

# Study Of Chronic Energy Deficiency Among Women Labourers In Rajasthan(India)

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## Citation

N CV. *Study Of Chronic Energy Deficiency Among Women Labourers In Rajasthan(India)*. The Internet Journal of Epidemiology. 2009 Volume 8 Number 1.

## Abstract

**Objective:** To study the prevalence of Chronic Energy Deficiency among women labourers and to study the influence of socio-economic indicators of living standard on health and nutrition.

**Study design:** Descriptive study. **Materials and methods:** The study was carried out 252 women labourers employed on a daily wage basis with 144 of the participants employed as head loaders in construction and 108 employed in gardening and house keeping.

**Results:** 75% women in the construction group and 33.2% women in the gardening and housekeeping group suffered from Chronic Energy Deficiency. Socioeconomic indicators such as female literacy rates, family size and household characteristics such as average family income, educational status and occupation of husband showed a negative trend among the construction labourers as compared to their gardening counterparts.

## INTRODUCTION

India was ranked 132 out of 179 countries in the 2006 Human Development Index (HDI) which is a comparative measure of life expectancy, education and standard of living for countries world wide. It ranks a dismal 128 among 177 countries in 2007-08 in the Gender Development Index which shows the inequalities that exist between men and women in the in terms of leading a long and healthy life, education and a decent standard of living. A recent report on the state of food insecurity in rural India has revealed that more than 27 % of the worlds undernourished population lives in India.

Most nutritional surveillance systems focus on the nutritional problems of infants and children. It was proposed by FAO that nutritional surveillance should begin with simple anthropometric data of adult individuals and should also include analysis of socio-economic variables, which are characteristic of the households to which the individuals belong <sup>1</sup>.

Body Mass Index (BMI) is the most established anthropometric indicator used for assessment of adult nutritional status. BMI is an efficient predictor of morbidity

and mortality rates. BMI is influenced by a number of socio-economic factors <sup>2</sup> including the family size, level of education of head of the family and monthly family income <sup>3</sup>. Energy deficiency is probably best measured in adults by BMI <sup>4</sup>. A task force of the International Dietary Consultancy Group (1992) suggested that BMI can be used as a measure of adult Chronic Energy Deficiency(CED). BMI<18.5 kg/m<sup>2</sup> is used as a practical measure of CED, i.e., a steady underweight state in which the individual is in a state of energy balance <sup>5</sup>.

For a woman, besides being the homemaker, they have to take up gainful employment for economic and other reasons. Since historic times women have been engaged in economically productive activities such as agriculture however in emerging industrial sector they are largely involved in labour intensive, unskilled and low paying work. In case of rural women, lack of on education, on job training and child care facilities makes it harder for them to overcome their inferior occupational status. Hence in the rural economically backward sections of the society this often means taking up work on a daily wage basis where there is no formal contract and hence no protection from dismissal and no social protection against ill health and old

age. Women labourers form an uninvestigated and underrepresented part of the informal labour work force.

The dynamic nature of nutrition-productivity pathway reflects that an increased BMI in a woman means increased work with an increase in income<sup>6</sup> which in turn supplements the family income and hence improved energy intake and more leisure, however if the woman's work and income do not increase the family income, the positive effects on leisure, energy intake and health do not materialize<sup>7</sup>. CED is commonly found in illiterate women from rural areas<sup>8</sup> belonging to low socio-economic status<sup>9</sup> and is associated with low birth weight<sup>10</sup>. Rural women in Asia are among the most disadvantaged people globally in terms of their health-particularly sexual and reproductive health-and access to accurate and appropriate health information and comprehensive, adequate and affordable health services.

Hence the present study was conducted to assess the prevalence of CED among women labourers and in order to study the effect of socio-economic factors on health and nutrition

### **MATERIALS AND METHODS**

The cross-sectional study encompassed 252 women labourers employed on a daily wage basis by private contractors. The whole study was conducted by personal interview based on a questionnaire and anthropometric measurements were carried out at site. Apart from relevant background information, enquiries were made regarding household structure, including the years of schooling, educational status of husband, family size and approximate family income per month.

### **RESULTS AND DISCUSSION**

There were a total of 252 women labourers who were studied. These women labourers were divided into two groups based on their occupational profile. The first group consisted of 144 women employed as head loaders in construction and the second group consisting of 108 women employed in gardening and housekeeping.

### **AGE AND EDUCATIONAL PROFILE**

Maximum number of women (64.3%) belonged to the 21-40 age group .A dismal 83.3% of the women had never been to school while 14.3% had studied up to Class 5 indicating that it was women in the prime working age of 21-40 with minimal or no education who took up employment on a daily wage basis.

The average age in the construction group was 31.5 years and that in the gardening group was 34.7 years. Also the gardening group had more years of schooling as compared to the construction group

### **HOUSEHOLD CHARACTERISTICS**

All women who participated in the study were married and currently staying with their husbands. Average age at marriage was 17 years and average age at first childbirth among the parous women was 18.5 years.

About 58.4% women in the construction group and 55.5% women in the gardening group had more than 3 living children. The average family size was 5.16 for the construction group and 4.6 for the gardening group. Knowledge about contraception was poor among both the groups with adoption of permanent sterilization being the most commonly employed method.

The husband's level of education was poorer in the construction group. Majority (57%)of the husbands were employed as unskilled labourers in construction along with their wives, 16% were self employed in professions such as agriculture and cattle rearing with 27% of the participants reporting their husbands were unemployed. In contrast in the gardening group, the husbands were better educated. While 63% were employed as semiskilled and skilled labourers, 26% were self-employed and 11% were reported to be unemployed.

The approximate average monthly family income from all sources was Rs 3316 for the construction group and Rs 5555 for the gardening group

### **BMI AND CED**

The height was measured in meters and weight was measured in kilograms using standard equipment and body mass index (BMI) was calculated. BMI is a complex phenotype representing the amount of fat mass, lean mass, body build and proportions, and it is likely to be affected by various metabolic processes, hormonal effects, energy intake and expenditure. Assessment of CED per IDECG guidelines was made according to BMI as normal >18.5, Grade 1 17-18.4, Grade 2 16-16.9, Grade 3 <16.

75% women in the construction group and 33.33 % women in the gardening group suffered from CED, the difference being statistically significant.

With only 252 subjects, this is a very limited study. However a fair cross-section of the population is represented

in a working environment within a government enterprise with appropriate minimum wages. In spite of this the study has found evidence of CED prevalent in these people of the low socio-economic class. This has great social and economic implications.

**Figure 1**

Table 1: Body Mass Index

BODY MASS INDEX	CONSTRUCTION (N=144)	GARDENING AND HOUSEKEEPING (N=108)
Normal >18.5	36	102
CED <18.5	108	36

**Figure 2**

Table 2: Characteristics of various labourers

Parameter	Category	Construction (percentage)	Gardening and House Keeping (percentage)
AGE DISTRIBUTION	<20	20.8	11.1
	21-40	70.8	55.6
	41-60	8.4	33.3
YEARS OF SCHOOLING (WIFE)	Nil	95.8	66.7
	Up to class 5	4.2	27.8
	Class 5 and above	-	5.5
YEARS OF SCHOOLING (HUSBAND)	Nil	41.7	22.2
	Up to class 5	33.3	55.6
	Class 5 and above	25	22.2
PARITY	G5 and above	12.5	11.1
	G4	33.4	5.5
	G3	12.5	38.9
	G2	20.8	5.5
	G1	-	22.2
	NIL	20.8	16.8
BMI AND CED	N >18.5	25.0	66.7
	Grade 1 (17-18.4)	29.2	33.3
	Grade 2 (16-16.9)	20.8	-
	Grade 3 < 16	25.0	-

## CONCLUSION

Inequalities in health occur across gender and populations due to differences in socio-economic status and due to inherent cultural practices. The public health implications of these findings are very important since women from rural areas with low educational status are often compelled to take up employment on a daily wage basis. The construction industry, which is labour intensive, provides employment to the most underprivileged.

Illiterate women in rural areas have low BMI (Teller and Yimar 2000). CED is likely to be associated with decreased productivity (Satyanarayan et al 1977), increased morbidity

and mortality (Satyanarayan et al 1991). With regards to reproductive health, CED is positively co-related with low birth weight infants (Naidu et al 1991) and thus with infant mortality.

This calls for the need for community and workplace based nutritional intervention programs in order to improve the health and nutrition of women labourers. Socio-economic empowerment of these women would in turn translate into better health and living standards.

## **ACKNOWLEDGEMENTS**

The author would like to express gratitude to Heavy Water Board Mumbai for their encouragement and cooperation in conducting this study.

She would also like to thank the senior management and staff of Heavy Water Plant Kota who participated in the study.

And is also indebted to the staff at the Occupational Health Centre as their help and cooperation made this study possible

## **References**

1. Sizaret F(1994)Use of BMI for monitoring and surveillance, practical issues .European Journal of Clinical

Nutrition. 48 (suppl.3) p. S185-S189.

2. Nube M, Asenso-Okyere W K, Van der boom G J.(1998) Body mass index as indicator of standard of living in developing countries :European Journal of Clinical nutrition . Feb;52(2):136-44.

3. Bose K, Bisai S, Das P, Dikshit S, Pradhan S.(2007) Interrelationships of income, CED, morbidity and hospitalization among adult male slum dwellers of Midnapore, West Bengal, India. Journal of Biosciences. Sep: 39(5): 787.

4. Kurpad, A V ; Muthayya, S; Vaz, M.( 2005) Consequences of inadequate food energy and negative energy balance in humans. Public Health Nutrition. 8(7A) Supplement:1053-1076..

5. James W P, Ferro-Luzzi A, Waterlow J C.(1988)Definition of CED in adults, Report of a working party of the International Dietary Energy consultative Group. European Journal of Clinical Nutrition;42:969-981

6. Pryer J A, Roger S, Rahman A.(2003) Factor affecting nutritional status in female adults in Dhaka slums. Social Biology. Autumn-winter; 50(3-4): 259-69.

7. Kennedy E, Garcia M.(1994) Body mass index and. economic productivity. European Journal of. Clinical Nutrition. 48: S45-55.

8. Delpuch F, Cornu A, Massamba J P, Traissac P, Maire B.(1994 Nov)Is body mass index sensitivity related to socio-economic status and to economic adjustment? A case study from Congo. European Journal Clinical Nutrition;48 Suppl 3:S141-7.

9. Hong R, Hong R (March 2007). Economic inequality and under nutrition in women: multilevel analysis of individual, household and community levels in Cambodia. Food Nutrition Bulletin;28(1):59-66.

10. Naidu A N, Rao N P(1994 Nov): Body mass index :a measure of nutritional status in Indian population: European Journal Clinical Nutrition;; 48 Suppl 3:S131-40.

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