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ASSESSMENT OF NUTRITIONAL STATUS OF ANGANWADI WORKERS OF PALANPUR TALUKA IN NORTH GUJARAT

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ABSTRACT

Number of studies have been conducted to assess the nutritional and health status of the anganwadi children but very less focus has been given to assess the nutritional status of anganwadi workers. AW are actually the main resource person of the ICDS program. For the better outcome of ICDS services it is expected that the anganwadi workers should have a healthy nutritional status. The present study was aimed to assess nutritional status of anganwadi workers of Palanpur taluka of Banaskantha district. For the present study two hundred anganwadi workers were selected by simple random sampling method. Personal interview technique was used for collecting data on personal and socio-economic characteristics and dietary pattern. Nutritional status of AW was determined on the basis of anthropometric measurement, clinical examination and dietary assessment. The data obtained from the study was statistically analysed by frequency, percentage, mean, standard deviation and correlation coefficient. Anthropometric indices revealed that among the whole population fifty per cent anganwadi workers of Palanpur taluka had normal nutritional status and only few workers were severely malnourished. Age of anganwadi workers showed highly significant positive correlation with nutritional status and housing condition of anganwadi workers showed significant positive correlation with nutritional status.

Keywords : *nutritional status, ICDS, anganwadi workers, anganwadi centres*

INTRODUCTION

Anganwadi workers are the central points for the delivery of ICDS services at community levels to children below six years of age, pregnant women, nursing mothers and adolescent girls. Therefore, they must have healthy nutritional status and child care practices (Soni *et al.,* 2020). As the anganwadi workers play an important role due to their close and continuous contact with the people of community, especially the children and women (Vinaya Shirur, 2021). The success rate of this nationwide integrated programme solely depends upon the fact as to how we are preparing our anganwadi workers to combat with the problem of malnutrition, it becomes really important to upgrade anganwadi worker with their healthy nutritional status.

There were number of the researches carried out on the nutritional status of the beneficiaries of ICDS, evaluation of nutrition and health services provided by anganwadi centres but very less focus has been shifted to assess the nutritional status of the anganwadi workers who are actually the main resource person of the programme do have a direct impact on the child health. For the better outcome of ICDS project it is expected that at least the anganwadi workers must have healthy nutritional status. The main purpose of selecting Banaskantha district is that, it has been identified as a backward district of Gujarat and the beneficiaries of the ICDS in this area are still deprived from good nutritional and health care facilities which are directly linked with the work performance of the anganwadi workers. Palanpur taluka of Banaskantha district which includes rural population has scare information available in this aspect; hence the present investigation has been an attempt to assess the nutritional status of anganwadi workers of Palanpur taluka, Banaskantha district.

METHODOLOGY

Total 420 anganwadi centres were working in Palanpur taluka which were categorized under Palanpur *Ghatak*-1, 2, 3, 4. Two hundred anganwadi workers were selected as respondents by the simple random sampling method for this study. The personal and socio-economic characteristics *viz.,* age, education, religion, caste, type of family, size of family, family annual income, housing condition were studied as independent variables. Nutritional status of anganwadi workers was studied as dependent variable. A well-structured interview schedule was used for data collection. The interview schedule developed by the investigator consisted four parts, personal and socio-

economic characteristics, anthropometric measurements, clinical examination and dietary pattern. Personal and socioeconomic characteristics in interview schedule included the background information, personal and socio-economic characteristics such as age, education level, religion, caste, family type and family size and annual income of family recorded by interviewing the individual respondent personally.

Height was measured by using flexible, non-stretchable measuring tape and weight was measured by digital weighing scale with accuracy 0.1 kg. The categorization of the respondents was done on the basis of BMI which is calculated as per formula given by Garrow (1987) and grading of the BMI was done using the classification given by WHO *et al.* (2007). The clinical signs have been assessed as per method recommended by Jelliffe *et al.* (1966) and any deviation from the normal was recorded. Dietary assessment included the general food habits and the food consumption patterns of anganwadi workers i.e., General pattern of dietary habits, food consumption pattern and 24-hour recall method and data were analysed by using different statistics tools i.e., frequency, percentage, correlation co-efficiently (Gupta and Saini,1995).

RESULTS AND DISCUSSION

Personal and socio-economic characteristics

Table 1: Personal and socio-economic characteristics of respondents (n = 200)

Sr. No.	Personal and socio-economic variables		F	%
1	**Age**	20 to 30	27	13.50
		31 to 40	52	26.00
		41 to 50	61	30.50
		51 to 58	60	30.00
2	**Education level**	Secondary	78	39.00
		Higher Secondary	33	16.50
		Graduate	40	20.00
		Post-Graduate	49	24.50
3	**Religion**	Hindu	188	94.00
		Muslim	12	06.00
4	**Caste**	General	39	19.50
		OBC	86	43.00
		SC	72	36.00
		ST	03	01.50
4	**Family type**	Nuclear	109	54.50
		Joint	91	45.50
5	**Family size**	Small family (up to 4 members)	84	42.00
		Medium family (5-8 members)	104	52.00
		Large family (above 8 members)	12	06.00
6	**Family income**	Medium level	177	88.50
		High level	23	11.50
7	**Housing condition**	Kaccha house	31	15.50
		Pakka house	169	84.50

As shown in Table No. 1. about one third (30.50%) of the workers were in the age group of 41 to 50 years and 30.00 per cent workers were in the age group of 51 to 60 years, whereas 26.00 per cent workers were in age group of 31 to 40 years and 13.50 per cent belonged to 20 to 30 years age group. Thirty-nine per cent workers had secondary education, 16.50 per cent workers had higher secondary education, whereas 20.00 per cent workers were graduate and 24.50 per cent were post graduate. More than half (54.50%) anganwadi workers were living in the nuclear family, while 45.50 per cent were living in joint families. Majority (88.50%) of the anganwadi workers had medium level of annual income while only 11.05 per cent anganwadi workers had high level of annual income. Eighty-four per cent of the anganwadi workers were lived in pakka house while 15.50 per cent anganwadi workers were lived in kaccha house. Dave and Mistry (2017) conducted

a study on estimation of health status of tribal farm women of Sabarkantha district and observed lower socio-economic condition of the women. Other researchers who worked on Tribal women of sabarkantha district also found poor socio-economic background i.e., low income, large family size, and poor education level in their study. (Dave and Chaudhary (2019)[a] Dave and Chaudhary (2019)[b]).

Anthropometric measurements

Height and weight

Anthropometric measurements are useful criteria for assessing nutritional status of an individual or groups.

Table 2: Height and weight of respondents (n = 200)

Anthropometric measurement	F	%
Height (cm):		
< 145	5	02.50
145 to 155	154	77.00
> 155	41	20.50
Weight (kg):		
< 40	5	02.50
40 to 50	182	91.00
> 50	13	06.50

The criteria suggested by WHO *et al.,* (1993), as the women with height less than 145 cm and body weight less than 38 kg may be considered to fall in high-risk category was used in the present study. Table No. 2. reveals that the majority (77.00%) of the workers had the height in between 145 to 155 cm and 20.50 per cent workers were found to have height above 155 cm while only 02.50 per cent workers had the height below 145 cm. Looking to the weight of the anganwadi workers it was observed that majority (91.00%) of the workers had body weight in between 40 to 50 kg and 06.50 per cent had body weight above 50 kg while only (02.50%) of the workers had body weight below 40 kg. So, it concluded that only 02.50 per cent anganwadi workers come under high-risk category as per the criteria suggested by WHO *et al.* (1993).

Body Mass Index (BMI)

Table 3: BMI classification of respondents (n=200)

BMI Classification	F	%
Chronic energy deficiency Grade-III severe Undernutrition- <16	03	01.50
Low body weight- 18-20	47	23.50
Normal- 20-25	101	50.50
Obese grade I- 25-29.9	38	19.00
Obese grade –II-30-40	08	04.00
Obese grade –III -> 40	03	01.50

The ratio of weight in (kg)/Height in (m^2) is referred to as Body Mass Index. Respondents were distributed on the basis of BMI in Table No. 3. According to BMI classification (WHO *et al.*, 2007), half (50.50%) of the anganwadi workers were having normal BMI. Only 01.50 per cent anganwadi workers were having severe chronic energy deficiency Grade-III, 23.50 per cent anganwadi workers were having low body weight. Total 24.50 per cent AW were found having different grades of obesity. Out of them 19.00 per cent AW were categorized under obese grade I, 04.00 per cent of the anganwadi workers categorized under Obese grade–II and only 01.50 per cent anganwadi workers were categorized under Obese grade–III. Dave *et. al.* (2019) conducted a similar study in Sabarkantha district nearby Banaskantha and found that their average height, weight and BMI of the respondent women was lower than reference Indian women.

Clinical examination

Table 4: Clinical signs of nutrition deficiency of respondents (n = 200)

Sr. No.	Signs and symptoms		F	%
1	**Hair**			
	(i)	Lack of luster	65	32.50
	(ii)	Thinness and sparseness	36	18.00
	(iii)	Flag sign	01	00.50
	(iv)	Easy pluck ability	25	12.50
	(v)	Normal	73	36.50
2	**Face**			
	(i)	Diffuse depigmentation	137	68.50
	(ii)	Naso-labial dyssebacea	19	09.50
	(iii)	Moon face	00	00.00
	(iv)	Normal	44	22.00

Sr. No.	Signs and symptoms		F	%
3	**Eye**			
	(i)	Night blindness	00	00.00
	(ii)	Pale conjunctiva	71	35.50
	(iii)	Xerosis conjunctiva	58	29.00
	(iv)	Xerophthalmia	00	00.00
	(v)	Bitot's spot	09	04.50
	(vi)	Normal	62	31.00
4	**MouthLips**			
	(i)	Angular stomatitis	01	00.50
	(ii)	Cheilosis	47	23.50
	(iii)	Normal	152	76.00
5	**Tongue**			
	(i)	Oedema	00	00.00
	(ii)	Scarlet and raw tongue	25	12.50
	(iii)	Magenta tongue	02	01.00
	(iv)	Fissure tongue	54	27.00
	(v)	Normal	119	59.50
6	**Teeth**			
	(i)	Mottled enamel	140	70.00
	(ii)	Caries	25	12.50
	(iii)	Normal	35	17.50
7	**Gums**			
	(i)	Spongy bleeding gums	94	47.00
	(ii)	Normal	106	53.00
8	**Nails**			
	(i)	Brittle nails	13	06.50
	(ii)	Ridged nails	35	17.50
	(iii)	Normal	152	76.00

Clinical signs have been assessed as per method recommended by Jelliffe *et al.* (1966) and any deviation from the normal was recorded. From the clinical examination it was noticed from Table No. 4. that Majority (70.00%) of the workers had mottled enamel. Caries in teeth was shown in only (12.50%) of the workers. Fifty-three per cent of the workers had healthy gums. Spongy bleeding gums were shown in 47.00 per cent anganwadi workers. Only 17.00 per cent workers found with ridge nails and only (06.50%) of the workers found with brittle nails. Seventeen per cent workers had follicular hyperkeratosis type-1 due to vitamin-A deficiency and only (01.00%) of the workers had Pellagrous Dermatitis due to niacin deficiency. only (04.50%) of the workers had Bitot's spots. Twenty-seven per cent workers were found with fissure tongue, Spongy bleeding gums were shown in 47.00 per cent anganwadi workers.

Spongy gums

Fissure on tongue

Bitot's Spot of eye

Fig 1: Percent of respondent according to their BMI

Dave and Mistry (2017) conducted similar study and observed clinical signs and symptoms of farm women of Sabarkantha district. They observed lack of lustre in hair, thinness and sparseness, flag sign among farm women. They noted about Diffuse depigmentation on face, angular stomatitis, angular scars and cheilosis on lips amongst the respondents. Molted enamel and dental caries as well as brittle, ridged nails were found among women in their study.

Dietary assessment of the anganwadi workers

Table 5 : Dietary pattern of respondents (n =200)

	Details	F	%
Dietary habit	Vegetarian	146	73.00
	Non-vegetarian	54	27.00
Meal pattern /day	3 Large meals	200	100.00
	5-6 Small meals	00	00.00

It can be seen from the data present in Table No. 5. that majority (73.00%) of the AW were vegetarian and 27.00 per cent workers were non-vegetarian and all the AW exclusively followed 3-large meal pattern. Dave *et. al.,* (2019) conducted a study on food consumption pattern of farm women of Sabarkantha district and reported that 44.00 per cent farm women were vegetarian while 56 .00 per cent were non-vegetarian.

Table 6: Food consumption pattern of respondents (n =200)

Sr. No.	Food products	Daily (%)	Twice a week (%)	Once a week (%)	Monthly (%)	Occasionally or Seasonally (%)	Never (%)
1	**Cereals**	100.00	00.00	00.00	00.00	00.00	00.00
2	**Pulses**	00.00	60.50	39.50	00.00	00.00	00.00
3	**Green Leafy Vegetables**	00.00	63.50	36.50	00.00	00.00	00.00
4	**Other vegetables**	00.00	57.50	42.50	00.00	00.00	00.00
5	**Roots and tubers**	43.50	34.50	15.50	06.50	00.00	00.00
6	**Fruits**	00.00	10.00	67.50	17.50	05.00	00.00
7	**Milk and milk products**	64.50	23.50	12.00	00.00	00.00	00.00
8	**Fats and oils**	100.00	00.00	00.00	00.00	00.00	00.00
9	**Sugar and Confectionary**	83.00	17.00	00.00	00.00	00.00	00.00
10	**Meat and meat products**	00.00	02.00	04.00	15.00	06.50	72.50
11	**Preserved and processed foods**	00.00	16.00	34.50	32.50	10.00	07.00
12	**Fast foods**	00.00	03.00	13.00	28.50	28.50	27.00

Result indicates from Table No. 6. that all AW were consumed cereals on the daily basis and among them, wheat and rice consumed daily by the workers. The vegetables like spinach, coriander leaves, radish leaves, drumstick leaves, fenugreek leaves used by the workers mainly depend upon its seasonal availability, especially in winter. Seasonally available roots like radish, sweet potato was used. Fruits like amla, banana, mango, watermelon and guava were consumed in season. Milk consumption with khichdi was found as a daily meal among most of the anganwadi workers.

Dave *et. al*., (2019) assessed nutritional status and food consumption pattern of tribal farm women of Sabarkantha district and found similar observations**.** It was observed that tribal farm women consume maize followed by wheat and rice as the major cereals. Pulses and dals were taken twice a week while vegetables on daily bases.

Table-7: Coefficient correlation between the independent variables with nutritional status (n=200)

Sr. No.	Personal and socio-economic variables	Coefficient correlation 'r' value
		Nutritional status (BMI)
X_1	**Age**	0.213**
X_2	**Caste**	-0.253**
X_3	**Religion**	0.072 NS
X_4	**Family type**	-0.024 NS
X_5	**Family size**	-0.015 NS
X_6	**Housing condition**	0.144*
X_7	**Education**	-0.141*
X_8	**Annual income**	-0.087 NS
X_9	**Nutritional knowledge**	-0.097 NS

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed). NS = Not Significant.

According to Table No. 7. Age of anganwadi workers showed highly significant positive correlation with nutritional status and housing condition of anganwadi workers showed significant positive correlation with nutritional status.

CONCLUSION

It is concluded from the study that total fifty per cent anganwadi workers of Palanpur taluka had normal nutritional status. only 01.50 per cent anganwadi workers were having severe chronic energy deficiency Grade-III, 23.50 per cent anganwadi workers were having low body weight. Total 24.50 per cent AW were found having different grades of obesity. Out of them 19.00 per cent anganwadi workers were categorized under obese grade I, 04.00 per cent of the anganwadi workers categorized under Obese grade–II and only 01.50 per cent anganwadi workers were categorized under Obese grade –III.

Majority (72.50%) of the anganwadi workers were vegetarian followed a three-meal pattern. Looking to their dietary intake, they were not taking protein rich food i.e., pulses and dals and milk and milk products on regular bases as per ICMR recommendation. Intake was green leafy vegetables was also not as per the ICMR recommendation. Consumption of roots and tubers was higher as compared to green leafy vegetables. It was observed that their diet was not a balanced diet. Age of anganwadi workers showed highly significant positive correlation with nutritional status and housing condition of anganwadi workers showed significant positive correlation with nutritional status.

CONFLICT OF INTEREST

There is no conflict between author.

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