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Health and nutritional status of urban slum and rural female farm labours

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Abstract
A cross sectional study was conducted to assess the health status of 500 female farm labours of Parbhani district of Marathawada region of Maharashtra state. The study revealed that majority of female farm labours were from nuclear families in urban slums (76.8 per cent) and in rural (67.2 per cent). More per cent of rural families (79.2 per cent) were vegetarian whereas urban slums (69.2 per cent) were non-vegetarian. Maximum numbers of farm women were belonging to income group Rs. 6001-10,000/- per month. The mean food intake of cereals, pulses, green leafy vegetables, roots and tubers, other vegetables, fruits, nuts and oil seeds, milk and milk products, fats and oils, sugars and jaggary and meat and meat products was ranged between 275.38 ± 37.97 to 309.36 ± 52.28gm, 32.08 ± 17.88 to 50.39 ± 19.36gm, 18.37 ± 15.66 to 24.69 ± 16.36gm, 37.76 ± 26.57 to 45.19 ± 32.90gm, 29.92 ± 16.92 to 33.44 ± 20.02gm, 17.62 ± 19.15 to 21.30 ± 23.39gm, 8.28 ± 4.28 to 13.09 ± 6.48gm, 89.43 ± 23.99 to 103.19 ± 31.62 ml, 17.81± 8.33 to 21.48 ± 7.92 ml, 36.33 ± 13.67 to 43.72 ± 19.76gm and 2.68 ±10.00 to 23.25 ± 25.16gm respectively. Whereas mean intake of different nutrients were energy (1747.52± 205.59 to 1812.39± 231.93kcal), protein (50.08 ±7.59 to 56.69 ±9.82gm), fat (32.69 ±8.60 to 35.13 ±8.17gm), calcium (418.16 ±64.04 to 475.27 ±99.25mg), iron (14.19 ± 2.88 to 16.64 ±3.91mg), vit. C (36.57 ± 19.67 to 42.05 ±24.21mg), and β-carotene (1298.57 ±695.73 to 1761.60 ±1108.63µg) respectively. Near about 75 to 80 percent surveyed respondents were suffered with one or other grade of anaemia.

Keywords: mean food intake, nutrient intake, per cent adequacy, haemoglobin and anaemia

1. 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 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'. Nutrition is one of the most important factor influencing the quality of human life. The nutritional status of women is the great concerns in the contemporary world, because she plays multiple role for example, biological: reproduction and lactation, health and maintenance of the family, income generation and social roles played by women give rise to serious health and nutritional problem. Anaemia is also a major public health problem worldwide, particularly among women. It has been estimated that more than half of Indian women (55%) are depicted as anaemic by NFHS survey. The priority target groups, who are at high risk, are women of reproductive age (15-49yrs). Further, various factors like poverty, lower literacy, poor living condition, etc make the women more prone to suffer from this disorder. This problem is much more in rural and urban slum area. So that this study aims to know the health and nutritional status of urban slum and rural female farm labours.

2. Materials and Methods
The study was carried out to assess the health 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 food consumption pattern, nutrient intake and per cent adequacy (ICMR 1996 and 1999) [6] were used for assessing the nutritional status of selected female farm labours.
To judge the extent of prevalence of anaemia hemoglobin content was determined by cyanomethemoglobin method (Crossby *et al*. 1954) [3]. The data was analyzed statistically by applying different suitable tests to compare between the two groups and to find out the significant difference between groups.

3. Results and Discussion
Table 1 showed that majority of female farm labours were from nuclear families in urban slum (76.8%) and in rural area (67.2%), while 84.2 percent of families were having 4 to 6 members. The results were also in line with study conducted by Girade and Shambharkar (2012) [4] in Vidharbha region of Maharashtra state. Near about 79 percent female farm labours from rural areas were vegetarian and 69.2 percent were non-vegetarian from urban slum. More than 55 per cent subjects from both groups were belonging to monthly family income of Rs. 6001 to 10,000/. Around 40 percent were educated up to high school and 60 per cent either primary or secondary school educated. The mean food intake of selected female farm labours as per different socio-economic categories is depicted in Table 2. The mean food intake of cereals, pulses, green leafy vegetables, roots and tubers, other vegetables, fruits, nuts and oil seeds, milk and milk products, fats and oils, sugars and jaggary and meat and meat products was ranged between 275.38 ± 37.97 to 309.36 ± 52.28gm, 32.08 ± 17.88 to 50.39 ± 19.36gm, 18.37 ± 15.66 to 24.69 ± 16.36gm, 37.76 ± 26.57 to 45.19 ± 32.90gm, 29.92 ± 16.92 to 33.44 ± 20.02gm, 17.62 ± 19.15 to 21.30 ± 23.39gm, 8.28 ± 4.28 to 13.09 ± 6.48gm,

89.43 ± 23.99 to 103.19 ± 31.62 ml, 17.81± 8.33 to 21.48 ± 7.92 ml, 36.33 ± 13.67 to 43.72 ± 19.76gm and 2.68 ±10.00 to 23.25 ± 25.16gm respectively. Except fats and oils and meat and meat products intake of other foods was found to be good in rural and vegetarian labours. Inadequate consumption was noted for all food groups except and jaggery when compared with ICMR recommended values among all selected female farm labours. Especially the consumption of green leafy vegetables, roots, tubers, other vegetables, fruits, milk and milk products was less. According to Prabhat and Khyrunnisa (2012) non-vegetarian food type had effect on consumption of pulses and sometimes on green leafy vegetables. Considering income of the family difference in consumption of all food groups was very meager. These finding were in line with study conducted in Parbhani district by Bhalerao and Kulkarni (2007).

Table 1: Socio-economic background of selected female farm labours (N=500)

Sr. No.	Particular	Urban (N= 250))	Rural (N= 250))
1.	**Age Group (yrs)**	No. (%)	No. (%)
	21-30	125 (50)	125 (50)
	31-40	125 (50)	125 (50)
2.	**Area**		
	Rural	125 (50)	125 (50)
	Urban	125 (50)	125 (50)
3.	**Type of Family**		
	Joint	58 (23.2)	82 (32.8)
	Nuclear	192 (76.8)	168 (67.2)
4.	**Family Size(No.)**		
	4-6	223 (89.2)	198 (79.2)
	>6	27 (10.8)	52 (20.8)
5.	**Food Habit**		
	Vegetarian	77 (30.8)	198 (79.2)
	Non-vegetarian	173 (69.2)	52 (20.8)
6.	**Family Income (Rs. per month)**		
	Upto 6000	40 (16)	67 (26.8)
	6001-10000	154 (61.6)	139 (55.6)
	>10000	56 (22.4)	44 (17.6)
7.	**Educational level of subject**		
	Primary school education	72 (28.8)	53 (21.2)
	Secondary school education	77 (30.8)	101 (40.4)
	High school education	101 (40.4)	96 (38.4)

Figure in parenthesis indicates percentage

Table-2 Mean food intake of selected female farm labours (N=500)

Particular	Cereals (gm)	Pulses (gm)	Green Leafy vegetables (gm)	Roots & Tubers (gm)	Other Vegetables (gm)	Fruits (gm)	Nuts and Oil seeds	Milk and milk products (ml)	Fats & Oils (ml)	Sugars & Jaggery (gm)	Meat and Fish (gm)
Balanced Diet	**360**	**75**	**100**	**100**	**100**	**100**	**-**	**300**	**30**	**25**	**30**
Age Group (yrs)											
21-30 (N=250)	288.86 ± 49.37	40.77± 20.39	22.96± 16.20	41.66± 38.72	32.06± 19.24	17.70± 19.66	10.95± 6.73	95.78± 29.20	20.16± 9.69	39.29± 16.58	13.97± 21.96
31-40 (N=250)	295.88± 50.50	42.31± 20.35	22.12± 16.48	42.54± 30.13	30.94± 18.11	21.08± 22.01	10.42 ± 5.26	98.22± 28.98	19.13± 6.99	41.50± 18.18	11.96± 21.47
Area											
Urban Slum (N=250)	275.38± 37.97	32.69± 17.35	18.39± 14.26	39.01± 35.42	30.50± 17.24	18.81± 18.88	8.28± 4.24	91.17± 19.72	21.48± 7.92	38.11± 13.10	23.25± 25.16
Rural (N=250)	309.36± 52.28	50.39± 19.36	26.69± 17.23	45.19± 32.90	32.51± 19.89	19.98± 22.90	13.09± 6.48	102.83± 35.21	17.81± 8.33	42.68± 20.82	2.68± 10.00
Food Habit											
Vegetarian (N=275)	301.90± 53.44	49.28± 19.06	24.69± 16.36	45.65± 39.44	32.81± 19.88	21.30± 23.39	12.00+ 6.41	103.19± 31.62	19.02± 7.50	43.72± 19.76	-
Non-vegetarian (N=225)	280.72± 43.78	32.08± 17.88	19.91± 15.91	37.76± 26.57	29.91± 16.92	17.06± 17.53	9.09+ 5.03	89.43± 23.99	20.41± 9.25	36.33± 13.58	28.38 ± 24.36
Family Income (Rs. per month)											
< 6000 (N=107)	290.78 ± 55.48	41.33 ± 11.70	24.60± 17.82	41.18± 17.79	30.83± 18.42	17.62± 19.15	10.20 ± 5.74	94.67± 30.21	19.01 ± 2.89	40.79 ± 8.38	14.25 ± 22.30
6001 to 10000 (N=293)	298.59± 48.71	42.04± 12.82	23.05± 15.85	38.98 ± 20.57	33.44± 20.02	19.96± 21.40	10.76 ± 6.23	97.64 ± 31.55	20.40 ± 3.96	39.05 ± 8.47	12.88 ± 21.75
>10001 (N=100)	290.38± 47.65	40.31± 10.24	18.37± 15.66	43.57 ± 35.37	31.55± 17.85	19.64± 21.65	11.02 ± 5.44	97.93 ± 32.86	18.19 ± 2.59	40.61 ± 8.56	11.97 ± 21.14

Table 3 revealed the data regarding per cent adequacy of food intake of selected female farm labours as per different socio-economic categories. Percent adequacy for mean food intake was better in rural and vegetarian female farm labours than urban slum and non-vegetarian, except fats and oils and meat and meat products. When comparison was made between different categories it was seen that maximum per cent adequacy was found for consumption of sugar and jaggery (145.32 to 174.88 %) followed by cereals (77.97 to 85.93%), pulses (42.77 to 67.18%) and fats and oils (59.36 to 68.03%) whereas minimum for fruits (17.06 to 21.30%) followed by green leafy vegetables (18.39 to 26.69%).

Table 3: Per cent adequacy of food intake of selected female farm labours (N=500)

Particular	Cereals (gm)	Pulses (gm)	Green Leafy vegetables (gm)	Roots & Tubers (gm)	Other Vegetables (gm)	Fruits (gm)	Milk and milk products (ml)	Fats & Oils (ml)	Sugars & Jaggery (gm)	Meat and Fish (gm)
Age Group (yrs)										
21-30 (N=250)	80.23	54.36	22.96	41.66	32.06	17.70	31.92	67.20	157.16	166.00
31-40 (N=250)	82.18	56.41	22.12	42.54	30.94	21.08	32.74	63.76	46.56	39.86
Area										
Urban Slum (N=250)	76.49	43.58	18.39	39.01	30.50	18.81	30.39	71.60	152.44	77.5
Rural (N=250)	85.93	67.18	26.69	45.19	32.51	19.98	34.27	59.36	170.72	8.93
Food Habit										
Vegetarian(N=275)	83.86	65.70	24.69	45.65	32.81	21.30	34.39	63.40	174.88	-
Non-vegetarian (N=225)	77.97	42.77	19.91	37.76	29.91	17.06	29.81	68.03	145.32	94.6
Family Income (Rs. per month)										
< 6000 (N=107)	80.77	55.10	24.60	41.18	30.83	17.62	31.55	63.36	163.16	47.50
6001 to 10000 (N=293)	82.94	56.05	23.05	38.98	33.44	19.96	32.54	68.00	156.2	42.93
>10001 (N=100)	80.66	53.74	18.87	43.57	31.55	19.64	32.64	60.63	162.44	39.90

Mean nutrient intake of selected female farm labours as per different socio-economic situations is presented in Table 4.Mean intake of different nutrients energy (1747.52± 205.59 to 1812.39± 231.93kcal), protein (50.08 ±7.59 to 56.69 ±9.82gm), fat (32.69 ±8.60 to 35.13 ±8.17gm), calcium (418.16 ±64.04 to 475.27 ±99.25mg), iron (14.19 ± 2.88 to 16.64 ±3.91mg), vit.C (36.57 ± 19.67 to 42.05 ±24.21mg), and β-carotene (1298.57 ±695.73 to 1761.60 ±1108.63µg) respectively. It is revealed from table that intake of different nutrients were better in higher age group (31-40yrs), rural and vegetarian respondents. These findings were hand in hand with study conducted in Parbhani district by Bhoyar (2006) on working status of women. There was not much difference in intake of different nutrients with reference to income of family. These findings were in line with Bhalerao and Kulkarni (2007).

Table-4 Mean nutrient intake of selected female farm labours (N=500)

Particular	Energy (kcal)	Protein (gm)	Fat (gm)	Calcium (mg)	Iron (mg)	Vit. C (mg)	β – Carotene (µg)
RDA	**2230**	**55**	**25**	**600**	**21**	**40**	**4800**
Age Group (yrs)							
21-30 (N=250)	1762.38 ± 262.74	52.90 ±8.57	34.43 ±8.85	445.19 ±86.00	15.37 ±3.52	37.63 ± 19.81	1570.31 ±920.60
31-40 (N=250)	1791.47 ±258.87	53.77 ±9.92	33.67 ±8.38	448.24 ±90.34	15.47 ±3.74	42.05 ± 24.21	1489.86 ±980.09
Area							
Urban Slum (N=250)	1743.75 ±192.02	50.08 ±7.59	35.13 ±8.17	418.16 ±64.04	14.19 ± 2.88	39.06 ±24.68	1298.57 ±695.73
Rural (N=250)	1810.11 ± 313.35	56.59 ± 9.82	32.96 ± 8.88	475.27 ± 99.55	16.64 ± 3.91	40.62 ± 19.82	1761.60 ± 1108.63
Food Habit							
Vegetarian (N=275)	1812.39 ±280.89	54.64 ±9.88	33.25 ±8.08	462.60 ±93.83	16.15 ±3.85	41.60 ± 23.04	1629.19 ± 968.00
Non-vegetarian (N=225)	1733.59 ±231.93	51.74 ±8.48	35.03 ±9.15	427.30 ±77.63	14.52 ±3.16	37.69 ± 21.49	1408.96 ± 923.05
Family Income (Rs. per month)							
Up to 6000 (N=107)	1791.69 ± 230.77	53.34 ± 9.82	34.67± 8.38	449.61± 42.53	15.44± 2.34	41.34± 18.76	1647.56± 990.19
6001 to 10000 (N=293)	1764.02± 216.71	54.19 ± 8.40	33.72± 8.79	449.31± 48.60	15.57± 2.93	36.57± 19.67	1551.07± 940.60
>10001 (N=100)	1747.52± 205.59	51.34± 8.90	32.69± 8.60	435.51± 67.60	14.96± 3.16	38.98± 19.90	1342.92± 920.30

Table 5 revealed the data regarding per cent adequacy of nutrient intake of selected female farm labours as per different socio-economic categories. The per cent adequacy for energy, protein fat, calcium, iron, Vit.C and β-carotene was ranged between 79.10 to 81.27 per cent, 91.05 to 102.89 per cent,130. 76 to 140.52 per cent, 69.69 to 79.21 per cent, 67.57 to 79.23 per cent, 91.42 to 105.12 per cent and 27.05 to 36.70 per cent respectively. Overall the per cent adequacy was ranged between 27.05 (β-carotene intake, urban slum) to 140.52 (fat intake, urban slum).

Table 5: Per cent adequacy of nutrient intake of selected female farm labours (N=500)

Particular	Energy (kcal)	Protein (gm)	Fat (gm)	Calcium (mg)	Iron (mg)	Vit.C (mg)	β – Carotene (µg)
Age Group (yrs)							
21-30 (N=250)	79.03	96.18	137.72	74.19	73.19	94.07	32.71
31-40 (N=250)	80.33	97.76	134.68	74.70	73.66	105.12	31.03
Area							
Urban Slum (N=250)	78.19	91.05	140.52	69.69	67.57	97.65	27.05
Rural (N=250)	81.17	102.89	131.84	79.21	79.23	101.55	36.70
Food Habit							
Vegetarian (N=275)	81.27	99.34	133.00	77.10	76.90	104.00	33.94
Non-vegetarian (N=225)	77.73	94.07	140.12	71.21	69.14	94.22	29.35
Family Income (Rs. per month)							
Up to 6000 (N=107)	80.34	96.98	138.68	74.93	73.52	103.35	34.32
6001 to 10000 (N=293)	79.10	98.52	134.88	74.88	74.14	91.42	32.31
>10001 (N=100)	78.36	93.34	130.76	72.58	71.23	97.45	27.97

Prevalence of anaemia in selected female farm labours belonging to different socio-economic groups is presented in Table 6. It is observed from table that near about equal percent subjects from rural (36.4 %) and urban slum (36.8 %) areas were having mild and moderate grades of anaemia respectively. Whereas 26.4 percent and 20.8 percent recorded normal values for haemoglobin and very less percent (3.6% and 7.2%) showed severe grades of anaemia. When comparison was made between two food habits, 25.09 percent vegetarian and 21.77 percent non-vegetarian respondent were found to be normal. The improvement in income level reported increased in percent of normal labours (18.70 to 34.00 %) and decreased in moderate (34.58 to 30 %) and severe (8.41 to 2 %) grade of anaemia. On the whole subjects from high income group (>Rs10, 000) recorded highest (34.00 %) value for normal grade followed by rural (26.4 %) and 31 to 40 years age group (26.4 %). Whereas 42.37 percent secondary educated labours recorded mild grade of anaemia followed by low income group (38.31 %) and 21-30 years of age group (37.6 %).High values for moderate grade of anaemia was recorded by primary educated (43.2%) respondents and low value by high income group (30.00 %). However near about 2 to 8.41 percent female farm labours from different socio-economic categories were having severe grade of anaemia. On the whole prevalence of anaemia on the basis of different socio-economic livings 18.70 to 34 percent respondents were in normal grade these findings were in line with Shrinivasa *et al.* (2014) [9].

Table-6 Prevalence of anaemia in selected female farm labours of different socio-economic groups (N=500)

Particular	Grades of anaemia			
	Normal (>12.0)	**Mild (>10 - 12)**	**Moderate (7 - 10)**	**Severe (< 7)**
Area				
Rural	66(26.4)	91(36.4)	84(33.6)	9(3.6)
Urban	52(20.8)	88(35.2)	92(36.8)	18(7.2)
Age Group (yrs)				
21-30	52(20.8)	94(37.6)	88(35.2)	16(6.4)
31-40	66(26.4)	85(34.00)	88(35.2)	11(4.4)
Food Habit				
Vegetarian	69(25.09)	98(35.63)	99(36.00)	9(3.27)
Non-vegetarian	49(21.77)	81(36.00)	77(34.22)	18(8.00)
Family Income (Rs. per month)				
Up to 6000	20(18.70)	41(38.31)	37(34.58)	9(8.41)
6001-10000	64(21.84)	104(35.51)	109(37.20)	16(5.46)
>10001	34(34.00)	34(34.00)	30(30.00)	2(2)
Educational level				
Primary Educated	27(21.6)	34(27.2)	54(43.2)	10(8.00)
Secondary Educated	40(22.59)	75(42.37)	55(31.07)	7(3.95)
High School Educated	51(25.75)	70(35.35)	67(33.83)	10(5.05)

Figure in parenthesis indicates percentage

Summary and Conclusion

Majority of selected female farm labours were from nuclear families in urban slum (76.8%) and in rural area (67.2%), while 84.2 percent of families were having 4 to 6 members. More than 55 per cent subjects from both groups were belonging to monthly family income of Rs. 6001 to 10,000/-.26.4 percent of rural while 20.8 percent of urban slum subjects showed normal hemoglobin content. In case of food intake maximum percent adequacy was noted for sugar and jiggery and minimum for fruits. However in terms of nutria intake highest percent adequacy was noted for fat intake while lowest for β-carotene. Near about 75 to 80 percent surveyed respondents were suffered with one or other grade of anaemia.

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