

Dietary Intakes, Knowledge of People about the Diseases and Nutritional Disorders in two Desert Districts of Rajasthan

T Ramnath, K K Ganguly, A Mahapatra, Sheshpal Yadav and R M Pandey
Desert Medicine Research Centre, ICMR, PB 122, Jodhpur - 342 005 India

Abstract A comprehensive health survey was initiated in 1986, in two desert districts of Rajasthan covering 512 households from 19 villages and 438 households from 15 villages from Jodhpur and Bikaner districts respectively. The results show that more than 30 % of the families have to travel more than 10 km to avail any health facilities. More than 50 % of the respondents had the knowledge of fever, diarrhoea, worm infestation, measles, malaria and guinea worm. However, their knowledge about nutritional disorders was poor in both the districts. The diets were predominantly based on bajra and wheat. The consumption of pulses, vegetables, fats and oil, sugar and other foods were far from satisfactory and were below 30 g. The nutrients intake (except protein) were inadequate in all the age groups but the deficits of nutrients were observed to be more pronounced among children below 12 years.

Key words Health facilities, Diseases, Nutritional disorders, Dietary intake, Disease knowledge

In Rajasthan, out of its 0.342 million km² area, about 60 % is comprised of hot desert covering eleven north western districts. Repeated occurrence of drought, almost once in every four years, has great bearing on the diet and nutrition in the area. The present paper provides information on availability of health facilities, knowledge of diseases and nutritional disorders among respondents, food and nutrient's intakes of individuals in two desert districts of Rajasthan.

Materials and Methods

The study was carried out in 1986, in two desert districts of Rajasthan viz. Jodhpur and Bikaner. For the collection of relevant information, a multi stage sampling technique was used. Selection of districts formed the first stage of sampling. At the second stage, the villages were selected using probability proportional to size technique (Moser & Kalton, 1980). Within each village, the required number of households were selected using systematic sampling method. The heads of selected households were interrogated and the information related to the availability of health facilities, their knowledge about selected diseases & nutritional disorders was collected. Approximately 20 % of the selected households were covered for diet survey. Under

diet survey, from the housewives of the selected households, the detailed information was obtained on each individual's dietary intake of previous day, using the standardized cups (NNMB Plan of operation 1972). The food intakes collected were grouped into various food groups. Based on food intake, the nutrients intakes were calculated using values provided in Nutritive values of Indian foods (Gopalan *et al.* 1980). For the selected age groups, the recommended dietary allowances (RDA) were arrived using the interpolation method. To find out the extent of deficits in case of each nutrient for each age and sex, the actual intakes were expressed as percentage of the RDA.

Results and Discussion

The 512 households from 19 villages and 438 households from 15 villages were covered from Jodhpur and Bikaner districts respectively. Under the diet survey, 685 subjects from 108 households from Jodhpur district and 404 subjects from 85 households from Bikaner district were covered (Table 1).

Availability of health facilities and its distance from the selected villages (Table 2) shows that less than 30 % of the households had health facilities

Table 1 Details of coverage

Coverage (No.)	Jodhpur	Bikaner
Villages	19	15
Households	512	438
Diet Survey		
Households	108	85
Subjects	685	404

Table 2 Availability of health facilities and its distance from the village

Distance of health facilities (km)	Jodhpur	Bikaner
Less than 5	28.1	29.6
5-10	21.1	35.7
More than 10	50.8	34.7
Number	512	432

Table 3 Knowledge of diseases/nutritional disorders among the respondents in two desert districts of Rajasthan

Disease/Nutritional disorder	Jodhpur	Bikaner
Kwashiorkar	8.0	46.7
Marasmus	8.4	54.2
Bitot's spot	5.1	43.2
Night blindness	57.0	38.8
Angular stomatitis	13.1	60.1
Fever	59.0	92.2
Diarrhoea	58.0	91.6
Worm infestation	50.0	68.1
Measles	58.4	86.8
T.B.	25.9	62.5
Leprosy	25.0	51.1
Malaria	55.9	82.3
Guinea worm	58.0	59.8

Table 4 Average food intakes according to age and sex in two desert districts of Rajasthan

Food group	Age groups (years)									
	1-5		5-12		12-18		18-45		45+	
	M	F	M	F	M	F	M	F	M	F
	Jodhpur									
No. studied	39	37	108	79	45	53	92	113	61	58
Cereals and millets	176	208	328	321	444	384	463	450	369	271
Pulses	4	6	12	12	21	7	19	16	27	17
Roots & tubers	4	14	17	18	17	23	26	24	21	13
Vegetables	1	2	10	3	11	12	24	17	19	6
Condiments & spices	6	8	14	13	15	12	15	16	18	14
Fats & Oil	3	6	6	5	10	9	12	14	15	10
Milk & Milk products	109	89	84	104	84	75	104	108	108	83
Sugar	11	13	12	13	14	13	16	14	20	17
	Bikaner									
No. studied	30	24	65	51	13	19	83	71	26	32
Cereals and millets	157	148	320	300	500	408	511	514	367	391
Pulses	11	6	17	23	28	34	31	35	17	22
Roots & tubers	13	14	19	18	26	24	40	39	37	37
Vegetables	7	4	18	12	11	24	26	31	14	21
Condiments & spices	3	4	10	9	15	9	17	17	11	8
Fats & Oil	2	3	3	6	5	6	9	8	7	6
Milk & Milk products	97	159	73	76	96	79	112	132	81	88
Sugar	16	19	13	12	34	18	22	25	16	22

Table 5 Average nutrients intake per day according to age and sex in two desert districts of Rajasthan

Food group	Age groups (years)									
	1 - 5		5 - 12		12 - 18		18 - 45		45 +	
	M	F	M	F	M	F	M	F	M	F
Jodhpur										
No. studied	39	37	108	79	45	53	92	113	61	58
Protein (g)	25.6	29.4	45.6	45.6	61.1	51.5	64.3	59.8	56.4	40.0
% of RDA	106	123	125	125	117	117	117	133	103	89
Calories (Kcal)	800	953	1386	1379	1871	1560	1968	1867	1711	1232
% of RDA	59	71	66	65	68	68	70	79	71	65
Calcium (mg)	266	261	308	350	391	331	437	421	418	303
% of RDA	59	58	68	78	87	74	97	94	93	67
Iron (mg)	9.5	11.8	24.5	18.0	27.6	21.6	28.3	24.8	22.7	16.5
% of RDA	42	52	98	72	105	62	118	78	95	52
Vitamin A (μ g)	118	123	150	161	212	132	194	187	215	165
% of RDA	16	16	20	21	28	18	26	25	29	22
Bikaner										
No. studied	30	24	65	51	13	19	83	71	26	32
Protein (g)	25.2	25.1	45.3	44.4	83.1	59.7	73.0	75.1	51.3	55.8
% of RDA	105	105	124	121	150	136	132	167	93	124
Calories (Kcal)	773	779	1359	1318	2558	1767	2223	2272	1597	1719
% of RDA	57	58	65	63	93	78	79	96	67	90
Calcium (mg)	256	351	315	322	508	394	515	551	359	395
% of RDA	57	78	70	72	102	79	114	122	80	88
Iron (mg)	9.3	8.5	18.4	17.8	34.3	24.3	30.1	30.6	21.2	22.9
% of RDA	41	38	74	71	130	69	125	96	88	72
Vitamin A (μ g)	95	115	123	118	219	134	224	204	152	164
% of RDA	13	15	16	16	29	18	30	27	20	22

within 5 km distance from their place of stay, whereas to more than one third of the households, the distance was more than 10 km.

The knowledge of the respondents about the selected diseases and nutritional disorders (Table 4) was relatively less among Jodhpur's respondents. More than 50% of the respondents in both the districts had the knowledge about fever, diarrhoea, worm infestation, measles, malaria and hookworm. However, knowledge about nutritional disorders was observed to be less common among them.

Average food intake per day of subjects according to their age and sex are provided in table 4 for both the districts. The diets were predominantly based on cereals and millets. Among cereals and millets, bajra contributed to the major proportion of the total consumed. The consumption of pulses,

vegetables, roots & tubers and condiments & spices was observed to be below 30 g and was far below the levels reported in balanced diet (ICMR 1981). Fats & oil consumption was in general below 25 g.

Average nutrients intake per day according to age and sex (Table 5) shows that among pre-school children, except the protein intake, the intakes of other nutrients were lower as compared to respective dietary allowances. This was also true in the case of 5-12 years age group of children. Among 12-18 years age group children males had satisfactory protein, calcium and iron intakes. In adults (>18 years), the intakes were better as compared to that in children below 18 years of age. In case of iron intakes, the deficits were uniformly higher in females as compared to males. Vitamin A intakes were uniformly lower (<30% of RDA) in all the age groups. In general the consumption pattern was

better in Bikaner district as compared to that in Jodhpur district.

The data on dietary intake suggests that the deficits with respect to major nutrients (except protein intakes) were more prominent among the children particularly below 12 years as compared to adults and adolescents. Lack of frequent availability of leafy vegetables in desert areas can be the major reason for the observed lower intakes of Vitamin A. The problems related to Vitamin A deficiency, frequently seen in the desert area, more so in summer season can be overcome by educating and encouraging people about the inclusion of leafy

vegetables and carrots when available in their daily diets.

References

- Balanced diets 1981 *Recommended Dietary Intakes for Indians*. Indian Council of Medical Research, New Delhi
- Goplan C, Ram Shastri BV & Balasubramanian 1980 *Nutritive Value of Indian Foods*, National Institute of Nutrition Hyderabad
- Moser C & Kalton G 1980 *Survey Methods in Social Investigations*. Second edition, Educational Books Ltd. and the English language Book Society, Britain, P 111
- NNMB Plan of operation 1972 *Family Diet Survey. One Day Weighment Schedule*. National Institute of Nutrition Hyderabad

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