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DIET AND NUTRITIONAL STATUS OF FEMALE FARM LABOUORS

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ABSTRACT

Corruption Diet and nutritional status of 500 female farm labouors (250 urban slum and 250 rural) were assessed by anthropometry, diet and nutrient intake. Diet survey was carried out by using 24 hours recall method. The findings of the study shows that height and weight from both the areas and age group were ranged between 150.38 ± 5.26 to 151.85 ± 6.08 cm and 47.10 ± 8.37 to 51.36± 9.19 kg and they were little bit lesser than NCHS standards while BMI (20.14 ±3.24 to 22.76 ± 3.99kg/m^2) and WHR (0.83 ± 0.09 to 0.86 ± 0.06) were in line with NCHS standards. The values for height, weight, BMI, MUAC, waist circumference, hip circumference and waist – hip- ratio as per area and different food habits of selected female farm labouors ranged between 150.33 ± 5.51 to 151.56 ± 6.09 cm, 48.42 ± 8.70 to 50.56 ± 9.25 kg, 21.4 ± 3.58 to 22.36 ± 3.97 kg/m^2, 25.10 ± 2.73 to 26.14 ± 4.33 cm, 72.22 ± 8.02 to 75.59 ± 9.82 cm, 86.53 ± 7.81 to 89.84 ± 9.07 cm and 0.82 ± 0.05 to 0.86 ± 0.06 respectively. Mean food intake was inadequate as compare to ICMR recommendations in all food groups except sugar and jaggery. Statistically non-significant difference was observed between two age groups .Nutrient intake of female farm labouors was below when compare with RDA for energy, calcium, iron and β-carotene where as equal to or more for protein, fat and Vit.C.

INTRODUCTION

Women are the pivots around whom the family, society and the whole humanity move. The prosperity and growth of a nation depends on the status and development of its women as they constitute half of its population and play crucial role in agricultural and livestock production, household economy and market activities besides performing their domestic chores and reproductive functions. India's first Prime Minister rightly said that 'You can tell the condition of a nation by looking at the status of women'. According to census (2011), out of total population of our country women were 652 million and Maharashtra state contents 54 million women population. Out of the main workers population, female workers comprise 25.51 per cent. It is estimated that 86 percent of the total rural women performing many agricultural operation. Among them, 36 percent have their own land and work in fields, around 50 per cent worked as agriculture labour. However the changed social status of farm workers resulted in additional workload and stress for women resulting in poor health status and form a group highly vulnerable to morbidity and mortality. Poor nutrition among women begins from infancy and continues throughout their life time.

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Information at the household level is important to understand the dietary patterns of women and to assess whether their requirements are met. Such data should be collected periodically so that agricultural strategies to bridge the gap could be planned (Chittemma Rao, 1993). This study was conducted to assess the diet and nutritional status of female farm labouors residing in rural and urban slums from Parbhani district of Marathwada Region.

MATERIALS AND METHODS

The study was carried out to assess the diet and nutritional Status of selected 500 female farm labours i.e. 250 each from urban slums and rural. Equal number of 21-30 and 31-40 years i.e. 125 each in all groups were covered from Parbhani District of Marathwada region of Maharashtra state. A survey was carried out to find general background.A combination of anthropometry, food consumption pattern and nutrient intake were used for assessing the nutritional status of selected female farm labours. Using standard procedures of anthropometry (Jelliffee, 1966 and WHO 1995) measurements of height (cm), weight (kg), mid-upper arm circumference, waist – hip –ratio (WHR) of the selected 500 female farm labours were recorded and compared with NCHS (1977) reference values. The body mass index (BMI) was calculated

by using ICMR Standard formula, (1986).WHR is the ratio of circumference of the waist to that of the hip. The ratio was determined by dividing waist measurement by hip measurement. Food and nutrient intake of all 500 female farm labuors was assessed by using 24 hours recall method for three consecutive days to determine the type and approximate quantity of food stuff consumed by each subject. The data was analyzed statistically to find out the significant difference between groups.

RESULTS AND DISCUSSION

Table 1 explains the general background of selected female labours. The distribution of female farm labours in urban slums and rural was same in both the groups of 21-30 years and 31-40 years. Majority of female farm labours were from nuclear families in urban slums (76.8 per cent) and in rural (67.2 per cent). Overall 72 per cent female farm labours were from nuclear families. Whereas only 28 per cent were from joint families. More number of families were containing 4 - 6 members. Majority of farm labours from rural families (79.2 per cent) were vegetarian. However female farm laborers from urban slums (69.2 per cent) were non-vegetarian. Accordingly more number of women from both the groups, urban slums (61.6 per cent) and rural (55.6 per cent) were belonging to the income groups Rs. 6001-10000/- per month. Further when observed critically it was noted that 17.6 per cent women from rural area were belonging to high income group (> Rs. 10,000). However low percent of selected farm labourer from urban slum (16 per cent) were came under low income group (upto Rs. 6000) per month. On the whole maximum numbers of farm women were belonging to income group Rs. 6001-10,000/- per month. Mittle (2013) and Mishra *et al*. (2012) carried out research in rural areas of Gurgaon and Ambala district revealed that same findings.

Table 2 explains the anthropometric measurement of selected female farm labours as per age and area. The values recorded for height and weight from both the areas and age group were ranged between 150.38 $\pm$ 5.26 to 151.85 $\pm$ 6.08 cm and 47.10 $\pm$ 8.37 to 51.36$\pm$ 9.19 kg and they were little bit lesser than NCHS standards while BMI (20.14 $\pm$3.24 to 22.76 $\pm$ 3.99 kg/m^2) and WHR (0.83 $\pm$ 0.09 to 0.86 $\pm$ 0.06) were equal or more than NCHS standards. These observations were in line with study conducted by Bhoyar (2006) and Bellurkar (2015) on farm women in Parbhani district. When compared statistically only value recorded for BMI and MUAC from urban slum and rural area and 21-30 years group from both the areas showed significant difference while 31-40 years age group showed non-significant difference. The anthropometric measurements of selected female farm labours with respect to areas and food habit is recorded in Table 3. The values for height, weight, BMI, MUAC, waist circumference, hip circumference and waist – hip- ratio as per area and different food habits of selected female farm labours ranged between 150.33 $\pm$ 5.51 to 151.56 $\pm$ 6.09 cm, 48.42 $\pm$ 8.70 to 50.56 $\pm$ 9.25 kg, 21.4 $\pm$ 3.58 to 22.36 $\pm$ 3.97, 25.10 $\pm$ 2.73 to 26.14 $\pm$ 4.33 cm, 72.22 $\pm$ 8.02 to 75.59 $\pm$ 9.82 cm, 86.53 $\pm$ 7.81 to 89.84 $\pm$ 9.07 cm and 0.82 $\pm$ 0.05 to 0.86 $\pm$ 0.06 respectively. Higher value for height was recorded from rural non-vegetarian group where as subject from urban non-vegetarian group recorded highest values for weight, BMI, MUAC, waist circumference and hip circumference. Highest value (0.86 $\pm$ 0.06) for WHR was observed in total non-vegetarian group. On the whole it was noted that all the higher values were recorded from non-vegetarian group. However when studied statistically non-significant difference was noted for height, weight and waist hip ratio. Whereas female farm labouors from urban slum showed significant influence of food habit on BMI, MUAC, waist circumference and hip circumference. Study conducted in coastal areas of Karnataka by Prabhat and Khyrunnisa

Begum (2012) reflects the same findings. The mean food intake of selected female farm labours as per age, area and food habit is presented in Table 4. The consumption of cereals, pulses, green leafy vegetables, roots and tubers, other vegetables, fruits, milk and milk products, nuts and oil seeds, fats and oils, sugar and jaggery ranged between 275.38 to 309.36gm, 32.08 to 5.039gm, 18.39 to 26.69gm, 37.76 to 45.65gm, 29.91 to 32.81gm, 17.06 to 21.30gm, 8.28 to 13.09gm, 89.43 to 103.19ml, 17.81 to 21.48ml, 36.33 to 43.72gm and respectively. Further it is observed from the table that among 21-30 and 31-40 yrs age group consumption of pulses, green leafy vegetables, roots and tubers, other vegetables, milk and milk products, nuts and oil seeds, fats and oils, meat and meat products was near about same. Fruits and sugar and jaggery consumption was little bit more in 31-40 years age group. When noticed critically in comparison with ICMR recommendations the consumption of all the foods, was far below except sugars and jiggery with statistically non-significant difference between two age groups for all food groups. Consumption of pulses, green leafy vegetables roots and tubers nuts and oil seeds, milk and milk products and sugars and jaggery was more in rural areas on the other hand urban female farm laboursconsume more fats and oils and meat and meat products.

It is revealed from the table that intake of different nutrient was better in higher age group (31-40 years) than lower age group (21-30 years).. But non-significant difference was observed between all nutrients except Vit C. When compared with recommended daily allowances except fat and Vit.C all other nutrient intakes were below than recommendation level. Among two areas the nutrient intake was more in rural areas for energy, protein, calcium, iron, vit.C and β-carotene whereas only fat intake was more in urban slum. When observed statistically, highly significant difference between all nutrient intake except vit.C was noted. These findings were hand in hand with study conducted in Parbhani district by Bhoyar, (2006) on working status of women. The study conducted in urban slum in Delhi by Singh *et al.,* (2015) depicted same findings. Intake of energy, protein, calcium, iron and β-carotene showed highly significant difference, where as fat intake show significant difference and vit.C depicted non-significant difference. Similar findings were observed in Vidharbha region (Parsuraman and Rajratnam, 2011) and Parbhani district (Bhalerao *et al.,* 2005) of Marathwada region. When comparison was made between different food habits highly significant difference was observed in consumption of cereals, pulses, green leafy vegetables, roots and tubers, milk and milk products, nuts and oil seeds, sugars and jaggery and significant difference was noted only in consumption of fruits where as consumption of other vegetables, fats and oils showed non-significant difference. According to Prabhat and Khyrunnisa (2012) non-vegetarian food type had effect on consumption of pulses and sometimes on green leafy vegetables. Whereas the regular meal was more or less same in both vegetarian and non-vegetarian group.

Table 1. General background of selected female farm labouors (N=500)

Sr.no.	Particular	Urban (N= 250))	Rural (N= 250))	Total (N=500)
1.	Age Group (yrs)	No. (%)	No. (%)	No. (%)
	21-30	125 (50)	125 (50)	250 (50)
	31-40	125 (50)	125 (50)	250 (50)
2.	Type of Family			
	Joint	58 (23.2)	82 (32.8)	140 (28)
	Nuclear	192 (76.8)	168 (67.2)	360 (72)
3.	Family Size(No.)			
	4-6	223 (89.2)	198 (79.2)	421 (84.2)
	>6	27 (10.8)	52 (20.8)	79 (15.8)
4.	Food Habit			
	Vegetarian	77 (30.8)	198 (79.2)	275 (55)
	Non-vegetarian	173 (69.2)	52 (20.8)	225 (45)
5.	Family Income (Rs. per month)			
	Upto 6000	40 (16)	67 (26.8)	107 (21.4)
	6001-10000	154 (61.6)	139 (55.6)	293 (58.6)
	>10000	56 (22.4)	44 (17.6)	100 (20)

Figure in parenthesis indicates percentage

Table 2. Anthropometric measurements of selected female farm labours as per age and area (N=500)

Particular	Height (cm)	Weight (kg)	BMI	MUAC (cm)	Waist Circumference (cm)	Hip Circumference (cm)	Waist – Hip Ratio (WHR)
Urban Slum	150.38 ± 5.26	49.90 ± 9.12	22.04 ± 3.83	25.85 ± 3.91	74.55 ± 9.42	88.82 ± 8.82	0.86 ± 0.06
21-30	150.6 ± 5.51	48.44 ± 8.85	21.33 ± 3.55	25.39 ± 3.78	72.56 ± 8.55	82.70 ± 8.38	0.85 ± 0.08
31-40	150.16 ± 5.07	51.36 ± 9.19	22.76 ± 3.98	26.03± 3.99	76.54 ± 10.02	90.94 ± 8.78	0.84 ± 0.09
Rural	151.308 ± 5.68	48.92 ± 9.32	21.34 ± 3.74	25.20 ± 3.20	73.85 ± 9.42	87.86 ± 8.82	0.85 ± 0.05
21-30	151.85 ± 6.08	47.10 ± 8.37	20.14 ± 3.24	24.58 ± 2.49	71.55 ± 7.84	85.56 ± 7.51	0.83 ± 0.09
31-40	150.76 ± 5.21	50.75 ± 9.88	22.28 ± 3.97	25.81 ± 3.69	76.15 ± 10.31	90.16 ± 9.43	0.84 ± 0.07
NCHS Standards for working women 20 to 45 years	161 cm	55 kg	21.2	24	-	-	≤ 0.85
't' value							
Urban Vs Rural	1.88^{NS}	1.17^{NS}	2.07*	2.12*	0.82^{NS}	1.21^{NS}	0.91^{NS}
Urban Vs Rural 21-30 yrs	1.70^{NS}	1.22^{NS}	2.13*	1.98*	0.98^{NS}	1.21^{NS}	0.91^{NS}
Urban Vs Rural 31-40 yrs	0.93^{NS}	0.50^{NS}	1.01^{NS}	0.67^{NS}	0.30^{NS}	0.67^{NS}	0.46^{NS}

NS Non significant * Significant at 5%

Table 3. Anthropometric measurements of selected female farm labours as per different food habits (N=500)

Anthropometric Measurements	Urban Slum			Rural			Total		
	Vegetarian (Mean ± SD)	Non-vegetarian (Mean ± SD)	't' value	Vegetarian (Mean ± SD)	Non-vegetarian (Mean ± SD)	't' value	Vegetarian(Mean ± SD)	Non-vegetarian (Mean ± SD)	't' value
Height (cm)	150.47 ± 4.69	150.33 ± 5.51	0.20^{NS}	151.23 ± 5.58	151.56 ± 6.09	0.35^{NS}	151.02 ± 5.35	150.62 ± 5.56	0.81^{NS}
Weight (kg)	48.42 ± 8.70	50.56 ± 9.25	1.75^{NS}	49.01 ± 9.37	48.61 ± 9.23	0.27^{NS}	48.84 ± 9.17	50.11 ± 9.26	1.52^{NS}
BMI	21.33 ± 3.41	22.36 ± 3.97	2.09*	21.40 ± 3.78	21.14 ± 3.58	0.45^{NS}	21.38 ± 3.68	22.08 ± 3.91	2.03*
MUAC (cm)	25.19 ± 2.63	26.14 ± 4.33	2.12*	25.10 ± 2.73	25.58 ± 4.59	0.72^{NS}	25.12 ± 2.70	26.01± 4.39	2.64**
Waist Circumference (cm)	72.22 ±8.02	75.59 ±9.82	2.85**	74.11 ± 9.58	72.84 ± 8.99	0.90^{NS}	73.58 ± 9.20	74.96 ± 9.64	1.61^{NS}
Hip Circumference (cm)	86.53 ± 7.81	89.84 ± 9.07	2.93**	87.86 ± 8.99	87.86 ± 8.99	0.003^{NS}	87.49 ± 8.54	89.38 ± 9.07	2.38*
Waist- Hip Ratio	0.82 ± 0.05	0.84 ± 0.15	1.01^{NS}	0.84 ± 0.09	0.82 ± 0.18	1.04^{NS}	0.84 ± 0.04	0.86 ± 0.06	0.92^{NS}

NS Non significant * Significant at 5% ** Significant at 1%

Table 4. Mean food intake of selected female farm labours as per age area and food habit (N=500)

Particular	Balanced Diet	Age			Area			Food Habit		
		21-30 yrs	31-40 yrs	't' value	Urban Slum	Rural	't' value	Vegetarian	Non- Vegetarian	't' value
Cereals(gm)	360	288.86 ± 49.37	295.88±50.50	1.56 NS	275.38±37.97	309.36±52.28	8.01**	301.90±53.44	280.72±43.78	4.87**
Pulses (gm)	75	40.77±20.39	42.31±20.35	0.84 NS	32.69±17.35	50.39±19.36	10.76**	49.28±19.06	32.08±17.88	10.39**
Green Leafy vegetables (gm)	100	22.96±16.20	22.12±16.48	0.56 NS	18.39±14.26	26.69±17.23	5.86**	24.69±16.36	19.91±15.91	3.30**
Roots & Tubers (gm)	100	41.66±38.72	42.54±30.13	0.28 NS	39.01±35.42	45.19±32.90	2.02*	45.65±39.44	37.76±26.57	2.67**
Other Vegetables (gm)	100	32.06±19.24	30.94±18.11	0.67 NS	30.50±17.24	32.51±19.89	1.20NS	32.81±19.88	29.91±16.92	1.76 NS
Fruits (gm)	100	17.70±19.66	21.08±22.01	1.80 NS	18.81±18.88	19.98±22.90	0.62 NS	21.30±23.39	17.06±17.53	2.32*
Nuts and Oil seeds	-	10.95±6.73	10.42 ± 5.26	0.99 NS	8.28±4.24	13.09±6.48	9.80**	12.00+6.41	9.09±5.03	5.70**
Milk and milk products (ml)	300	95.78±29.20	98.22±28.98	0.93 NS	91.17±19.72	102.83±35.21	4.56**	103.19±31.62	89.43±23.99	5.55**
Fats & Oils (ml)	30	20.16±9.69	19.13±6.99	1.37 NS	21.48±7.92	17.81±8.33	5.03**	19.02±7.50	20.41±9.25	1.81 NS
Sugars &Jaggery (gm)	25	39.29±16.58	41.50±18.18	1.41 NS	38.11±13.10	42.68±20.82	2.93**	43.72±19.76	36.33±13.58	4.96**
Meat and Fish (gm)	30	13.97±21.96	11.96±21.47	1.03NS	23.25±25.16	2.68±10.00	12.00**	23.00±6.41	0	15.70**

NS Non significant *Significant at 5% **Significant at 1%

Table 5. Mean nutrient intake of selected female farm labours as per age, area and food habit (N=500)

Particular	RDA	Age			Area			Food Habit		
		21-30 yrs	31-40 yrs	't' value	Urban Slum	Rural	't' value	Vegetarian	Non- Vegetarian	't' value
Energy (kcal)	2230	1762.38 ± 262.74	1791.47 ±258.87	1.24NS	1743.75 ±192.02	1810.11 ± 313.35	2.85**	1812.39 ±280.89	1733.59 ±231.93	3.44**
Protein (gm)	55	52.90 ±8.57	53.77 ±9.92	1.04NS	50.08 ±7.59	56.59 ± 9.82	8.29**	54.64 ±9.88	51.74 ±8.48	3.54**
Fat (gm)	25	34.43 ±8.85	33.67 ±8.38	0.98NS	35.13 ±8.17	32.96 ± 8.88	2.84**	33.25 ±8.08	35.03 ±9.15	2.28*
Calcium (mg)	600	445.19 ±86.00	448.24 ±90.34	0.38NS	418.16 ±64.04	475.27 ± 99.55	7.62**	462.60 ±93.83	427.30 ±77.63	4.61**
Iron (mg)	21	15.37 ±3.52	15.47 ±3.74	0.31NS	14.19 ± 2.88	16.64 ± 3.91	7.97**	16.15 ±3.85	14.52 ±3.16	5.21**
Vit.C (mg)	40	37.63 ± 19.81	42.05 ± 24.21	2.21*	39.06 ±24.68	40.62 ± 19.82	0.77NS	41.60 ± 23.04	37.69 ± 21.49	1.96NS
β – Carotene (µg)	4800	1570.31 ±920.60	1489.86 ±980.09	0.94NS	1298.57 ±695.73	1761.60 ± 1108.63	5.59**	1629.19 ± 968.00	1408.96 ± 923.05	2.59*

NS Non significant * Significant at 5% ** Significant at 1%

Nutrient intake of selected female farm labouors as per age, area and food habit is presented in Table 5. Mean intake of different nutrients as per age, area and food habit was energy (1733.59 and 1812.39 kcal), protein (50.08 and 56.59 gm), fat (32.96 and 35.03 gm), calcium (418.16 and 475.27 mg), iron (14.19 and 16.64 mg), Vit.C (37.63 and 42.05 mg) and β-carotene (1298.57 and 1761.60 µg) respectively.

Summary and conclusion

Difference in anthropometric measurements was very meager when compare between two areas. Anthropometric measurements like BMI, MUAC and waist-hip-ratio were in line with standard NCHS values. Mean food intake was inadequate as compare to ICMR recommendations in all food groups except sugar and jaggery. Nutrient intake of female farm labouors was below when compare with RDA for energy, calcium, iron and β-carotene where as equal to or more for protein, fat and vit.C.

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