

FOOD CONSUMPTION PATTERN AND NUTRITIONAL STATUS OF WOMEN LABORERS FROM COASTAL AREAS OF KARNATAKA

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ABSTRACT

Introduction: Food consumption pattern fundamentally reflects nutritional well being of individuals and the meal pattern is defined by the culture and food availability.

Objective: To investigate food consumption pattern and nutritional status of women laborers from coastal regions.

Method: 120 women engaged in beedi (rolled tobacco leaves into a form of cigar) making, mason work, maids etc participated in the study. Standardized interview schedules were used to elicit information such as demography, food purchasing pattern and frequency of consuming different foods. Weight, height, MUAC and WHR were recorded using standard procedures and equipments.

Results: Majority of the participants (79%) was daily wagers (DW) and 21% were on monthly payment (MP). Among the non vegetarian foods (82%), sea foods predominated and consumed daily. Fruit consumption was high (69.4%), curd and greens were obligatory items for lunch and dinner. Type of payment (DW/MP) and diet type (vegetarians/ non vegetarians) was found to exert influence on nutritional status of women, 68.5 and 72% of DW and MP had BMI in normal range, and 14.7% of DW had CED while 24% MP were overweight. Conversely, 22.5% of non vegetarian women had CED and 57.2% women had normal BMI against 81.8% of vegetarian women. Occurrence of obesity was less; however, 84% of all the participants regardless of payment and diet type had WHR > 0.91 indicating prevalence of central obesity.

Conclusion: Nutritional status of women laborers was influenced by the type of payment; while central obesity was found to be a common feature.

Key words: Food pattern, Nutritional status, women laborers, BMI, daily wages,

INTRODUCTION

The Food and Nutrition Board of NAS in coordination with FDA laid importance to develop and integrate data base on food consumption with nutrition and health status of population. Literature suggests that consumption patterns change over time, the major lead for such changes is the development in technology. However caution is also being exercised to control the ill effects of wrong dietary choices through monitoring awareness programs by public health authorities ¹. Food habits are predictors of health and nutritional status. Culture and socio economic status of the population influence food choices and pattern of consumption, while consumption of some food

items is likely to vary according to season and often based on availability and price Education and income have been shown to be important determinants in food intake ²⁻³. Nutritional status was found to be positively related with any level of education and mode of payment ^{4,5}

With respect to food consumption, urban women are reported to have better access to a variety of food items. India is known for its diversity in culture and believes, so also their eating behaviors, especially the people from coastal regions are known to have different dietary habits ⁵. The major differences in dietary pattern are use of fish and sea foods, parboiled rice which is considered to be more nutritious than raw rice. Gruels made from cereals are

commonly consumed as breakfast along with pickle and thick curry. The coastal region selected for study lies adjacent to the highland of the Western Ghats that have thick vegetation, thereby different variety of fruits and vegetables are available. The region is experiencing a rapid growth of water based industries and consequent spurts in population, these characteristic make the region different from other parts of the Indian continent. There are no studies reported in literature regarding the existing dietary practices and their on nutrition status of the coastal population including female population. Therefore, the present study was proposed with the objective to develop data based about dietary practices of women from the coastal belt and correlate with their nutritional and health status especially with respect to the development of obesity.

MATERIALS AND METHODS

The present cross sectional study on 120 women laborers employed in construction industries, cashew factories, Beedi making etc. (Daily wagers and monthly payment) were studied.

Selection of Subjects: The women participants were in the age group of 25-45 years, and active income generating members of the family. Those women who willingly cooperated to provide information required for the study were only included. A consent letter was obtained from each participant (the contents of the letter was read and explained to the women, those who wished to participate made a thumb impression). The study was approved by the HEC, University of Mysore.

Data Collection: Information relating to the family demography (family size, family type, education, employment and wage payment), frequency of food intake was obtained using interview questionnaire. Anthropometric measurements including linear height, body weight, MUAC & WHR were measures according to standard procedures. The equipment used were fiber glass tape to measure height, MUAC, hip and waist circumference and a glass electronic personal scale- PS 250 (Essae-teraoka Ltd.) was used to measure body weight. A food frequency questionnaire was used to obtain frequency of consuming various foods.

Statistical Analysis: Descriptive analysis was used for presenting the data; chi-square analysis

was employed for comparisons between variables.

RESULTS

Table 1: Demographic Details of the Subjects (n=120)

Variables	No (%)
Women Laborers	
Daily wagers	95 (79.2)
Monthly payment	25 (20.8)
Education	
Primary	86 (71.7)
Middle	07 (5.8)
High School	27 (22.5)
Type of family	
Nuclear	68 (56.7)
Joint	45 (37.5)
Extended	07 (5.8)
Size of family no.	
<3	19 (15.8)
4-6	71 (59.2)
>6	30 (25.0)
Type of diet	
Vegetarian	22 (18.3)
Non vegetarian	98 (81.7)

Results of the investigation is presented in tables 1 to 6, Demographic details of selected women laborers is summarized in Table 1. Daily wage for women was 150Rs/day and monthly payment varied from less than Rs 4000-5000. Coolie and Beedi workers were considered as Daily wagers (79.16%); Monthly payments (20.83%) included jobs at cashew factory, tailoring and house maids. Educational level of the participants was poor, 86 and 27% had primary and high school education. Nuclear family system predominated among the selected population (56.66%) followed by joint family (37.5%). Family size varied from ≤ 3 members to > 6 members. 59.2% of the women were from families consisting of 4-6 members.

Table 2 presents the food consumption pattern; essentially similar pattern of consumption was noted among the two groups (type of payment) for most of the food groups. Women from both the groups consumed cereals daily, and pulses were consumed 2 times a week. Except for greens and milk, consumption of other foods exhibited a skewness.

Table 2: Consumption based on wage earning

Variables	Wage earning	Frequency of intake (%)			Chi-square (observed value)	Chi-square (critical value)	P-Value
		Daily	Weekly 1/2	Monthly 2/3			
Cereals	DW	100(95)	0	0	0.134	5.991	0.855 ^{NS}
	MP	100(25)	0	0			
Pulses	DW	13.6(13)	70.5(67)	15.7(15)	0.350	5.991	0.187 ^{NS}
	MP	12.0(3)	76(19)	12.0(3)			
Green Leaves	DW	46.3(44)	50.5(48)	3.2(3)	3.020	5.991	0.221 ^{NS}
	MP	28.0(7)	64.0(16)	8.0(2)			
Fruits	DW	8.4(8)	69.5(66)	22.1(21)	0.535	3.841	0.464 ^{NS}
	MP	20.0(5)	56.0 (14)	24.0(6)			
Milk	DW	97.8(93)	2.2(2)	0	2.187	5.991	0.335 ^{NS}
	MP	100.0(25)	0	0			
Sea Food	DW	1.0(1)	69.5(66)	29.5(28)	0.629	5.991	0.730 ^{NS}
	MP	0	84.0(21)	16.0(4)			
Egg	DW	4.2(4)	68.4(65)	27.4(26)	28.0(7)		
	MP	8.0(2)	64.0(16)	28.0(7)			

Fruits, sea foods and eggs were consumed 2times a week to 2 to 3 time a month. It is noteworthy that intake of greens was appreciable since 28 – 46.3% women consumed daily; higher proportion (46.3% vs. 28%) of DW

women consumed it daily as compared to the MP women. Further it was imperative to compare the differences in pattern of consumption between vegetarians and non vegetarian groups.

Table 3: Frequency of intake as influenced by diet type

Variables	Type	Frequency of intake (%)			X ² (observed value)	X ² (critical value)	P-Value
		Daily	Weekly 1/2	Monthly 2/3			
Cereals	VEG	100(22)	0	0	1.883	5.991	0.390 ^{NS}
	NG	100(98)	0	0			
Pulses	VEG	4.5(1)	81.9(18)	13.6(3)	4.499	5.991	0.105 ^{NS}
	NG	15.3(15)	74.5(73)	10.2(10)			
Green Leaves	VEG	59.1(13)	31.8(7)	9.1(2)	1.631	5.991	0.442 ^{NS}
	NG	39.8(39)	56.1(55)	4.1(4)			
Fruits	VEG	18.2(4)	72.7(16)	9.1(2)	0.457	3.841	0.499 ^{NS}
	NG	18.4(18)	61.2(60)	20.4 (20)			
Milk	VEG	100.0(22)	0	0	--	--	--
	NG	97.9(96)	2.1(2)	0			
Sea Food	VEG	--	--	--	1.1(1)	71.4(70)	27.5(27)
	NG	1.1(1)	71.4(70)	27.5(27)			
Egg	VEG	--	--	--	4.1(4)	72.4(71)	23.5(23)
	NG	4.1(4)	72.4(71)	23.5(23)			

It can be seen from Table 3, the diet type did not seem to influence eating pattern, except that the frequency of intake of pulses was less frequent among non vegetarian. None of the other foods exhibited major differences in intake patterns statistically were therefore non-significant. Prevalence of overweight and obesity was assessed among the group to identify which of the diet type or wage payment affected body weight.

Table 4 presents the data, it can be noted that comparatively less percentage of women from daily wages and the vegetarian groups were overweight against those Non vegetarian. Central obesity was prevalent in 90-100% of women regardless of their BMI. It is evident that central obesity is the characteristic feature of Indian population and a genetic disposition. Except for diet type, none of the other variables exhibited significant association. Among Daily wagers, extremely significant association in BMI

was observed among the diet groups, while WHR was mildly significant.

Table 4: Influence of diet and type of payment on BMI & WHR of the women participants

Variables	Type of payment		Diet type	
	DW(95)	MP(25)	Veg (22)	Nonveg(98)
BMI				
<18	14.7(14)	4.0(01)	0	22.5(22)
18-25	68.5(65)	72.0(18)	81.8(18)	57.2(56)
>25.5	16.8(16)	24.0(06)	18.2(04)	20.3(20)
P-Value	0.299 ^{NS}		0.034*	
WHR				
<0.8	0	0	0	0
0.81-0.91	15.7(15)	04(16)	18.2(04)	16.3(16)
>0.91	84.3(80)	21(84)	81.8(18)	83.7(82)
P-Value	0.968 ^{NS}		0.833 ^{NS}	

* $P < 0.005$

Table 4: Type of payment and diet type correlates with selected food groups and body dimensions

Correlates	Correlation Coefficient "r"
Type of payment	
Greens	0.165 ^{NS}
Fruits	0.157 ^{NS}
Seafoods	0.134 ^{NS}
BMI	0.140 ^{NS}
WHR	0.003**
Diet Type	
Cereals (parboiledrice)	0.156 ^{NS}
Greens	0.190 ^{NS}
BMI	0.203 ^{NS}
WHR	0.108 ^{NS}

** $P < 0.01$

Table 5 represents the Correlation test which was performed on selected variables to identify the relationship between 'type of payment' and 'diet type' to nutritional status and the most common foods consumed. All the variables selected were non significantly associated with diet type and type of payment, wherein WHR had highly significant association with type of payment. Nevertheless reports from other workers have similar observations.

DISCUSSION

Food selection and intake is a multifactorial behavior influenced by affordability and the food culture prevalent. Food studies have

demonstrated that family income positively correlates the frequency and quantity of consuming protective foods and energy foods. Although knowledge about foods and their requirements play an important role in food selection, since there is a close association between food intake behaviors and Nutritional Status of people, it is apparent that such data help to assess risk factors in the development of non communicable disease in the given community¹⁰.

There is abundance of literature available explaining eating patterns, cultural effects in communities across Nations. The human variability is so large that there is a great scope to analyze existing patterns of foods selection and eating in communities in exclusive areas that is untouched¹¹. Specifically to say, the people from the coastal region in India have varied dietary practices. The data is scanty. Further the women population who are bread earners to the family and subsist on low level payments either daily wages or periodic payment form a high proportion of coastal population. It was felt relevant to study their dietary behaviors and related to their Nutritional status and identifies the apparent risk for developing non communicable diseases. Studies have demonstrated that type of foods and their quantity of consumption effect body composition. It is well known that obesity is prevalent in Southeast Asian countries with an etiology of early malnutrition stress. Such conditions are more prevalent among low income population. Our results therefore brought about important information regarding the food behavior and Nutritional status of women, prevalence of central obesity and indicators for risk of developing CVD¹². Highlighting our observation it is relevant to mention that type of payment and diet type did not seem to influence consumption pattern among the selected.

BMI and WHR of selected women were calculated and compared between those practicing Vegetarian and Non vegetarianism. It is worthwhile to mention to proportion of Non vegetarian were more (women who practiced non-vegetarian diet consumed fleshy foods, sea foods and eggs 1-2 times a week) and therefore there is less proportionate distribution among the two groups. Relatively higher percentage of women from Non vegetarian group had BMI indicating of pre obesity in both DW and MP group. Among the DW group the differences

were found to be associated statistically. When WHR was used as a parameter to measure central obesity marked differences were noted. There was a higher inclination towards central obesity with WHR being more than 0.91. Women from normal BMI shifted towards the high WHR from both vegetarian and Non vegetarian groups. It may be right to comment that the central obesity in the study population could be a genetic predisposition¹⁵.

The correlation co-efficient also suggested a position correlation between the type of diet and the pattern of payment to obesity as indicated by BMI and WHR. Our study has indicated that food behavior pattern is strongly associated to the culture and less influenced by either the diet type or pattern of payment. However a subtle influence of pattern of payment does exist. Majority of the women exhibited central obesity suggesting being the characteristic of the population.

CONCLUSION

Technological developments although have changed the lifestyle pattern and elevated the social status of women. Our study reveals no differences in the pattern of eating due to dietary practices or payment. Prevalence of central obesity was a common phenomena in the majority of the selected women regardless of their dietary practices. The study population being the hardworking laborer group, their health should be considered as an important public health issue. Creating awareness and making them self sufficient in modifying food behavior and life style pattern within their accessible environment should be included as an intervention strategy in the regional programmes.

REFERENCE

1. Wahlqvist ML, Savige GS. Intervention aimed at dietary and lifestyle changes to promote healthy aging. *European Journal of Clinical Nutrition*; 2000; 54(3S):148-156.
2. NiharRanjan Rout. Food Consumption Pattern and Nutritional Status of Women in Orissa. *A Rural-Urban Differential*; 2009; 25(3): 179-185.
3. Olayiwola IO, Olusanya EO, Ketiku AO. Nutritional vulnerability, Food habit and anthropometrics indices of the elderly in southwest of Nigeria. *West African Journal of Foods and Nutrition*; 2004;7(1):46-52
4. Sweeting H, Anderson A, West P. Socio-demographic correlates of dietary habits in mid to late adolescence. *European Journal of Clinical Nutrition* 1994;48:736-748.
5. Roos E, Prattala R, Lahelma E, Kleemola P, et al. Modern and healthy?: Socioeconomic differences in the quality of diet. *Eur J Clin Nutr* 1996;50:753-760.(3)
6. Haraldsdottir J, Holm L, Astrup AV, Halkjaer J, et al. Monitoring of dietary changes by telephone interviews: results from Denmark. *Public Health Nutrition* 2001; 4:1287-1295.
7. Moreira PA, Padrao PD. Educational and economic determinants of food intake in Portuguese adults: A cross-sectional survey. *BMC Public Health*; 2004 (4); 4:58.
8. Jacques PF, Tucker KL. Are dietary patterns useful for understanding the role of diet in chronic disease? *American Journal of Clinical Nutrition*; 2001; 73:1-2.
9. Jelliffe D. B. The assessment of the nutritional status of the community, W.H.O. Monograph series 53. World Health Organization, Geneva; 1966.
10. Christina A, Larweh, Patience M, Yeboah Gyemfua, Yaa. Food consumption patterns, dietary quality and health status of expectant mothers: case studies in suburban and rural communities in Ghana; 2002; 7-14(8):26.
11. Trondsen T, Braaten T, Lund E, Eggen A E. Health and seafood consumption patterns among women aged 45-69 years. A Norwegian seafood consumption study. *Journal article*; 2004; 15(2): 117-128
12. Hofmann E. Diet, Nutrition and the Prevention of Chronic Diseases. *Time & Society*; 2007; 13 (2-3): 363-382
13. Kumar D, Mittal PC, Singh S. Socio-cultural and Nutritional Aspects of Fast Food Consumption among Teenagers and Youth. *Indian Journal of Community Medicine*; 2006; 3:31.
14. Slavin JL. Dietary fiber and body weight. *Nutrition*; 2005; 21:411-418.
15. Common Variations in Perilipin Gene, Central Obesity, and Risk of Type 2 Diabetes in US Women; 2008; 5: 1-1065.

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