162.2	6.48	50.0	8.92	24.0	2.27	7.7	3.74
50-54	19	164.8	6.06	53.9	13.61	24.7	3.25	8.4	5.84
55-59	37	162.1	8.45	51.3	12.06	24.1	3.40	8.5	5.03
>=60	73	161.1	5.85	48.6	10.19	22.9	2.87	7.8	4.01

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: GUJARAT SEX: FEMALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	35	59.2	4.93	5.0	1.41	12.0	1.44	8.5	2.26
1	32	70.5	4.77	7.5	1.35	12.8	1.43	8.5	2.27
2	32	79.9	4.28	9.2	1.22	13.4	0.91	10.0	2.22
3	32	88.3	4.17	11.1	1.18	14.1	1.23	10.0	2.61
4	33	93.3	6.75	12.2	1.91	14.3	1.16	10.0	2.39
5	32	100.4	4.33	13.7	1.26	14.6	0.98	8.9	2.23
6	41	106.5	7.12	15.1	2.20	14.5	1.05	7.8	2.72
7	29	111.5	6.40	16.3	2.49	14.6	1.22	6.9	1.78
8	33	116.8	7.06	18.8	2.25	15.4	1.10	7.8	2.26
9	28	122.2	5.60	20.6	2.96	16.1	1.14	7.0	2.17
10	26	124.8	8.46	22.0	4.42	16.6	1.72	8.4	2.50
11	29	132.7	6.33	24.6	4.90	17.3	1.86	8.0	2.54
12	37	135.8	6.32	26.9	4.70	17.4	1.33	7.8	2.43
13	24	141.3	8.20	30.3	5.09	19.0	1.85	9.0	3.04
14	24	147.2	5.38	35.3	5.43	20.1	2.08	9.1	3.61
15	18	150.4	4.91	38.4	4.35	20.9	2.00	11.0	3.29
16	34	150.6	4.57	39.6	6.17	21.2	2.47	11.2	3.82
17	26	151.7	4.56	42.0	5.84	22.2	2.16	13.9	3.18
18	26	151.4	6.52	41.9	6.25	22.1	1.87	11.9	3.67
19	21	154.5	6.58	45.4	4.62	22.7	1.44	12.4	3.17
20-24	133	150.0	5.71	42.2	6.34	22.1	1.97	10.9	3.79
25-29	101	151.8	5.49	43.5	5.12	22.5	1.67	11.2	4.07
30-34	98	151.7	5.61	42.1	6.41	22.4	2.03	10.2	3.97
35-39	80	151.4	4.97	43.5	7.61	23.1	2.72	11.0	4.52
40-44	91	151.0	5.30	44.6	9.21	23.5	2.95	12.5	5.07
45-49	73	150.7	6.23	44.0	6.64	23.5	2.56	12.9	4.70
50-54	58	150.6	6.26	45.8	11.49	23.9	3.83	13.8	6.27
55-59	35	149.8	5.22	42.2	7.64	22.9	2.89	11.9	4.77
>=60	65	147.6	5.62	42.5	7.99	23.3	3.06	11.9	4.75

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: ORISSA SEX: MALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	27	63.5	7.63	6.3	1.22	11.5	0.88	2.4	0.32
1	44	74.3	5.99	8.2	1.34	12.1	1.04	2.4	0.36
2	34	84.1	4.87	10.4	1.18	12.6	0.96	2.5	0.37
3	40	87.4	6.26	11.4	1.85	12.9	0.89	2.7	0.42
4	28	97.9	5.50	13.6	1.61	13.2	0.79	2.7	0.29
5	38	100.7	5.80	14.6	1.88	13.1	0.83	2.8	0.28
6	39	106.4	5.84	15.8	2.03	13.6	0.94	2.8	0.30
7	31	108.4	7.70	16.5	2.29	13.5	0.77	2.8	0.35
8	37	117.0	8.62	19.3	3.79	14.2	1.25	3.0	0.46
9	24	122.2	8.86	20.8	3.77	14.6	1.00	2.9	0.27
10	57	127.9	7.41	24.0	3.70	15.7	1.22	3.3	0.50
11	24	130.6	7.11	24.8	3.90	15.6	0.99	3.4	0.59
12	38	138.8	7.39	28.9	4.52	16.6	1.46	3.5	0.50
13	23	140.7	9.28	29.9	5.45	16.7	1.82	3.5	0.50
14	16	148.5	7.25	35.8	5.24	18.3	1.73	4.0	0.69
15	22	155.1	9.87	41.4	7.28	19.3	2.08	4.8	1.46
16	17	157.4	8.48	42.7	8.64	20.1	1.82	4.8	1.00
17	16	161.0	7.62	47.2	6.46	21.2	2.01	5.4	1.31
18	23	162.7	6.05	47.6	4.48	21.6	1.48	5.5	1.36
19	10	163.5	10.04	47.4	4.73	21.5	0.80	5.1	0.77
20-24	97	162.0	6.00	49.7	5.49	22.5	1.53	5.9	1.56
25-29	69	161.3	6.47	50.1	7.11	22.8	1.96	6.4	2.27
30-34	60	160.9	5.88	49.0	5.55	22.5	1.45	6.0	1.67
35-39	69	161.0	6.14	50.1	7.35	22.7	2.02	6.3	2.76
40-44	51	160.7	6.31	49.9	6.41	22.8	1.55	6.3	1.98
45-49	45	159.2	6.40	48.0	6.30	22.4	1.80	5.8	1.65
50-54	52	161.0	6.30	49.9	9.50	22.5	2.39	6.1	2.42
55-59	45	159.8	5.65	48.4	6.53	21.9	2.04	5.6	1.60
>=60	100	158.7	6.58	46.6	7.32	21.3	2.26	5.4	2.13

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: ORISSA SEX: FEMALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	26	63.6	5.71	6.0	1.40	11.4	0.88	2.3	0.31
1	31	72.9	5.79	8.3	1.53	11.9	1.05	2.5	0.41
2	46	81.0	5.23	9.2	1.44	12.0	0.90	2.5	0.35
3	42	87.7	5.95	10.8	1.54	12.5	0.94	2.6	0.36
4	36	93.0	6.43	12.1	1.62	12.9	0.77	2.7	0.28
5	30	100.5	6.34	14.2	2.00	13.2	0.89	2.7	0.36
6	29	103.5	6.84	14.6	1.88	13.3	0.83	2.8	0.36
7	46	111.6	7.75	17.4	2.94	13.7	0.99	2.9	0.35
8	50	116.8	5.97	18.7	2.52	14.3	0.99	3.2	0.98
9	32	121.2	7.12	20.7	2.92	14.8	1.10	3.1	0.40
10	32	124.9	7.88	21.9	21.9	15.0	1.17	3.1	0.47
11	34	130.5	7.45	25.2	3.99	16.1	1.38	3.3	0.79
12	29	136.2	8.00	28.2	5.27	16.8	1.71	3.4	0.57
13	17	141.3	4.58	33.6	4.11	18.0	1.49	3.8	0.56
14	19	143.6	7.68	35.0	6.86	18.6	2.05	4.1	0.74
15	26	147.8	5.76	38.4	5.27	19.1	1.70	4.3	1.00
16	24	149.1	4.35	41.2	4.51	20.2	1.46	4.7	0.81
17	34	150.4	6.10	42.4	3.48	20.6	1.30	5.1	1.11
18	31	150.2	5.40	42.9	5.32	20.3	1.57	5.0	1.53
19	14	150.4	9.28	42.5	4.06	20.6	1.78	4.8	0.87
20-24	115	150.6	5.17	42.6	4.80	20.2	1.37	5.0	1.12
25-29	124	150.5	5.49	42.9	5.07	20.4	1.58	4.9	1.16
30-34	114	150.3	5.18	43.5	6.53	20.7	1.76	5.1	1.81
35-39	69	150.5	5.60	42.3	6.35	20.8	1.72	5.4	1.73
40-44	70	149.5	6.30	41.4	6.40	20.2	2.02	5.0	1.66
45-49	72	148.8	4.96	41.7	5.90	20.5	1.77	5.2	1.54
50-54	63	149.0	6.33	40.3	4.97	20.1	1.63	4.9	1.35
55-59	57	148.2	5.94	40.8	6.73	20.7	2.17	5.4	2.55
>=60	95	146.8	6.68	39.0	7.19	19.6	2.22	4.7	2.20

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: WEST BENGAL SEX: MALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	22	63.8	4.95	6.9	1.63	13.0	1.11	7.9	1.49
1	19	72.6	6.39	8.3	1.60	13.2	1.12	7.7	1.86
2	27	81.6	6.78	10.2	1.96	12.6	1.24	7.5	1.16
3	24	87.4	5.63	11.1	2.13	13.4	1.19	7.1	1.29
4	39	94.0	8.91	13.2	2.51	13.9	1.06	7.7	1.52
5	48	99.4	7.50	13.9	2.26	14.0	1.08	6.9	1.48
6	30	103.5	9.22	15.7	2.88	14.0	1.34	7.1	1.49
7	38	111.8	8.58	17.0	4.11	14.5	1.44	6.2	1.39
8	52	117.1	8.61	19.7	3.28	14.9	1.58	6.6	1.55
9	24	121.1	6.34	22.0	2.90	15.6	1.05	6.6	1.83
10	40	125.3	7.35	22.8	3.74	16.0	1.64	6.7	1.89
11	27	129.7	9.50	25.0	5.53	16.2	1.84	6.8	1.96
12	40	137.3	8.90	29.2	6.98	17.2	2.04	6.3	1.76
13	21	143.1	10.77	32.5	7.74	18.7	2.59	6.7	2.28
14	22	148.4	11.39	37.2	8.62	19.3	2.50	6.8	2.62
15	12	150.5	9.54	38.8	6.78	19.9	2.82	6.8	3.92
16	17	149.7	16.36	38.2	10.58	20.4	2.57	7.9	3.57
17	10	154.3	10.19	44.7	5.09	21.7	1.82	7.6	2.93
18	40	159.4	6.81	48.1	6.24	22.7	1.88	6.8	2.74
19	7	160.4	6.52	47.8	3.83	23.2	1.88	6.8	2.04
20-24	84	160.0	7.67	49.5	7.26	23.0	2.21	6.8	2.83
25-29	91	161.5	6.08	51.5	7.06	23.5	1.94	7.3	3.39
30-34	75	160.4	9.16	50.6	8.84	23.7	2.40	7.5	3.52
35-39	80	161.4	7.06	51.9	7.94	23.6	2.25	8.0	3.27
40-44	47	161.5	7.20	53.6	11.91	24.1	2.53	8.3	3.42
45-49	45	158.8	8.52	48.8	8.45	22.9	2.43	7.0	2.95
50-54	43	161.3	6.40	51.5	8.35	23.6	2.42	7.0	2.32
55-59	29	159.4	6.21	50.1	10.07	22.7	2.71	7.6	2.98
>=60	85	159.2	6.58	45.8	8.60	21.5	2.57	6.4	2.56

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: WEST BENGAL SEX:FEMALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	25	64.2	7.46	6.0	1.75	12.1	1.52	7.0	1.98
1	31	72.4	4.23	8.0	1.42	12.8	1.25	7.5	2.16
2	31	78.5	6.07	9.2	1.49	13.3	1.44	7.6	1.58
3	33	88.5	5.69	11.2	1.79	13.6	1.62	7.5	1.68
4	42	90.5	8.26	12.0	1.72	13.5	2.16	7.6	1.62
5	31	97.7	7.10	13.3	1.99	13.9	1.07	7.3	1.89
6	47	103.7	9.59	15.0	2.61	14.6	1.33	7.3	1.32
7	34	110.4	7.82	17.8	4.24	14.2	1.26	6.6	1.80
8	33	117.0	7.92	19.1	4.17	15.1	1.78	6.7	1.72
9	21	116.6	8.57	19.0	4.25	15.1	1.86	6.8	1.49
10	43	125.0	8.51	22.3	3.92	15.9	1.34	6.6	1.53
11	16	129.9	9.03	25.1	6.47	16.0	2.19	8.2	2.28
12	35	135.1	9.16	28.5	6.30	17.3	1.69	7.8	2.34
13	20	143.1	7.82	34.4	5.80	18.9	1.36	9.1	2.54
14	23	144.4	7.23	36.4	6.54	19.0	2.07	8.8	2.09
15	22	148.0	7.58	41.3	6.61	21.0	2.56	9.6	2.66
16	36	146.8	7.36	41.5	6.51	20.9	2.20	9.6	2.89
17	12	151.2	7.06	44.8	5.96	21.9	2.92	9.2	2.09
18	29	148.0	7.44	43.3	5.80	21.1	1.81	8.6	2.71
19	11	150.5	6.45	43.2	8.45	22.3	1.94	9.6	2.82
20-24	124	149.2	6.38	42.5	5.92	20.9	1.80	8.0	2.54
25-29	122	149.6	6.28	42.6	6.23	21.1	2.32	8.1	2.90
30-34	93	150.4	6.03	43.5	6.64	21.5	2.26	8.7	3.07
35-39	68	149.0	6.29	41.9	6.85	21.0	2.36	8.1	2.95
40-44	69	150.4	6.49	43.8	6.54	21.9	2.50	8.9	2.93
45-49	65	146.7	5.59	42.7	8.46	21.2	2.71	8.6	3.32
50-54	46	146.7	6.50	42.3	7.83	21.9	2.81	9.5	3.28
55-59	32	146.3	6.38	41.8	9.06	21.3	2.31	9.2	2.88
>=60	56	144.5	7.23	38.9	7.10	20.1	2.74	7.9	3.21

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: 8 STATES POOLED SEX: MALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<1	261	63.8	5.87	6.5	1.65	12.7	1.35	8.0	2.83
1	283	74.1	5.19	8.6	1.59	13.1	1.32	7.2	2.96
2	337	82.2	5.28	10.0	1.51	13.4	1.14	7.6	2.62
3	316	89.1	5.97	11.5	1.73	13.9	1.09	7.7	2.75
4	316	95.8	6.56	13.0	2.00	14.1	1.14	7.4	2.48
5	299	102.0	6.45	14.3	2.01	14.1	1.12	6.6	2.25
6	298	107.5	6.43	15.8	2.21	14.3	1.07	6.3	2.19
7	309	113.0	7.37	17.4	2.81	14.7	1.21	6.0	1.89
8	305	118.2	7.27	19.1	2.85	15.0	1.28	5.9	1.89
9	235	122.7	7.12	20.9	2.97	15.5	1.24	5.7	1.78
10	289	127.8	6.95	22.9	3.40	15.9	1.36	5.5	1.78
11	200	131.4	7.37	24.6	3.99	16.5	1.45	6.1	2.06
12	289	137.2	7.78	27.5	4.76	17.1	1.59	6.1	2.12
13	175	140.6	8.29	29.9	6.04	17.8	1.92	6.1	2.14
14	184	148.2	9.38	34.7	6.62	19.1	2.10	6.3	2.17
15	178	154.0	9.81	39.0	7.46	20.1	2.31	6.4	2.24
16	161	157.3	10.00	42.0	8.37	21.0	2.24	6.4	2.34
17	103	160.1	8.36	44.8	6.95	21.5	1.97	6.4	2.00
18	213	161.5	6.93	47.0	5.84	22.8	1.91	6.4	2.39
19	109	163.3	7.41	48.5	6.06	23.2	2.01	6.5	2.12
20-24	663	163.6	6.81	50.5	7.04	23.7	2.12	6.6	2.70
25-29	609	163.5	6.77	51.5	7.79	24.2	2.31	6.8	3.03
30-34	527	162.6	7.06	51.0	8.18	24.1	2.59	6.8	3.16
35-39	553	162.7	6.38	51.5	8.68	24.1	2.59	7.0	3.17
40-44	400	162.4	6.48	52.4	9.86	24.3	2.73	7.3	3.48
45-49	449	161.9	6.59	51.8	9.68	24.3	2.75	7.4	3.23
50-54	375	162.4	6.62	51.6	9.77	24.1	2.79	7.0	3.13
55-59	353	161.7	6.64	51.2	9.88	23.8	3.01	7.4	3.41
>=60	805	160.9	6.62	48.6	8.97	22.7	2.87	7.0	3.10

*Age in completed years.

MEAN ANTHROPOMETRIC MEASUREMENTS

STATE: 8 STATES POOLED SEX: FEMALES

Age* (Years)	N	Height (cm)		Weight (kg)		Arm Circ. (cm)		FFT (mm)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
<l	248	62.6	5.96	5.9	1.51	12.2	1.39	7.6	2.73
1	285	72.5	490	8.0	1.42	12.7	1.18	7.5	2.75
2	307	65.6	5.10	9.5	1.40	13.2	1.25	7.5	2.97
3	291	88.1	5.28	11.0	1.49	13.7	1.26	7.8	3.02
4	308	94.2	6.53	12.5	1.79	13.9	1.36	7.6	2.72
5	273	100.7	6.37	14.0	2.02	14.3	1.12	7.2	2.60
6	301	105.8	7.50	15.1	2.22	14.4	1.16	6.9	2.30
7	289	112.5	7.07	17.2	2.91	14.5	1.20	6.2	2.14
8	303	117.9	6.38	18.9	2.75	15.2	1.29	6.2	2.13
9	243	122.1	7.34	20.5	3.30	15.7	1.73	6.4	2.17
10	287	127.0	7.99	22.6	4.02	16.3	1.69	6.5	2.16
11	197	132.8	7.93	25.5	4.85	17.1	1.77	6.8	2.49
12	278	137.8	8.31	28.3	5.59	17.7	1.76	7.0	2.42
13	197	143.6	7.74	33.4	6.24	19.4	2.12	8.4	3.32
14	218	147.2	6.62	36.3	5.89	20.0	2.02	8.3	3.00
15	201	149.4	6.38	39.7	6.05	20.9	2.18	8.8	3.38
16	261	150.2	5.86	41.2	5.70	21.5	2.07	9.3	3.20
17	169	151.6	5.89	42.6	5.10	21.9	2.05	9.8	4.14
18	291	151.4	6.37	43.3	5.89	22.2	2.18	9.6	3.92
19	162	152.2	6.24	43.7	5.86	22.4	2.05	10.0	3.61
20-24	1052	151.3	5.93	43.3	6.14	22.0	2.17	9.3	3.90
25-29	1060	151.1	5.87	43.7	6.50	22.3	2.38	9.3	4.21
30-34	762	151.2	5.52	43.5	7.14	22.3	2.57	9.2	4.25
35-39	745	151.1	5.56	44.7	8.09	23.0	2.87	10.0	4.56
40-44	607	150.6	5.80	44.6	8.83	23.0	3.18	10.3	5.09
45-49	651	149.8	5.83	44.0	8.44	22.9	3.09	10.1	4.81
50-54	460	149.5	6.12	44.7	9.56	23.1	3.31	10.5	5.40
55-59	407	149.1	6.29	44.5	9.51	23.0	3.25	10.5	5.11
>=60	797	147.4	6.18	41.4	8.70	22.0	3.31	9.3	4.69

*Age in completed years.