

NUTRITION

3.4 Nutrition Monitoring Survey on NNMB pattern in Jodhpur district of Rajasthan

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OBJECTIVES

1. To develop continuous monitoring service to study the nutritional status, dietary habits, food availability and the effect of changing social and environmental factors on the health status of the population.
2. Aim at doing comparisons with other states data as to assess the variation among the states.

PROGRESS

NNMB surveys were initiated in Pali district with similar sample design and 30 villages have been selected from 9 tehsils of Pali district. Field work has been started data has been collected from 600 household belonging to twenty eight villages of nine tehsils (Sumerpur, Rohat, Bali, Pali, Desuri, Raipur, Sojat, Marwar and Jaitaran) of Pali district. The entire selected households were examined for Socio-demographic and Socio- economic aspects. All the members in the household have been examined for nutritional deficiency signs, anthropometric measurements (Height, weight, arm circumference and FFT), Dietary intake (24 hours recall method) and examination of nutritional morbidities in preceding 15 days. Dietary intakes of the individuals information were recorded in alternate houses i.e. 10 households from each village are covered.

Analysis of 600 households covering 2651 individuals has been done. Table 1 showed age and sex wise distribution of study population (1307 males and 1344 females). Nuclear families were significantly more (86.1 %) (Tables 2). Table 3 revealed that illiteracy is significantly high in females (48.4 %).

Table 1. Age and sex wise distribution of population covered

Age group	Males	%	Females	%	Total	%
0-5	250	19.1	231	17.2	481	18.1
6-9	116	8.9	157	11.7	273	10.3
10-14	151	11.6	144	10.7	295	11.1

15-17	73	5.6	72	5.4	145	5.5
18- 29	291	22.3	315	23.4	606	22.9
30 - 39	187	14.3	181	13.5	368	13.9
40-49	116	8.9	102	7.6	218	8.2
50 -59	58	4.4	54	4.0	112	4.2
>=60	65	5.0	88	6.5	153	5.8
Total	1307	100	1344	100	2651	100

Table 2. Distribution of households according to type of family

Type of family	N	%
Nuclear	517	86.1
Extended Nuclear	58	9.7
Joint	25	4.2
Pooled	600	100.0

Table 3. Distribution of population according to educational status

Educational status	Males	%	Female	%	Total	%
Illiterate	384	29.4	650	48.4	1034	39.0
Read & Write	28	2.1	12	0.9	40	1.5
1-4 Standard	238	18.2	230	17.1	468	17.7
5-8 Standard	303	23.2	255	19.0	558	21.0
9-12 Standard	199	15.2	77	5.7	276	10.4
College	67	5.1	25	1.9	92	3.5
N. A.	88	6.7	95	7.1	183	6.9
Pooled	1307	100.0	1344	100.0	2651	100.0

Main morbidities observed in population were, fever (11.4%), acute respiratory infection (20.3%), and diarrhea (0.9%) (Table 4). Regarding nutritional deficiency signs, it is observed that discoloration of hair, a sign of protein calorie malnutrition was observed to be high i.e. 7.1 percent which was significantly higher in females than males (Table 5). Marasmus was observed in 0.1. Angular stomatitis, Cheilosis and glossitis were 2.3, 3.6 and 0.3 percent. Vitamin A deficiency i.e. Bitot spot were 0.1 percent. Dental caries (26.7%) and dental fluorosis (21.6%). Koilonychia, a sign of anemia, was observed only in females (0.1%).

Table 4. Distribution of population according to Morbidity profile

Morbidity	Males N=1307	%	Females N=1344	%	Total N=2651	%
N.A.D.	1095	83.8	794	59.1	1889	71.3
Fever	82	6.3	221	16.4	303	11.4
Diarrhoea	12	0.9	13	1.0	25	0.9
Dysentery	0	0.0	2	0.1	2	0.1
A. Res. Infec.	151	11.6	386	28.7	537	20.3
Measles	1	0.1	0	0.0	1	0.0
GIT	53	4.1	161	12.0	214	8.1

Table 5. Distribution of population according to Nutritional deficiency signs

Deficiency Signs	Males	%	Females	%	Total	%
	N=1307		N=1344		N=2651	
N.A.D.	1066	81.6	673	50.1	1739	65.6
Hair Discoloured	89	6.8	100	7.4	189	7.1
Marasmus	1	0.1	1	0.1	2	0.1
Bitot Spot	2	0.2	1	0.1	3	0.1
Angular stomatitis	12	0.9	50	3.7	62	2.3
Cheilosis	16	1.2	79	5.9	95	3.6
Glossitis	2	0.2	5	0.4	7	0.3
Koilonychia	0	0.0	1	0.1	1	0.0
Gums-Spongy bleeding	30	2.3	226	16.8	256	9.7
Dental Caries	142	10.9	565	42.0	707	26.7
Dental Fluorosis	97	7.4	475	35.3	572	21.6
Thyroid gland palpable	0	0.0	1	0.1	1	0.0
Thyroid gland visible	0	0.0	1	0.1	1	0.0

The weights of pre-school children were expressed as percent of NCHS standards and categorized into different nutritional grades, based on Gomez classification (Tables 6-7). The overall prevalence of under nutrition was very high i.e. 79.1 percent. It was higher in SC community (80.4%) in comparison to ST communities (73.5%). The overall prevalence of severe under nutrition was high i.e. 9.4 percent. Under nutrition was higher significantly in Nuclear families (79.5 %).

Table 6. Distribution of 1-5 years children according to Gomez distribution and Type of family

Type of House	N	Nutritional Grades*			
		Normal	Mild	Moderate	Severe
Nuclear	249	20.5	37.3	31.7	10.4
Extended	23	17.4	43.5	39.1	0.0
Joint	6	50.0	33.3	16.7	0.0
Pooled	278	20.9	37.8	32.0	9.4

* NCHS Standards

Table 7. Distribution of 1-5 years children according to Gomez distribution and type of house

Type of House	N	Nutritional Grades*			
		Normal	Mild	Moderate	Severe
Kutchra	41	17.1	39.0	34.1	9.8
Semi Pucca	169	21.9	37.9	30.8	9.4
Pucca	68	20.6	36.8	33.8	8.8
Pooled	278	20.9	37.8	32.0	9.4

* NCHS Standards

Underweight (Weight for age) in preschoolers observed was 64.4 %, higher than NFHS III (44.0 %). The proportion of severe underweight was high (32%). Underweight were observed higher in females than

males. Declining trend has been observed in underweight in comparison to DMRC Phase one (71.6%), but higher than Phase II (59.5%), Phase III (58.3 %), and Phase IV (49.8 %) and Phase V study (59.3%) in Jodhpur district. Underweight in preschoolers observed was 64 percent using WHO standards.

Stunting (Height for age) was 57.3 percent in preschoolers with the prevalence of severe stunting 35.5 %, which needs attention. It's lower than DMRC Phase I (71.6 %), DMRC Phase II (62.1 %), and DMRC Phase IV (59.5%) but higher than NFHS III (33.7 % - up to 3 years), NNMB (49.3 %), and DMRC Phase III (57.1%). Stunting computed by adopting standard deviation classification using WHO standards was 60.1 percent in preschoolers with the prevalence of severe stunting 39.1 percent. Wasting (Weight for Height) computed by adopting standard deviation classification using WHO standards was 33 percent in preschoolers with the prevalence of severe wasting 12.6 percent.

The distribution of adults according to BMI grades has been shown in Tables 8. At the aggregate level, 51.2 percent had normal BMI (18.5-25.0), while 38.4 percent had severe chronic energy deficiency, whereas obesity was observed to be 10.4 percent.

Table 8. Distribution of adults (>=18 years) according to BMI classification

Gender	Obese II ≥ 30	Obese I 25-30	Normal 20-25	Low wt Normal 18.5-20	CED I 17-18.5	CED II 16-17	CED III <16
1. Male N=102	1.0	12.7	34.3	17.6	14.7	7.8	11.9
2. Female N=588	1.5	8.3	31.5	19.6	19.2	8.0	11.9
Pooled N=690	1.4	9.0	31.9	19.3	18.5	8.0	11.9

Dietary intake from 300 households was collected. In dietary intake, average intake of Calcium, Vitamin C and Vitamin B12 was less than RDA in children up to 15 years of age group whereas Beta Carotene i.e. Vitamin A was less than RDA in all age groups. Trends revealed that underweight in preschoolers and chronic energy deficiency in adults was more in Pali district in comparison to Jodhpur district as covered earlier in DMRC Phase II and DMRC Phase III, DMRC Phase IV and DMRC Phase V studies. Stunting was more in Pali district than Jodhpur district preschoolers (DMRC Phase III, and DMRC Phase V studies). Trends revealed that high illiteracy, poor economic conditions along with high deficiencies in their diet played important role for higher nutritional deficiencies, especially stunting more children and chronic energy deficiency more in adults of this region.

EXPECTED OUTCOMES

The results of the study carried out on representative segment of the population in desert areas have provided information and useful guidelines for food policies and also to assess the impact of the nutritional programs currently in progress and for future planning in the state of Rajasthan.