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NUTRITIONAL STATUS OF MIGRANT WOMEN LABOURERS IN LUDHIANA

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Migrant population has pivotal role in the economy of Punjab but this group has been ignored at a large extent. The health and well being of this section is vital for the overall development of the state. The study was conducted to determine the nutritional status of migrant women labourers. One hundred and twenty construction and domestic women labourers working in Ludhiana city were selected. All the food groups except cereals were inadequate. The nutrients namely energy, protein, riboflavin, folacin, vitamin B₁₂, vitamin C, iron and calcium were inadequate while fat, thiamine and niacin were adequate in the diets of both the groups. The mean Dietary Diversity Score (DDS) of construction and domestic labourers was 6.2 and 6.5 out of 12, respectively which indicates that the diets consumed by both the groups were less diverse. The mean Food Variety Score (FVS) of both the groups were poor, i.e., 17.08 and 15.98 out of 49, respectively. Mean Adequacy Ratio (MAR%) for construction and domestic labourers was 73.8 and 74.2. The study concluded that the construction and domestic labourers had inadequate dietary intakes which had negatively influenced their nutritional status. There is an urgent need for right policies by the government for this class so that they can afford a much diverse diet to meet their nutrient requirements.

Keywords: Migrant women labourers, Domestic labourers, Construction labourers dietary diversity score, Food variety score

INTRODUCTION

Migration is a universal phenomenon. It is a process through which people move from one permanent place of residence to another, more or less permanent for a substantial period of time. It is a physical and social transaction and also an instrument of cultural diffusion and social integration (Chakroborty, 2001). Migration in India is predominantly short distance with around 60% of migrants changing their residences within their district of birth and 20% within their state (province), while the rest move across the state boundaries. Domestic servants are the largest sector in India after Agriculture and Construction. Most of the employment in domestic workers is migrant labour. There are 20 million domestic workers mostly migrants from rural India. 92% of

the domestic workers are women, girls and children and 20% of these females are under 14 years of age (Madhumathi, 2013).

Punjab is witnessing large inflow of migrant labour from different parts of the country in the recent years. Though labourers from states as far as West Bengal, Bihar, Uttar Pradesh and Orissa now flock to Punjab, a relatively small section of the migrants from other states are professionals and skilled workers, large majority of them are unskilled or semi skilled workers engaged in construction, road works, pipe laying, etc. As Punjab is an agricultural state and for various agriculture related activities, the farmers are dependent on migrant labourers. Therefore, migrant population has pivotal role in the economy of Punjab;

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however, this group has been ignored at a large extent. It has been observed that their enjoyment of the right to health is often limited merely because they are migrants, as well as owing to other factors such as discrimination, language and cultural barriers or their legal status and social security. The health and well being of this section is vital for the overall development of the state. There is need to study the dietary diversity and nutrient adequacy of migrant women labourers so that the policy makers take up the recommendations drawn from the study for better nutritional status of this highly productive community of the state. Dietary diversity has been universally identified as a key element of high quality diets. As dietary factors are associated with increased risk of chronic diseases and under nutrition, local and international dietary guidelines recommend to improve the diversity of the diet. Macro and micro nutrient deficiencies are public health concerns in most developing countries due to monotonous, cereal-based diet that lacks diversity. Furthermore, diverse diet reflects the nutrient adequacy of the diet. Several studies have also shown that the overall nutritional quality of the diet is improved with a diverse diet. Therefore, diversity in the diet is important to meet the requirements for energy and other essential nutrients especially for those who are in the risk of nutrition deficiencies. Therefore, the present study was conducted to assess the nutritional status of Migrant women labourers in Ludhiana.

MATERIALS AND METHODS

A total of 120 migrant women labourers, 60 each from two labour categories namely construction workers and domestic workers were selected from different areas in and around Ludhiana city. A questionnaire was developed to collect information on socio-economic status and nutritional status of the migrant labourers. The information regarding the quantities of food consumed by the labourers was collected by 24-hour recall method for three consecutive days. The nutrient intake was calculated using MSU Nutriguide Computer Programme (Song *et al.*, 1992). The food intake was compared with suggested intakes for moderately active women (ICMR 2010). Dietary Diversity Score (DDS) was calculated using a set of 12 food groups. The choice of 12 food groups was based on outcomes of Food and Nutrition Technical Assistance (FANTA) project (Swindale and Bilinsky, 2006). Food Variety Score (FVS) was calculated using a set of 49 food items. The relation between Food Variety Score (FVS) and dietary adequacy was determined using the classification given by Savige *et al.* (1997). Mean

nutrient Adequacy Ratio (MAR%) was calculated. The mean ratio of intake to recommended intake (each truncated at 100%) of energy, protein, fat and eight micronutrients was calculated as a measure of the adequacy of the overall diet. The students t-test was used to assess the significant difference in varied parameters of construction and domestic labourers.

RESULTS AND DISCUSSION

Food Intake

The daily intake of major food groups by the subjects is shown in Table 1. The cereal intake was adequate in both the groups, the percent adequacy being 135 and 123%, respectively. Rao *et al.* (2010) reported an adequate cereal intake of 402 and 365 g in tribal and rural women in India. The consumption of pulses by both the groups was lesser than the suggested intake of 60 g, the percent adequacy being 67.0 and 63.0, respectively. There was inadequate consumption of green leafy vegetables and fruits in both the groups. The consumption of roots and tubers and other vegetables were also much lower, the adequacy being 59.0 and 66.0% for roots and tubers while 60.0 and 66.0% for other vegetables. Rao *et al.* (2010) also found a lower consumption of vegetables among tribal and rural women in India. The daily consumption of milk and milk products was inadequate in both the groups, the adequacy being 27.0 and 30.0%, respectively. An inadequate consumption

Food Intake, g	Construction Labourers (n = 60)	Domestic Labourers (n = 60)	Overall (N = 120)	Suggested Intake ^a
	Mean ± SD	Mean ± SD	Mean ± SD	
Cereals	452.7±73.3	407.6±81.6	430.1±77.4	330
Pulses	50.1±28.6	47.1±35.0	48.6±31.8	75
Green leafy vegetables	10.0±32.1	18.9±44.0	14.4±38.0	100
Roots and tubers	117.2±77.5	131.9±68.0	124.5±72.7	200
Other vegetables	119.8±49.0	132.9±60.0	126.3±54.5	200
Fruits	2.5±11.4	1.6±7.3	2.1±9.4	100
Milk and milk products	80.4±3.4	90.0±17.0	85.2±10.1	300
Fats and	17.7±2.6	16.8±3.0	17.27±2.9	25
Sugar	6.8±0.6	7.9±2.4	7.3±1.5	30

Note: ^a Suggested intake (ICMR, 2011).

of milk was also reported by Rao *et al.* (2010), the daily consumption being 29 and 80g in tribal and rural women. Similarly, Nagraj *et al.* (2006) also reported the daily consumption of milk as 204 g among female sweepers of Bangalore city. The mean intake of fats and oils and sugars by the construction and domestic women migrant labourers was inadequate, the overall mean percent adequacy being 71 and 67% and 23 and 26 %, respectively. The food intake of the subjects showed inadequacy of all the food groups except cereals. The results showed that much higher intake of cereals may compensate for lesser intake of fats and oils and sugars for energy purpose but the gross deficiency of micronutrients is inevitable in this group due to too less intake of food groups like milk and milk products as well as fruits and vegetables.

Table 2: Daily Intake of Nutrients by Migrant Women Labourers

Nutrients	Construction Labourers (n = 60)	Domestic Labourers (n = 60)	Overall (N = 120)	RDA ^a
Energy, kcal				
Mean ±SD	1814±304	1705±259	1759±286	2230
Protein, g				
Mean ±SD	51.1±8.4	50.3±9.4	50.6±8.8	55
Carbohydrates, g				
Mean ±SD	311.7±47.3	308.9±90.0	310.4±71.6	-
Total Fat, g				
Mean ±SD	40.0±9.2	34.3±7.0	37.2±8.1	25
Thiamine, mg				
Mean ±SD	1.85±0.38	2.38±1.87	2.12±1.37	1.1
Riboflavin, mg				
Mean ±SD	0.74±0.19	0.85±0.79	0.79±0.49	1.3
Niacin, mg				
Mean ±SD	14.8±3.6	15.0±4.3	14.9±4.0	14
Folacin, µg				
Mean ±SD	187±66	206±115	196.6±94	200
Vitamin C, mg				
Mean ±SD	9.88±3.58	11.34±2.36	10.61±2.97	40
Iron, mg				
Mean ±SD	18.4±3.9	18.1±4.6	18.2±4.2	21
Calcium, mg				
Mean ±SD	353.8±94.5	387.9±164.8	370.8±135.0	600
Phosphorus, mg				
Mean ±SD	1363.0±286.3	1307.1±320.0	1334.8±303.5	600

Note: ^aRDA: Recommended Dietary Allowances for moderately active adult women (ICMR, 2010).

Nutrient Intake

The daily intake of energy by the construction and domestic women labourers was 1814 and 1705 Kcal, respectively (Table 2). Inadequate consumption of energy as compared to Recommended Dietary Allowances (RDA) of ICMR (2010) was observed, the adequacy being 81.3 and 76.5%, respectively (Figure 1). There was a non-significant difference in the energy intake of both the groups. Joseph *et al.* (2005) found that 5.4% women workers consumed calories in excess than RDA, 79.31% consumed calories less than that recommended and 80.33% with normal BMI consumed low calories than the required amount. The marginal inadequacy of protein was also observed, the percent adequacy being 93.0 and 92.0 respectively. The mean daily fat intake by the construction and domestic women labourers was 40.0 and 34.3 g, respectively. The intake of fat in both the groups was more than adequate. The

Figure 1: Percent Adequacy of Macro Nutrients Among Women Migrant Labourers

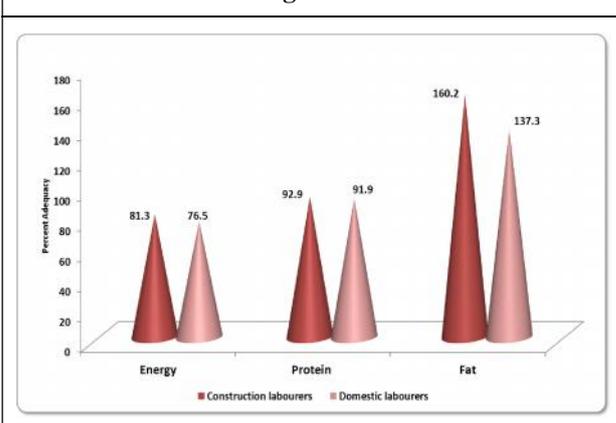
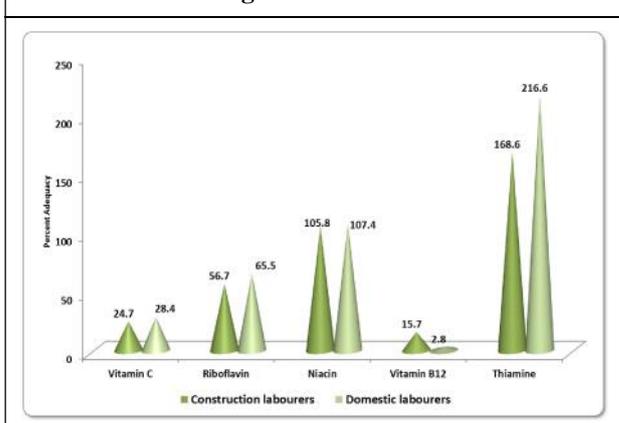
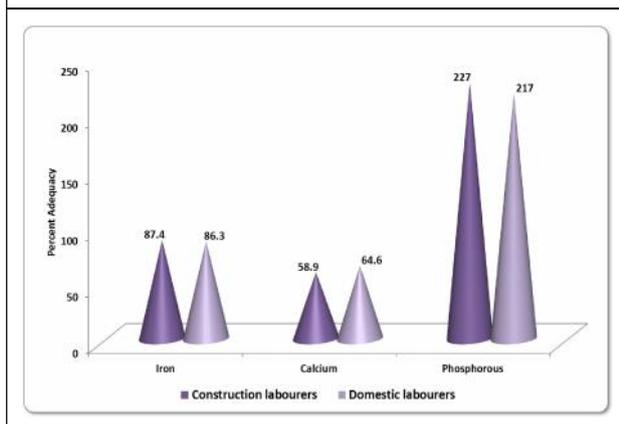


Figure 2: Percent Adequacy of Vitamins Among Women Migrant Labourers



contribution of fat to total energy in both the groups was 19.4 and 18.2%. Joseph *et al.* (2005) observed 86.5% women workers consumed fat more than the RDA, whereas, Rao *et al.* (2010) reported a lower intake, i.e., 21 and 17.3g of fat among tribal and rural women. The intake of thiamine was adequate among construction labourers and in domestic labourers, the adequacy being 169 and 217% (Figure 2). On the other hand, riboflavin was marginally inadequate while the niacin was adequate, the percent adequacy being 56.7 and 65.5% for riboflavin and 105.8 and 107.4% for niacin by construction and domestic labourers, respectively. Folic acid intake was marginally inadequate in construction labourers, the percent adequacy being 93.7% while it was adequate in domestic workers (103%). The intake of vitamin C by the both groups was less than the recommended level, the percent adequacy was found to be 24.70 and 28.4%, respectively (Figure 3).

Figure 3: Percent Adequacy of Minerals Among Women Migrant Labourers



Dietary Diversity Score and Food Variety Score

The Dietary Diversity Score (DDS) is defined as number of food groups consumed over a period of 24 hours. The food group consumed by the subjects during the previous 24-hour period was scored '1' and the food not consumed was given a score '0'. The Dietary Diversity Score (DDS) was calculated using a set of 12 food groups (Swindale and Bilinsky, 2006). The mean Dietary Diversity Score (DDS) of construction and domestic labourers was 6.2 and 6.5 out of 12, respectively which indicates that the diets consumed by both the groups were less diverse (Table 3). Food variety refers to the consumption of a mixture of foods from the entire range food groups (vegetables, fruits, cereals, meat, fish and dairy products). The mean Food Variety Score (FVS)

Table 3: Mean Adequacy Ratio (MAR), Nutrient Adequacy Ratio (NARs), Food Variety Score (FVS) and Dietary Diversity Score (DDS) of Women Migrant Labourers

	Construction Labourers (n = 60)	Domestic Labourers (n = 60)	Overall (N = 120)
NAR%	Mean ± SD	Mean ± SD	Mean ± SD
Energy	81.3±13.6	76.5±11.6	78.9±12.61
Protein	92.9±15.2	92.0±27.2	92.4±21.2
Fats	160.2±84.7	137.3±28.0	148.8±56.3
Thiamine	168.6±35.3	216.6±169.9	276.9±120.2
Riboflavin	56.7±15.3	65.5±61	61.1±38.1
Niacin	105.8±26.0	107.4±31	106.6±28.5
Folic acid	93.7±33.1	102.9±57.2	98.3±45.2
Vitamin B ₁₂	15.7±26.8	2.9±6.0	9.3±16.4
Vitamin C	24.7±8.9	28.4±5.9	26.5±7.4
Iron	87.5±18.7	86.4±22.1	86.9±20.4
Calcium	59.0±15.8	64.6±27.4	61.8±21.6
MAR (%)	73.8±26.7	74.2±34.3	74.1±33.4
DDS			
Range	8-May	7-May	8-May
Mean±SD	6.2±0.3	6.5±0.4	6.4±0.4
FVS			
Range	13-21	21-Nov	21-Nov
Mean±SD	17.1±1.9	16.0±2.30	16.5±20.8

of the construction and domestic women labourers was 17.08 and 15.98 out of 49, respectively. As per the classification given by Savige *et al.* (1997) for FVS, the food variety was poor in both the groups. Kaur (2012) reported the mean DDS among low, medium and high socio-economic groups of rural areas of Punjab was 7.4, 8.1 and 8.4, respectively, whereas the mean FVS was 18.9, 20.3 and 21.7. Mean Adequacy Ratio (MAR) was computed from Nutrient Adequacy Ratio (NAR) of eight micronutrients namely thiamine, riboflavin, niacin, folic acid, vitamin B₁₂, vitamin C, iron and calcium and three macronutrients i.e. energy, protein and fat. MAR% for construction and domestic labourers was 73.8 and 74.2. Kaur (2012) found the MAR of 76.2, 83.6 and 80.8% for women belonging to low, medium and high income households.

The study concluded that the construction and domestic labourers had inadequate dietary intakes which had negatively influenced their nutritional status. All the food groups were inadequate except cereals. The subjects showed poor dietary diversity and food variety which may be due to their poor purchasing power. So, these women should also be included as beneficiaries under various Programs run by Government of India and here is an urgent need for right policies by the government for this class so that they can afford a much diverse diet to meet their nutrient requirements. The labourers should be educated to make right dietary choices from the foods available to them.

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