Technical Report No. 1

NATIONAL NUTRITION MONITORING BUREAU

REPORT
For the period ending 31 August 1974

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

1975

A National Nutrition Monitoring Bureau (NNMB) was set up by the Indian Council of Medical Research in June 1972 with the National Institute of Nutrition as the Central Reference Laboratory and nine regional units, one in each of the States of Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal. The objectives, organisational pattern and the plan of work of the Bureau have been already reported (Plan of operation - NNMB). Data on the dietary intake and nutritional status of representative segments of the population in various parts of the country, using standardized methods, have been collected. Information regarding the dietary intakes included, those of families as well as of individuals. Clinical and anthropometric status were also assessed. In addition, data on income and occupational status of the population covered were also obtained.

Data received till the end of 1974 from different regional units with respect to rural households have been analysed and the results presented here.

However, in the interpretation of these results, the following two points have to be borne in minds

1. The districts covered in all the States did not belong to the same 'developmental' category (as per the criteria given in the plan of operation of NNMB, and comparisons between States is not, therefore, strictly valid; and
2. The coverage of households in different States was not uniform with respect to season - a factor known to modify the pattern of diet and nutritional status.

COVERAGE:

A total of 5,836 households have been covered, 4141 (71 %) from rural areas and the rest from urban localities (Table 1). The distribution of households according to daily per capita income showed that a majority (61.5 %) had an income of less than a rupee per day and about 25 % had an income of Rs. 1 - 2, while 11.1 % had between Rs.2/- and 5/- per day. Only a small per cent of households .□˜□ %) had a daily income of Rs.5/- or more per person which were not included in the present analysis (Table 2).

CONSUMPTION PATTERN - FOOD STUFFS

Cereals and millets: Major millets consumed were jowar, ragi and bajra. The mean consumption of cereals and millets was highest in Karnataka and lowest in Kerala (Table 3), with other States in the following order: Madhya Pradesh, Andhra Pradesh, Vest Bengal, Gujarat, Tamil Nadu, Uttar Pradesh and Maharashtra. There were no significant income trends in the consumption pattern of cereals and millets in any of the States, except in Kerala where the consumption of rice increased with increasing income at the expense of tapioca.

Pulses: 1 The mean consumption of pulses was far below the recommended allowance of 70 g. in all States except in Uttar Pradesh and Madhya Pradesh. It was lowest in Kerala about 15 g/day. With increasing income, the pulse consumption Increased in almost all the States.

Vegetables: Consumption of green leafy vegetables was low in all the States, it being less than 10 g., except in West Bengal (50 g), Madhya Pradesh and Maharashtra (20 g). The consumption of other vegetables was higher than that of green leafy vegetables in all States, it increasing with rising income.

Roots and tubers were consumed as vegetables in all States except Kerala, where they formed part of the staple. The trends of consumption were similar to those of other vegetables.

Milk and milk products: Milk intake increased with increasing income in all States. The mean was highest in Gujarat.

Fats and oils: There was an income gradient in the consumption of fats and oils. As with milk, the highest consumption was observed in Gujarat.

Sugar and jaggery: The mean consumption levels were low in all States except in Gujarat where the mean intake was more than the recommended allowance of 30 g. in all income groups.

CONSUMPTION PATTERN - NUTRIENTS

Based on family diet surveys, the average nutrient Intakes in the different States (per consumption unit per day) according to per capita income were calculated. These have been presented in Table-4.

Proteins: The highest mean intake of protein was in Madhya Pradesh and the lowest in Tamil Nadu. Except in Karnataka, Andhra Pradesh and Maharashtra, in the other States Intake of protein showed differences between the extreme income groups (i.e. per capita income of less than a rupee and above Rs.2/- per day). A definite stepwise income trend was observed only in Kerala.

Calories: In the income group below Re.1/- per caput per day, Kerala had the lowest calorie intake - 1750, closely followed by Tamil Nadu, Uttar Pradesh, Maharashtra and West Bengal and the highest in Gujarat (2365), followed by Karnataka and Madhya Pradesh. However, in the group with per capita income of Rs.2-5 per day, the pattern was different, Kerala and Karnataka having highest intakes closely followed by Gujarat, West Bengal and Madhya Pradesh forming a cluster. Uttar Pradesh, Andhra Pradesh, Tamil Nadu followed with Maharashtra registering the lowest intake.

In general, the mean intake of calories exhibited an upward trend with income.

It is gencrally held that in poor income groups, intake of calories and proteins run parallel. The data presented hero suggest that this is not always so. Madhya Pradesh had the highest mean protein intake of 87 g. with a calorie intake of 2600 while in Kerala the consumption of calories was highest - 2850, with only 73 g. of protein. Also in Karnataka, protein intake was lower - 66 g. and yet the calorie intake was similar - 2840. Temil Nadu and Gujarat

had similar intakes of protein - 58 *g* . , but widely different levels of calorie Intakes - 2260 and 2600 respectively. This is mainly due to differences in the type of cereal or millet used and replacement of tapioca with cereals as in the case of Kerala. Also, the level of fat and sugar intake influenced this relationship.

Calcium: The intake of calcium increased with increasing income in all States except in Karnataka, Andhra Pradesh and Maharashtra. Highest intakes were in Karnataka in all Income groups, the chief source of the nutrient being ragi in the low income groups and milk and its products in the higher income groups.

Iron: Intakes of iron were lowest in Kerala and Tamil Nadu. In the other States, the average intake was around the recommended level of 30 mg.

Vitamin A: Intakes of vitamin A were far below the recommended value of 750 ¤ug in alI States, especially in the lower income groups. The highest values were found in West Bengal and the lowest in Kerala. In most States, intakes tended to increase with income.

PROTEIN-CALORIE ADEQUACY

(A) Households:—

To determine the adequacy or otherwise of intakes of proteins and calories, the following procedure was adopted. Intakes in any household wherein the value for proteins and calories fell below the mean - 2SE of the recommended

allowances, were considered as Inadequate. All households were thus classified into different categories of protein-calorie adequacy and inadequacy. Since the numbers of households belonging to the per capita income groups of Rs. 1-2 and 2-5 per day were small, for this purpose, they were pooled and only two income categories were recognised - families with per caput income below Re.1/- per day and those with more than this amount. The percentage distribution of the households according, to protein-calorie adequacy in these two income groups (arbitrarily called as very low and low) is shown in Table 5.

Calorie and protein adequacy: In the very low income group, the proportion of households having adequate levels of both protein and calories ranged from a low 20.6 % in Kerala to a high 57.8 % in Gujarat.

Calorie inadequacy: Calorie inadequacy with or without associated protein inadequacy was observed in all the States. In the very low income group, the highest percentage of such families was in Kerala (76 %) and the lowest in Gujarat and Madhya Pradesh (42%). In the low income group, Tamil Nadu had the highest per cent of such families (26 %) and Gujarat the lowest (1,4 %). ' Calorie inadequacy per se i.e. where protein was adequate, was seen in all States in both income categories. The percentage of such families ranged from 22% to 60% in the very low income group and from 14 to 46 in the low income group in different States. Also in most of the

States, these figures were higher in the very low income group.

Protein and calorie inadequacy: Protein inadequacy was invariably associated with calorie inadequacy in both income categories in all States except in Kerala, whore a small percentage of households (1.9 %) of the very low income category had protoin inadequacy with calorie adequacy. In most States, the percentage of households where both nutrients were inadequate was consistently higher in the very low income group compared to low income group. In the very low income group, Kerala had the highest percentage (55%) in this category and Madhya Pradesh the lowest (2 %). In the low income group, the corresponding figures were 26% for Tamil Nadu and 1.4% for Gujarat,

(B) Individuals: ––

To determine the adequacy or inadequacy of an individual' intake, the procedure followed was similar to that used in the case of household dietary surveys except that twice the standard deviation of the recommended intakes was employed instead of twice the standard error values. The pooled distribution of individuals studied in each State according to their protein-calorie adequacy is presented in Table 6.

Protein and calorie adequacy: In almost all States except Tamil Nadu, a little more than 50 % of individuals had adequate Intakes of both protein and calories.

Combined protein and calorie inadequacy: This was observed in all States, Madhya Pradesh having the lowest figure of 1.3% and Andhra Pradesh having the highest figure of 19%.

Protein inadequacy was associated with calorie Inadequacy in all States excepting in Kerala, Tamil Nadu and Karnataka where an occasional individual consumed inadequate amounts of protein but adequate amounts of calories.

Calorie inadequacy with or without protein in-adequacy was observed in 20% of individuals in Madhya Pradesh and 56* of individuals in Tamil Nadu. In the others, they ranged from 24% to 50%.

In general, the distribution of individuals by protein calorie adequacy seemed to follow a pattern similar to that observed in case of families.

NUTRITIONAL STATUS - CLINICAL

A total of 19,22 subjects were examined for the presence of nutritional deficiency signs; in addition their body measurements were taken. Of these 597 were infants (below 1 year), 2,4l0 were pre-school children (1-5 years), 4 153 were of school-going age (5-12 years) and 4,476 belonged to the age group of 12-21 years. The rest were adults. The unitwise percent prevalence of various nutrition deficiency signs in each of these age categories is presented in Annexure - I.

Most commonly observed nutritional disorders were : Protein-calorie malnutrition (PCM): vitamin A and B complex deficiency and deficiency of essential fatty acids. The signs of PCM were seen more frequently in infants and pre-school children, while those of vitamin deficiencies in children of school age and adolescents.

Protein-calorie malnutrition:

Clinical cases of marasmus/emaciation and kwashiorkor were seen in almost all the States. Prevalence of marasmic type of PCM was common in infants (under 1 year), while in pre-school children both types of PCM namely, marasmus and kwashiorkor, were seen : their percent prevalence ranged from 0.4 to 9.7.

Other deficiency signs:--

Varying degree of occular signs of vitamin A deficiency like xerosis, bitot spots, and orolingual lesions of B complex deficioncy such as, angular stomatitis, cheilosis, glossitis etc., were observed in almost all the States. Prevalence of phrynoderma was seen in five out of nine States.

Thyroid enlargement (Goitre):--

Enlargement of thyroid gland was observed only in two States ; Uttar Pradesh (2.0%) and West Bengal (0.3%).

Dental Caries:--

Dental caries though not of nutritional significance, was observed in all the States. The highest prevalence of 14.7%

was seen in Kerala, while the lowest (0.4%) was in Andhra Pradesh.

NUTRITIONAL STATUS - ANTHROPOMETRY

Growth pattern:—

Mean values of anthropometric measurements - height, weight, arm circumference and skinfold at triceps by ago and sex are presented in Annexure II. In general, heights and weights of children and adolescents were lower than those reported by ICMR. The mean weights of adults was lower than but that in the ICMR study/their heights were comparable. This was seo in all States except Andhra Pradesh, Madhya Pradesh and Wst Bengal.

Prevalence of undernutrition in pre-school children using anthropometry : (Annexure III)

Weight for age:

When weight for age was used as a criterion for quantifying undernutrition (Gomez classification), on an average, about 75% of children were found to suffer from either moderate (54%) or severe (21%) degree of undernutrition. Only 4% of the children were found to have body weights more than or equal to 90% of the standard (normal). While there wore no marked differences, between the States in this regard, prevalence of severe forms of undernutrition was similar in the states of Kerala, Tamil Nadu, Kamataka and Maharashtra; in the remaining States it was slightly higher.

Weight/Height^2 X 100 :

The index Wt/Ht^2 has been shown to be age independent and the index value of 0.15 has been suggested as the cut off point for categorising children into the "normals'' and the "undernourished". According to the criterion forty four (44%) per cent of children surveyed in various States were ''normals" (Wt/Ht^2≥0.15), while the remainder fifty five (55%) per cent were "undernourished" (having index value of less than 0.15).

The proportion of severely malnourished children (<0.13) was found to be highest in West Bengal (29.6%) and lowest in Madhya Pradesh (3.6%). In the States of Karnataka, Andhra Pradesh, Maharashtra and Madhya Pradesh prevalence of the severe degree undernutrition was of the same order.

Table - 1 - 1974

NNMB -COVERAGE OF POPULATION

State	Coverage of		
	Households for diet survey		Individuals for nutrition survey
	Rural	Urban	
Kerala	395	200 595	3,570
Tamil Nadu	336	251 587	3,565
Karnataka	458	202 660	3,960
Andhra Pradesh	618	188 806	4,836
Maharashtra	314	141 455	2,730
Gujarat	706	177 883	4,598
Madhya Pradesh	613	250 863	5,268
West Bengal	440	150 590	3,180
Uttar Pradesh	261	136 397	2,054
Total	4,141	1,695	33,761

1974 4141
1975 7573
1976 2854
1977 3049
1978 2604
1979 3533
23,756

Rural only
Not HH
WW + OR.
Total

Table - 2

NNMB - PER CENT DISTRIBUTION OF HOUSEHOLDS ACCORDING TO DAILY PERCAPITA INCOME

Income category	Less than Re. 1/-	Rs. 1-2	Rs.2-5	Rs. 5 and more
Per cent of house-holds	61.5	24.9	11.1	2.5

Table - 3

NNMB - AVERAGE INTAKE OF FOODSTUFFS (PER CONSUMPTION UNIT PER DAY) ACOORDING TO PER CAPITA INCOME

State	Cereals and millets			Pulses			Leafy vegetables			Milk and milk products			Fats and oils			Sugar and jeggary		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Kerala	252 (107)	429 (23)	465 (10)	3	21	25	2	3	1	26	77	191	6	10	21	9	15	29
Tamil Nadu	472 (198)	429 (37)	455 (21)	24	35	52	4	1	15	16	29	165	7	10	19	5	15	21
Karnataka	536 (138)	615 (40)	613 (21)	30	32	28	2	2	4	50	82	162	4	10	15	20	43	49
Andhra Pradesh	542 (246)	521 (60	494 (32)	18	43	47	7	2	7	19	89	119	4	13	15	6	15	24
Maharashtra	438 (59)	493 (25)	366 (18)	41	47	63	17	25	8	41	68	105	9	14	20	21	27	32
Gujarat	498 (285)	507 (126)	479 (65)	23	40	33	3	4	2	151	188	303	16	21	30	47	55	62
Madhya Pradesh	565 (149)	554 (153)	565 (60)	53	71	78	18	14	28	32	58	141	4	4	11	12	13	28
West Bengal	519 (230)	643 (94)	528 (21)	24	30	38	56	75	56	9	42	154	5	12	23	9	19	35
Uttar Pradesh	442 (62)	429 (38)	467 (15)	46	89	72	3	*	*	68	100	202	4	6	11	14	25	29

A : Per capita income of less than Rs .1/- per day.
B : Per capita income of Rs.1/- to Rs. 1/- per day.

C : Per capita income of Rs.2/- to Rs .5/- per day.

* Less than 1 § m

Figures in parentheses indicate number of households.

Table - 4

NNMB - AVERAGE INTAKE OF DIFFERENT NUTRIENTS (PER CONSUMPTION UNIT PER DAY) ACOORDING TO PER CAPITA INCOME

	Protein (g.)			Calories			Calcium (mg)			Iron (mg)			Vitamin A		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Kerala	38.9	54.9	72.9	1756	2394	2856	616	627	993	17.6	24.4	29.2	106.7	171.9	397.7
Tamil Nadu	45.0	44.4	57.4	1877	1898	2268	457	400	588	24.9	21.6	25.5	134.8	130.3	322.2
Karnataka	64.1	65.5	66.5	2317	2678	2841	1018	918	989	41.1	38.2	36.7	184.4	194.9	259.7
Andhra Pradesh	622	60.4	58.5	2147	2300	2318	405	513	472	30.8	30.9	27.6	232.1	222.3	233.7
Maharashtra	60.2	71.1	58.9	1936	2274	1957	458	456	414	31.1	35.9	25.3	296.2	397.6	228.5
Gujarat	68.4	76.1	76.2	2365	2588	2675	539	635	803	31.2	33.4	32.9	300.4	366.8	451.5
Madhya Pradesh	76.2	78.7	86.9	2300	2360	2620	366	400	619	38.5	37.4	39.7	344.4	501.3	617.8
West Bengal	52.3	65.9	69.0	2000	2611	2661	364	556	692	29.7	38.2	33.4	533.4	740.7	645.4
Uttar Pradesh	65.7	74.7	78.4	1907	2117	2388	401	492	667	29.2	31.6	29.8	191.3	233.1	636.0

A : Percapita income of less than Re.1/- per day

B : Percapita income of Re.1/- to Rs. 2/- per day

C: Percapita income of Rs.2/- to Rs. 5/- per day.

Table — 5

NNMB - PERCENT DISTRIBUTION OF HOUSEHOLDS ACCORDING TO PROTEIN-CALORIE ADEQUACY .

State	"Very Low" Income Group (Percapita income of less than Re.l/- per day						"Low" income group (Percapita income of Rs. 1 - 5/- per day)					
	PI CI	PI CA	PA CI	PA CA	PI	CI	PI CI	PI CA	PA CI	PA CA	PI	CI
Kerala	55.1	1.9	22.4	20.6	57.0	76.4	16.3	-	14.6	68.3	17.1	31.7
Tamil Nadu	37.0	-	32.0	31.0	37.0	69.0	25.8	-	29.0	45.2	25.8	54.8
Karnataka	10.3	-	33.1	56.6	10.3	43.8	7.9	-	20.6	71.5	7.9	28.5
Andhra Pradesh	9.8	-	33.6	51.6	9.8	43.4	14.2	-	23.3	57.5	14.2	42.5
Maharashtra	15.2	-	42.4	42.4	15.2	57.6	8.9	-	44.4	46.7	8.9	53.3
Gujarat	6.0	-	36.2	57.8	6.0	42.2	1.4	-	26.4	72.2	1.4	27.8
Madhya Pradesh	2.0	-	40.3	57.7	2.0	42.3	1.8	-	26.8	71.4	1.8	28.6
West Bengal	32.3	-	23.3	44.4	32.3	55.6	7.1	-	22.3	70.6	7.1	19.4
Uttar Pradesh	3.3	-	60.0	36.7	3.3	63.3	3.2	-	46.0	50.8	3.2	49.2

PI : Protein Inadequacy : Intake of Protein/CU/day being lest than 37.5 g.
CI : Calorie Inadequacy : Intake of Calories/CU/day being lets than 2130
PA : Protein Adequacy
CA : Calorie Adequacy

Table - 6

NNMB - PER CENT DISTRIBUTION OF INDIVIDUALS ACCORDING TO PROTEIN-CALORIE ADEQUACY

State	Number of individuals surveyed	PI CI	PI CA	PA CI	PA CA	PI	CI
Kerala	226	16.81	2.65	11.50	69.04	19.47	28.31
Tamil Nadu	349	15.47	0.57	40.40	43.56	16.04	55.87
Karnataka	133	5.26	0.75	21.05	72.94	6.01	26.31
Andhra Pradesh	373	19.03	-	30.83	50.14	19.03	49.86
Maharashtra	113	8.85	-	35.40	55.75	8.85	44.25
Gujarat	476	4.20	-	20.38	75.42	4.20	24.58
Madhya Pradesh	615	1.30	-	19.02	79.68	1.30	20.33
West Bengal	402	11.94	-	30.10	57.96	11.94	42.04
Uttar Pradesh	129	3.10	-	23.26	73.64	3.10	26.36

PI : Protein Inadequacy
CI : Calorie Inadequacy
PA : Protein Adequacy
CA : Calorie Adequacy

A N N E X U R E - I

NNMB - Percentage prevalence of deficiency signs - Infants

STATE	Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Maharashtra	Gujarat	Madhya Pradesh	West Bengal	Uttar Pradesh
Number	39	71	33	77	30	133	118	72	24
NAD	92.1	85.9	93.9	97.4	86.7	95.5	97.5	98.6	50.0
Hair Changes	--	--	--	--	--	--	--	--	--
Moon Face	--	1.4	6.1	--	--	0.8	--	--	8.3
Oedema	---	---	---	---	---	---	---	---	---
Emaciation	---	---	---	3.0	1.3	---	---	1.4	25.0
Marasmus	---	7.7	5.6	---	---	13.3	---	1.7	---	---
Two or more signs of PCM	---	---	---	6.1	---	---	---	---	---	12.5
Conj. Xerosis	---	---	---	---	1.3	---	---	0.8	---	4.2
Bitot Spots	---	---	---	---	---	---	---	---	---	---
Total Vit. A deficiency	---	---	---	---	1.3	---	---	0.8	---	16.7
Ang. Stom.	---	---	---	---	---	---	---	---	---	---
Total B-complex deficiency	---	---	---	---	---	---	---	0.8	---	---
Pellagra	---	---	---	---	---	---	---	---	---	---
Phrynoderma	---	---	---	---	---	---	---	---	---	---
Koilonychia	---	---	---	---	---	---	---	---	---	---
Caries	---	---	---	---	---	---	---	---	---	---
Mottled enamel	---	---	---	---	---	---	---	---	---	---
Thyroid enlarg.	---	---	---	---	---	---	---	---	---	---

NNMB - Percentage prevalence of deficiency signs - Pre-school children

STATE		Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Maharashtra	Gujarat	Madhya Pradesh	West Bengal	Uttar Pradesh
Number	---	156	284	113	285	121	505	499	348	99
NAD	---	68.6	56.0	61.1	90.2	83.5	81.0	87.2	83.0	37.4
Hair Changes	---	---	0.7	---	---	---	---	0.2	0.3	---
Moon Face	---	---	5.3	14.2	---	4.8	0.6	---	---	16.2
Oedema	---	---	1.1	9.7	0.4	---	0.4	0.4	---	---
Emaciation	---	3.2	2.1	0.9	---	---	0.6	0.4	9.5	10.1
Marasmus	---	5.8	0.4	0.9	---	3.3	1.6	0.8	---	1.0
Two or more signs of PCM	---	---	2.1	3.5	---	0.8	---	---	1.1	12.1
Conj.Xerosis	---	0.6	8.1	---	5.6	4.1	0.6	2.6	3.7	11.1
Bitot spots	---	---	3.9	0.9	1.4	- -	1.4	0.8	0.6	4.0
Total vit.A deficiency	---	0.6	9.2	0.9	6.0	4.1	1.6	4.2	4.3	16.1
Ang. Stomat.	---	3.8	19.0	5.3	4.2	1.7	0.8	1.8	3.4	5.1
Total B-complex deficiency.	---	3.8	23.3	6.2	4.6	1.7	1.2	3.2	3.5	12.1
Pellagra	---	---	---	---	---	---	---	0.8	---	---
Phrynoderma	---	0.6	0.7	3.5	---	---	0.2	1.0	---	---
Koilonychia	---	---	---	---	---	---	0.2	---	---	---
Caries	---	14.7	1.4	1.8	0.4	2.5	1.6	0.4	0.6	13.1
Mottled enamel	---	---	---	7.1	---	---	0.4	---	---	5.1
Thyroid Enlarg.	---	---	---	---	---	---	---	---	0.3	2.0

NNMB - Percentage prevalence of deficiency signs - 5-12 years

STATE	Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Maharashtra	Gujarat	Madhya Pradesh	West Bengal	Uttar Pradesh
Number	218	434	285	586	171	809	817	643	190
NAD	48.2	42.9	66.7	73.4	59.1	58.8	75.0	64.9	15.8
Hair Changes	—	—	—	—	—	—	—	—	—
Moon Face	—	0.5	—	0.2	—	—	—	—	3.2
Oedema	—	—	1.8	0.2	—	—	—	—	—
Emaciation	1.8	0.9	1.1	0.2	—	0.1	—	12.9	11.6
Marasmus	1.8	—	—	0.2	—	—	—	—	—
Two or more signs of PCM	—	0.2	—	—	—	—	—	0.2	—
Conj. Xerosis	3.2	11.5	6.0	9.0	7.0	1.6	2.4	6.5	20.0
Bitot spots	1.4	5.1	2.5	4.1	0.6	4.9	3.8	1.2	20.0
Total vitamin A deficiency	3.7	11.7	8.5	10.9	7.6	6.6	6.2	9.0	40.5
Ang. Stom.	1.4	32.3	6.3	9.7	6.4	3.6	4.9	5.9	7.4
Total B-complex deficiency.	1.4	41.9	7.5	10.1	6.4	3.7	8.6	7.4	24.2
Pellagra	—	—	—	—	—	—	0.4	—	1.1
Phrynoderma	—	—	2.3	1.1	0.3	—	0.1	1.8	—	0.5
Koilonychia	—	—	0.2	—	—	0.6	0.9	0.1	—	—
Caries	—	41.3	6.5	6.3	5.8	22.2	13.8	6.6	12.1	54.2
Mottled enamel	—	—	0.2	8.4	—	—	2.5	0.2	—	12.6
Thyroid Enlarg.	—	—	—	—	—	—	—	—	0.6	1.6

NNMB - Percentage prevalence of deficiency signs - 12-21 years - Males

STATE		Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Maharashtra	Gujarat	Madhya Pradesh	West Bengal	Utter Pradesh	
Number	—	142	349	176	321	120	489	543	334	143	2617
NAD	—	75.4	45.0	65.9	83.2	73.3	64.8	79.9	78.7	21.7	65.3
Emaciation	—	0.7	0.3	—	—	—	—	0.2	3.3	2.1	1.7
Oedema	—	—	—	0.6	—	—	—	—	—	—	0.1
Conj. Xerosis	—	1.4	11.2	2.8	4.0	3.3	1.4	1.5	2.4	18.9	5.2
Bitot spots	—	1.4	5.7	2.3	2.2	—	6.1	1.5	0.6	10.5	3.4
Total Vit. A deficiency	—	2.1	12.7	5.1	5.9	3.3	6.5	2.8	3.0	30.8	8.0
Ang. Stom.	—	—	14.3	5.7	6.9	5.8	0.2	2.4	5.1	3.5	4.7
Total B-complex deficiency	—	0.7	14.3	8.0	7.5	5.8	1.6	5.6	6.6	23.1	8.1
Pellagra	—	—	—	—	—	—	—	0.9	—	—	0.1
Phrynoderma	—	—	1.4	2.8	—	—	0.2	2.4	—	1.4	0.9
Koilonychia	—	—	—	—	—	1.7	0.6	—	—	—	0.3
Caries	—	15.5	2.9	6.3	2.5	12.5	7.6	3.1	7.8	39.9	10.9
Mottled enamel	—	—	—	9.7	—	—	2.2	0.2	—	14.7	3.0
Thyroid Enlarg.	—	—	—	—	—	—	—	—	1.8	9.8	1.3

NNMB - Percentage prevalence of deficiency signs - 12-21 years - Females

STATE	Kerala	Tamil Nadu	Karnataka	Andhra Pradesh	Maharashtra	Gujarat	Madhya Pradesh	West Bengal	Uttar Pradesh	
Number	144	218	149	200	87	374	325	277	85	1859
NAD	76.4	51.4	67.1	88.0	67.8	58.3	90.5	75.8	24.7	66.7
Emaciation	1.4	—	—	—	—	—	—	1.4	1.2	0.4
Oedema	—	—	1.3	—	—	0.3	—	—	—	0.2
Conj. Xerosis	—	10.1	0.7	1.0	4.6	1.0	—	—	14.1	3.5
Bitot spots	—	3.7	1.3	2.0	1.1	4.0	1.2	—	5.9	2.1
Total vit. A deficiency	—	10.1	1.4	3.0	4.6	4.6	1.2	—	18.9	5.0
Ang. Stom.	0.7	14.2	0.7	4.0	3.4	2.0	0.9	1.8	2.4	2.3
Total B-complex deficiency	0.7	27.5	1.3	4.5	3.4	2.5	2.5	5.5	22.4	7.6
Pellagra	—	—	—	—	—	—	—	0.3	—	—	0.03
Phrynoderma	—	—	2.8	6.0	0.5	—	—	0.3	—	—	1.1
Koilonychia	—	—	1.4	—	—	4.6	2.7	0.6	—	—	1.0
Caries	—	16.0	2.3	5.4	2.0	9.2	8.6	2.8	9.0	37.6	10.3
Mottled enamel	—	—	—	2.0	—	—	1.6	—	—	7.1	1.2
Thyroid Enlarg.	—	—	0.5	—	—	—	—	—	4.7	18.8	2.7

ANNEXURE-II

NNMB - MEAN ANTHROPOMETRIC MEASUREMENTS BY AGE AND SEX - KERALA

MALES					Age in years	FEMALES				
N	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)		Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)	N
8	76.7	8.4	13.4	7.8	01	73.1	7.9	12.6	8.0	18
25	83.5	10.0	13.9	8.8	02	81.6	9.4	13.2	8.6	21
16	88.1	11.7	14.5	10.7	03	85.2	10.5	13.9	9.5	16
26	92.1	12.2	14.2	8.6	04	94.0	11.9	14.1	8.5	26
20	100.5	14.1	14.4	8.1	05	98.3	12.9	14.2	8.5	15
23	107.9	16.2	14.9	7.9	06	101.3	13.7	14.0	7.8	9
21	110.5	16.5	15.2	7.4	07	110.2	16.1	14.9	8.9	17
21	113.1	17.8	15.2	7.5	08	113.5	16.0	14.6	7.6	21
9	120.5	20.0	15.8	7.6	09	117.4	16.8	14.0	6.7	12
15	122.8	20.5	15.7	7.5	10	120.2	19.1	15.6	7.4	12
11	126.8	22.0	16.5	7.8	11	123.9	21.0	16.3	8.3	12
28	132.2	24.0	16.9	7.4	12	128.5	23.0	16.9	8.9	16
13	135.0	25.8	17.4	6.0	13	133.8	25.8	17.7	9.4	13
14	137.7	26.4	17.7	7.1	14	137.2	29.6	19.0	10.3	18
13	146.5	32.5	19.0	6.9	15	146.4	35.3	20.0	11.9	15
21	148.3	34.1	19.6	6.4	16	149.9	40.2	21.9	14.3	18
9	153.9	37.9	21.2	6.1	17	146.8	38.6	22.2	14.5	17
17	162.0	42.4	21.6	5.5	18	150.3	41.5	22.5	14.9	15
17	161.6	44.5	22.8	7.1	19	149.8	41.9	22.7	15.0	11
50	161.9	47.2	23.8	6.5	20 - 25	151.0	41.8	22.5	13.6	66
34	160.4	46.4	23.9	6.8	25 - 30	149.3	42.7	22.4	14.5	32
17	159.4	45.6	24.2	5.7	30 - 35	147.8	40.4	23.0	12.9	37
27	161.0	46.1	23.8	6.3	35 - 40	146.5	38.4	22.0	12.0	22
25	160.6	47.6	24.9	5.8	40 - 45	148.2	39.1	22.6	12.6	29
22	159.7	46.0	24.3	6.2	45 - 50	149.0	41.1	23.0	13.9	27
16	159.5	48.1	24.9	8.2	50 - 55	145.9	37.7	22.2	11.4	17
16	161.3	48.9	25.0	8.8	55 - 60	145.2	39.2	22.7	14.1	16
28	159.6	45.8	22.9	7.4	⩾60	147.8	36.9	21.1	10.3	25

NNMB - MEAN ANTHROPOMETRIC MEASUREMENTS BY AGE AND SEX - TAMIL NADU

MALES					Age in Years	FEMALES				
N	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)		Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)	N
34	72.7	7.8	12.8	10.4	01	71.9	7.8	13.0	10.4	27
27	81.2	9.5	13.7	10.2	02	83.0	9.7	13.5	10.6	37
36	85.6	10.8	14.1	10.3	03	86.7	10.7	13.8	11.6	39
43	93.8	12.7	14.4	10.0	04	92.7	11.5	14.2	10.0	41
39	101.6	14.2	14.4	9.3	05	102.4	14.0	14.5	9.9	32
31	105.8	15.6	14.8	8.5	06	104.8	14.3	14.6	9.2	34
39	113.6	17.9	15.0	8.1	07	109.5	16.4	14.9	8.9	34
31	118.1	19.1	15.3	8.5	08	114.6	17.8	15.4	8.9	29
33	122.5	21.5	15.9	7.8	09	121.3	20.4	16.0	8.9	32
41	126.8	23.4	16.3	7.9	10	129.1	23.1	16.8	8.9	37
32	131.3	24.7	17.5	7.9	11	133.6	26.4	17.8	9.3	68
58	135.0	26.6	17.4	7.9	12	136.0	27.8	18.4	9.4	46
34	141.2	29.2	18.4	7.8	13	142.1	31.4	18.9	9.8	26
24	146.5	35.2	19.6	8.1	14	147.8	39.0	21.6	13.0	13
31	149.5	35.3	19.3	7.4	15	146.8	39.4	22.0	14.1	25
30	155.4	39.1	20.3	7.3	16	147.1	38.4	21.2	11.3	22
49	160.4	43.0	21.4	7.6	17	147.8	42.0	22.7	13.1	19
37	161.3	45.6	22.0	8.3	18	151.0	44.7	23.1	14.0	23
29	162.8	46.8	23.0	7.4	19	152.8	43.4	23.4	13.6	19
105	162.5	47.2	23.3	7.0	20 - 25	150.2	43.4	22.3	12.6	61
62	161.3	47.2	24.0	8.1	25 - 30	150.2	42.2	22.0	11.6	88
48	161.2	48.0	24.3	8.0	30 - 35	149.6	43.4	22.8	12.2	56
37	162.2	49.6	23.8	8.1	35 - 40	149.7	42.3	22.7	12.0	72
46	163.9	49.0	23.8	8.0	40 - 45	149.5	42.6	23.0	12.5	41
41	162.4	48.9	24.0	7.4	45 - 50	151.0	44.9	23.7	13.9	47
47	162.8	50.8	24.2	9.2	50 - 55	148.6	42.3	23.4	14.3	29
37	162.8	49.9	23.9	8.1	55 - 60	148.2	40.3	22.4	13.6	25
55	160.7	46.6	22.6	8.2	≥ 60	147.9	37.7	21.3	10.5	39

NNMB - MEAN ANTHROPOMETRIC MEASUREMENTS BY AGE AND SEX - KARNATAKA

MALES						FEMALES				
N	Height (cm)	Weight (cm)	Arm circum-ference (cm)	Skinfold at Triceps (mm)	Age in years	Height (cm)	Weight (kg)	Arm Circum-ference (cm)	Skinfold at Triceps (mm)	x
11	73.3	7.7	12.7	9.3	01	70.7	7.4	12.8	9.7	11
11	77.0	8.7	13.2	9.2	02	77.4	8.9	12.8	8.5	11
15	86.2	11.1	13.9	9.6	03	85.1	10.9	13.7	9.4	16
21	93.5	12.8	14.2	8.3	04	92.7	12.4	14.0	8.7	18
19	101.4	14.5	14.5	8.3	05	96.9	12.9	13.9	9.6	22
26	106.3	15.1	14.1	7.3	06	104.6	15.0	14.6	8.8	23
22	112.6	17.9	15.3	7.3	07	110.0	16.7	14.9	8.3	7
31	118.2	18.9	14.9	6.9	08	117.8	18.8	15.4	7.5	23
13	120.3	19.4	15.0	5.9	09	123.8	20.8	15.8	7.2	20
22	128.1	23.7	16.2	7.1	10	129.2	24.1	16.4	7.4	25
19	129.2	24.0	16.5	6.6	11	133.2	24.9	16.9	7.8	13
40	135.7	27.0	17.1	6.4	12	138.9	29.0	17.9	7.6	22
20	140.8	29.8	18.3	5.5	13	142.1	31.3	18.9	9.4	16
17	148.5	33.3	18.4	5.2	14	148.7	37.3	20.4	9.3	20
15	153.6	36.9	19.3	5.5	15	152.7	40.5	21.6	10.0	18
13	152.3	37.7	19.9	5.4	16	153.5	41 .7	21.9	10.6	18
14	161.2	43.8	21 .0	5.6	17	148.6	40.4	20.9	10.0	7
20	162.1	45.3	21 .8	6.3	18	151.6	42.8	22.0	10.7	14
11	164.2	47.4	22.4	6.0	19	149.5	41.5	21.3	11.0	6
63	163.7	48.3	23.2	6.0	20-25	150.9	41.3	21.7	10.7	66
42	164.4	50.4	24.0	6.0	25-30	151.3	42.3	22.1	9.6	53
33	164.6	50.0	23.8	6.1	30-35	151.9	42.5	22.3	9.5	35
45	163.0	48.7	23.4	5.9	35-40	151.0	41.3	21.7	9.4	37
28	165.1	50.5	23.3	5.5	40-45	149.8	42.4	22.2	9.5	26
27	164.3	48.6	23.3	5.9	45-50	150.2	42.2	22.0	9.8	27
16	163.2	45.0	21 .4	3.6	50-55	150.9	40. 8	22.0	9.0	27
16	162.5	44.2	21.3	4.9	55-60	151.7	43.6	22.7	10.5	*6*
42	160.3	45.7	22.1	6.2	≥60	148.8	38.9	21.1	7.9	37

NNMB - MEAN ANTHROPOMETRIC MEASUREMENTS BY AGE AND SEX - ANDHRA PRADESH

MALES					Age in years	FEMALES				
N	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)		Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)	N
21	72.4	7.3	12.6	6.3	01	70.5	7.5	12.2	6.6	32
30	77.0	8.8	12.7	6.5	02	77.3	9.19	12.9	7.6	25
40	82.6	10.3	13.5	7.7	03	83.3	10.4	13.6	7.8	37
63	92.1	12.5	13.7	6.9	04	90.4	11.9	13.9	7.4	47
39	96.7	13.6	14.2	6.6	05	96.3	13.1	14.0	6.7	39
47	103.4	14.7	13.8	5.7	06	100.8	14.1	14.1	6.2	62
46	110.3	16.5	14.2	4.7	07	111.1	17.4	15.0	6.0	34
47	115.9	18.5	14.7	5.1	08	115.3	18.8	14.7	5.1	60
20	122.6	20.8	15.6	5.1	09	120.8	20.1	15.4	5.6	37
52	126.4	22.4	15.6	4.7	10	125.9	22.2	16.0	5.4	42
35	130.0	24.0	16.2	4.7	11	133.3	25.5	17.0	6.2	26
59	134.4	26.1	16.6	4.5	12	138.9	28.9	17.8	5.6	41
24	139.1	28.5	17.7	5.1	13	142.9	32.4	19.3	6.1	22
41	143.9	30.8	17.8	4.7	14	145.6	35.7	20.1	8.1	19
14	147.3	33.6	18.6	5.6	15	143.8	37.2	20.6	9.2	9
38	152.0	39.0	20.2	5.0	16	146.6	36.5	20.3	8.1	29
36	156.3	41.3	20.7	4.5	17	149.1	42.3	21.3	9.2	19
42	160.4	46.2	22.7	4.9	18	150.2	42.2	21.6	7.5	22
24	158.7	45.9	23.0	4.4	19	145.4	35.4	20.0	10.8	2
74	160.1	47.1	23.0	4.5	20 - 25	149.0	41.9	21.6	8.0	87
62	162.1	48.3	22.8	4.6	25 - 30	149.8	41.9	21.9	7.7	115
85	161.9	49.5	23.6	5.0	30 - 35	150.3	41.4	21.5	7.2	103
84	163.0	49.2	23.4	4.6	35 - 40	149.6	41.3	21.8	8.0	58
54	159.5	48.5	23.7	5.7	40 - 45	147.8	41.9	22.4	8.1	50
61	160.9	48.2	22.9	5.2	45 - 50	149.2	44.6	22.7	9.2	40
38	161.8	50.7	23.5	5.9	50 - 55	149.2	41.0	21.2	7.0	27
28	162.5	51.2	23.2	5.9	55 - 60	148.0	40.3	20.5	7.3	16
48	158.9	44.3	21.1	4.5	≥ 60	146.4	37.2	20.5	6.1	47

NNMB - MEAN ANTHROPOMETRIC MEASUREMENTS BY AGE AND SEX - MAHARASHTRA

MALES					Age in years	FEMALES				
N	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)		Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)	N
18	71.3	8.2	11.8	9.6	01	71.3	7.9	11.7	8.9	15
10	78.8	9.8	12.8	9.2	02	77.2	9.4	12.5	11.7	15
18	83.8	11.2	12.9	11.2	03	83.4	10.6	12.9	11.8	12
17	92.1	12.4	13.2	9.2	04	89.8	11.6	13.3	11.1	16
13	99.0	14.0	13.4	8.2	05	99.6	14.9	14.5	11.7	6
10	105.0	15.5	13.4	7.2	06	104.0	15.7	14.2	8.8	14
16	109.2	17.1	14.0	8.1	07	105.4	15.8	14.1	8.1	8
12	115.8	17.4	13.9	6.1	08	118.9	19.6	14.9	7.3	11
12	119.1	20.6	14.9	6.6	09	119.1	19.7	15.2	8.3	14
16	126.1	23.4	15.8	6.3	10	124.1	22.1	15.6	9.4	17
11	127.5	23.1	16.0	7.5	11	136.2	27.3	17.5	9.4	11
18	135.4	25.3	15.9	6.6	12	135.3	28.1	17.1	9.7	18
15	138.1	28.1	16.4	7.4	13	138.1	30.9	17.8	8.8	18
15	140.9	31.0	17.3	7.1	14	145.9	35.3	19.4	12.2	11
14	148.4	33.1	17.7	5.8	15	144.4	36.3	21.5	13.0	5
14	156.2	40.5	20.0	8.4	16	147.3	37.2	20.4	10.9	12
14	159.0	43.9	21.3	6.7	17	151.0	41.6	22.1	16.2	6
13	159.8	45.9	22.1	6.8	18	153.2	42.8	21.5	14.0	4
11	164.4	48.0	22.6	6.7	19	147.2	41.0	22.0	14.2	5
25	161.9	46.2	22.6	6.3	20 - 25	151.2	42.3	21.0	11.9	30
28	161.0	47.9	22.7	6.6	25 - 30	149.6	41.0	21.2	10.8	26
19	163.0	49.6	23.1	6.5	30 - 35	149.2	41.4	21.7	12.3	35
26	164.0	52.7	24.0	8.7	35 - 40	147.8	41.3	21.7	11.3	23
23	161.1	47.9	22.6	6.8	40 - 45	147.2	40.7	21.7	11.9	17
21	160.3	48.2	23.1	7.7	45 - 50	148.3	38.3	21.1	12.0	21
9	159.4	50.0	23.3	7.1	50 - 55	148.1	36.4	20.1	9.1	10
17	162.6	50.6	23.6	8.9	55 - 60	148.3	37.3	20.0	8.8	9
29	160.2	47.0	22.1	7.4	≥ 60	147.8	39.3	20.8	10.1	31

NNMB - MEAN ANTHROPOMETRIC MEASUREMENTS BY AGE AND SEX - GUJARAT

MALES					Age in years	FEMALES				
N	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)		Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)	N
41	71.8	7.4	13.0	8.3	01	70.5	6.9	12.2	7.7	41
65	78.7	9.1	13.1	8.4	02	75.9	8.4	12.8	8.6	63
76	84.1	10.2	13.6	8.7	03	82.7	10.2	13.5	9.3	62
89	93.9	12.3	14.2	8.2	04	91.3	11.9	14.2	9.1	68
65	100.9	13.7	14.0	7.4	05	98.1	13.5	14.3	8.7	63
48	105.6	15.1	14.2	6.9	06	104.1	14.8	14.6	8.4	57
69	110.1	16.4	14.6	7.1	07	109.3	16.9	14.8	7.8	63
74	114.8	17.9	15.2	6.9	08	115.8	18.1	15.3	7.5	65
53	118.2	19.1	15.2	6.4	09	120.6	20.1	15.7	8.3	42
69	126.9	22.9	16.2	6.7	10	126.6	22.1	16.5	8.5	53
39	129.3	23.4	16.2	7.0	11	130.2	24.1	16.9	8.9	51
93	133.3	25.6	16.9	7.3	12	134.3	26.0	17.3	8.8	64
58	140.3	28.5	17.4	7.9	13	139.3	29.6	18.6	10.5	46
46	143.7	31.4	18.5	7.7	14	144.2	34.1	19.8	11.1	40
33	151.9	35.3	19.0	7.7	15	148.2	37.3	20.5	12.9	39
50	156.2	40.6	20.7	7.4	16	147.8	39.0	21.7	15.1	38
53	159.3	42.7	21.2	8.0	17	151.3	43.1	22.6	16.6	21
63	160.8	44.8	22.0	7.7	18	151.9	44.4	23.4	16.1	29
43	161.2	45.4	22.5	7.4	19	152.0	42.5	22.6	15.4	31
166	162.9	47.3	23.1	7.4	20 - 25	152.0	43.4	22.6	14.4	152
123	164.3	50.2	24.0	7.7	25 - 30	151.4	43.7	22.7	13.3	146
109	164.4	50.4	23.9	9.1	30 - 35	151.2	42.6	22.8	13.5	119
97	163.5	49.5	23.5	7.8	35 - 40	151.5	44.5	23.3	13.4	91
72	163.2	50.2	24.1	9.3	40 - 45	150.2	43.6	23.3	13.6	79
74	161.7	47.9	23.0	8.6	45 - 50	150.9	42.4	22.9	13.3	96
59	163.6	47.8	22.8	8.6	50 - 55	149.5	42.5	22.8	13.9	57
50	162.9	48.7	23.2	8.1	55 - 60	148.2	42.6	23.2	14.1	39
75	159.5	46.1	22.1	7.6	⩾60	147.2	39.2	21.6	11.5	67

NNMB - MEAN ANTHROPOMETRIC MEASUREMENTS BY AGE AND SEX - MADHYA PRADESH

MALES					Age in years	FEMALES				
N	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)		Height (cm)	Weight (kg)	Axm circum-ference (cm)	Skinfold at Tricepe (mm)	N
56	69.9	7.6	12.4	*6.6*	01	69.7	7.5	12.0	6.5	50
47	77.5	9.4	12.6	6.7	02	76.6	9.0	12.6	6.3	43
66	82.6	10.7	13.0	6.6	03	83.0	10.9	12.9	6.1	77
89	90.5	12.2	13.5	6.3	04	91.1	12.3	13.6	6.4	71
82	99.7	14.3	13.9	6.2	05	100.7	14.8	14.0	5.9	41
80	105.2	15.9	14.1	5.5	06	107.6	16.3	14.3	5.4	55
56	111.3	17.5	14.4	5.6	07	109.9	16.8	14.5	5.2	51
91	116.9	19.4	14.8	5.2	08	117.2	19.7	15.3	5.5	80
41	121.2	20.9	15.2	5.3	09	121 .6	21.4	15.6	5.5	30
81	128.8	24.0	16.3	5.1	10	127.7	24.3	16.7	5.4	69
35	133.5	26.2	16.7	5.1	11	135.7	28.3	18.1	6.4	25
87	139.1	29.5	17.7	5.5	12	137.0	29.7	18.0	6.0	57
48	141.2	30.1	17.5	5.3	13	143.4	33.7	19.2	6.0	*29*
41	146.2	33.8	18.6	5.3	14	144.3	36.1	19.8	6.1	34
52	151.9	39.2	19.8	5.5	15	149.2	41.6	21.6	6.7	42
46	157.9	43.3	21 .1	5.0	16	151 .2	43.4	21.8	6.9	44
53	157.9	46.0	21 .8	5.4	17	150.8	42.9	21.6	7.3	18
76	161.3	47.9	22.3	5.6	18	150.5	45.2	22.5	7.3	46
37	161.4	50.4	22.9	5.8	19	149.1	43.0	21.5	5.4	10
181	163.0	49.7	23.1	5.7	20-25	152.2	45.0	22.4	6.1	114
104	163.7	51.5	23.7	5.5	25-30	150.8	44.9	22.1	6.4	128
88	163.5	50.8	23.6	5.4	30-35	150.7	45.6	22.3	6.5	114
111	164.9	51.7	23.5	5.4	35-40	150.6	44.8	22.9	6.4	113
95	163.2	50.8	23.3	5.7	40- 45	150.6	44.1	22.4	6.3	*96*
93	163.7	51.3	23.0	5i6	45-50	150.6	43.8	22.2	6.3	65
72	163.7	50.6	23.1	5.8	50-55	150.4	43.5	22.0	6.4	55
46	163.5	50.4	23.5	5.8	55-60	150.2	43-3	22.8	6.4	31
99	163.2	50.0	22.2	5.6	≥60	149-0	42.4	21.7	6.1	57

NNMB - MEAN ANTHROPOMETRIC MEASUREMENTS BY AGE AND SEX — WEST BENGAL

MALES					Age in years	FEMALES				
N	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)		Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)	N
51	72.6	7.4	12.1	6.1	01	71.6	7.1	11.9	6.2	35
48	81.1	9.3	12.9	6.4	02	79.4	8.8	12.4	6.4	41
46	90.2	11.3	13.4	5.8	03	86.4	10.3	13.1	6.7	46
43	93.0	12.1	13.6	6.3	04	92.0	11.4	13.4	6.5	38
56	100.8	13.7	13.7	5.3	05	98.5	12.6	13.6	5.9	41
49	105.1	14.7	13.7	4.8	06	104.1	14.2	14.0	5.1	44
58	110.9	16.2	14.1	4.6	07	109.3	15.3	14.0	4.9	40
37	116.3	17.6	14.3	4.4	08	114.7	17.5	14.7	4.9	50
51	120.9	19.8	15.0	4.5	09	119.9	19.0	15.0	4.5	44
45	124.4	20.9	15.6	4.5	10	123.5	20.6	15.7	5.3	45
35	129.2	22.8	15.9	4.0	11	130.5	23.8	16.5	5.1	47
42	133.2	24.9	16.6	4.4	12	136.3	26.9	17.3	5.4	59
36	136.3	26.7	16.8	4.5	13	140.9	30.1	18.1	6.0	38
35	143.5	30.4	17.9	4.5	14	142.7	32.5	19.2	7.1	38
46	147.4	32.9	18.6	4.4	15	146.0	35.8	20.3	7.9	30
31	156.6	40.0	20.4	4.8	16	148.1	35.8	20.0	6.7	20
38	157.6	40.7	20.6	4.6	17	150.3	40.3	21.2	9.4	16
47	160.6	44.8	22.0	4.9	18	148.4	41.0	22.0	9.9	34
37	157.9	43.1	21.7	4.9	19	149.1	39.7	20.9	7.9	30
82	163.0	47.3	23.0	5.0	20 - 25	149.7	41.2	21.7	8.1	54
40	161.8	46.5	23.2	4.6	25 - 30	148.8	40.7	21.5	7.7	93
48	161.2	47.0	23.3	4.9	30 - 35	147.6	39.5	21.5	7.9	74
77	161.0	47.3	23.4	5.1	35 - 40	147.8	38.7	21.1	7.2	104
76	160.6	45.2	22.8	4.7	40 - 45	149.0	40.1	21.6	7.9	56
73	160.7	45.9	22.8	4.9	45 - 50	148.5	40.6	22.2	9.2	43
47	161.4	45.5	22.4	4.7	50 - 55	144.5	36.1	21.1	7.2	20
31	160.8	43.9	21.8	4.3	55 - 60	146.4	37.2	21.0	7.6	15
23	158.7	42.6	21.4	5.0	⩾ 60	146.4	36.6	20.4	6.5	38

NNMB - MEAN ANTHROPOMERIC MEASUREMENTS BY AGE AND SEX - UTTAR PRADESH

MALES						FEMALES				
N	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Triceps (mm)	Age in years	Height (cm)	Weight (kg)	Arm circum-ference (cm)	Skinfold at Tricepe (mm)	x
10	72.3	8.2	13.2	7.4	01	66.9	6.3	10.8	6.3	9
11	76.6	9.3	13.2	8.6	02	76.6	8.3	12.4	7.6	11
12	84.7	10.7	13.1	7.3	03	80.5	9.7	12.9	7.7	18
I8	93.8	13.1	14.0	8.1	04	89.2	12.0	14.5	8.6	10
8	96.3	13.2	13.2	*6.6*	05	92.7	12.9	13.9	7.3	10
24	104. 6	15.5	14.4	7.2	06	97.6	13.1	14.0	7.3	9
17	105.5	15.4	14.2	6.1	07	104.7	14.4	14.1	6.7	14
15	118.1	19.6	15.0	6.0	08	114.0	18.3	15.1	7.7	14
12	122.3	21.6	15.6	5.8	09	119.3	20.0	15.1	6.8	13
24	124.0	21.9	15.3	5.8	10	123.7	21.7	16.2	7.4	11
13	128.4	23.6	16.4	6.3	11	136.6	29.0	17.9	7.4	6
29	137.0	27.1	17.1	6.5	12	138.3	28.2	17.8	8.0	22
15	139.8	29.5	17.5	6.5	13	141.9	33.0	19.9	11.6	7
9	144.9	37.0	20.3	9.5	14	148.2	36.7	20.6	10.8	9
9	159.5	45.5	21.2	7.7	15	150.5	40.8	22.6	10.9	7
8	158.8	42.7	21.5	7.6	16	151.0	44.5	22.8	14.5	7
12	159.2	45.9	21.7	7.0	17	147.7	46.3	23.9	15.6	10
23	161.1	45.2	22.5	7.2	18	152.6	44.8	22.2	11.1	9
15	162.7	49.3	23.3	6.7	19	143.0	40.0	22.4	11.0	1
47	162.7	49.2	23.6	7.1	20-25	149.9	42.6	23.0	11.1	27
28	162.8	50.7	24.1	6.6	25-30	151.0	45.2	23.2	12.1	31
25	163.7	51.9	24.0	8.2	30-35	149.8	40.9	22.3	9.9	19
22	161.6	49.5	24.1	*6.6*	35-40	151.5	44.7	22.7	9.6	23
21	162.3	50.0	23.6	5.7	40-45	147.3	42.3	23.2	11.0	23
15	162.4	48.4	23.9	6.5	45-50	149.1	40.1	22.6	9.8	24
21	162.8	51.1	23. 4	6.7	50-55	149.3	44.8	23.4	11.9	13
3	165.8	51.0	24.2	5.5	55-60	146.7	42.4	23.3	11.9	10
31	161 .2	48. 1	22.9	7.0	≥60	146.2	38.6	22.0	10.3	24

ANNEXURE-III

NNMB - Percent Distribution of Pre-school children according to weight for age classification*

STATE	Normal	Degree of undernutrition		
		Mild	Moderate	Severe
KERALA	4.5	29.9	52.9	12.7
TAMIL NADU	3.1	24.8	57.4	14.7
KARNATAKA	4.4	22.1	54.9	18.6
ANDHRA PRADESH	3.7	18.5	54.0	23.8
MAHARASHTRA	2.7	24.3	55.9	17.1
GUJARAT	3.4	17.2	51.2	28.2
MADHYA PRADESH	3.8	23.7	53.2	19.3
WEST BENGAL	1.4	17.5	58.1	23.0
UTTAR PRADESH	7.1	19.2	46.5	27.3
ALL STATES	3.8	21.9	53.8	20.5

*NORMAL: ≥90% of standard+ weight for age

MILD : 75-90 -do- -do-

MODERATE: 60-75 -do- -do-

SEVERE : ∠60 -do- -do-

+NELSON

NNMB - Percent distribution of pre-school children according to Dugdale Index (weight/height $^{1.6}$)

STATE	Dugdale Index		
	≥90	70 - 90	∠70
KERALA	25.6	70.6	3.8
TAMIL NADU	30 .4	59.8	9.8
KARNATAKA	25.6	71.7	2.7
ANDHRA PRADESH	32.9	62.0	5.1
MAHARASHTRA	46.6	52.5	0.8
GUJARAT	23 .4	68.0	8.6
MADHYA PRADESH	43.5	53.3	3.2
WEST BENGAL	14.7	77.1	8.2
UTTAR PRADESH	36.4	54.5	9.1
ALL STATES	31.0	63.3	5.7

NNMB - Percent distribution of pre-school children according to Weight/Height^{2x100}

STATE	Weight/height$^{2 \times 100}$		
	≥0.15	0.13 - 0.15	∠0.13
KERALA	34.6	46.1	19.3
TAMIL NADU	42.7	41.2	16.2
KARNATAKA	46.0	48.7	5.3
ANDERA PRADESH	45.7	47.8	6.4
HAHARASTRA	63.6	31.4	4.1
GUJARAT	39.7	47.9	12.5
MADHYA PRADESH	65.2	31.3	3.6
WEST BENGAL	18.1	52.3	29 .6
UTTAR PRADESH	36.5	41.4	12.2
ALL STATES	44.7	43.1	12.1

(Corrections)

Page	Line	For	Head as
1	2nd para 1st line	end of 1974	end of August 1974
2	2nd para 3rd line	millets was	millets in group A was
4	2nd para 5th line	Karnataka and Madhya Pradesh.	Karnataka, Madhya Pradesh and Andhra Pradesh.
4	2nd para 9th line	followed with	followed by
4	Last line	Tamil Nadu and Gujarat	Andhra Pradesh and Maharastra
5	2nd line	2260 arid 2600	2320 and I960
5	From below 8th line	lowest in Kerala	lowest in Kerala and Tamil Nadu
6	From below 6th line	(26%) and Gujarat (55%)	and West Bengal
6	From below 7th line	(1.4%)	(19%)
11	4th line	forty four (44%)	forty five (45%)
Table-4	Title	vitamin A	vitamin A (ug)
Table-5	1st row 8th col.	16.3	17.1
Table-5	8th row last col.	19.4	29.4