Health Care for Women International

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/uhcw20

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Available online: 23 Feb 2007

To cite this article: ROHINI GHOSH & PREMANANDA BHARATI (2005): Women's Status and Health of Two Ethnic Groups Inhabiting a Periurban Habitat of Kolkata City, India: A Micro-Level Study, Health Care for Women International, 26:3, 194-211

To link to this article: http://dx.doi.org/10.1080/07399330590917753

Women's Status and Health of Two Ethnic Groups Inhabiting a Periurban Habitat of Kolkata City, India: A Micro-Level Study

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We studied the interrelationship of women's status in terms of so- and its effect on women's health at micro level between two et ic groups in a periurban area of Kolkata City, India. One-h ndred twenty-seven women who belong to a tribal populati (Munda) and 174 women who belonged to a caste popul on (Poundrakshatriya) participated in this study. We fou ignificant differences between various (socioeconomic, demographic, diet intake, and body mass index [BMI]) factors among the two ethnic groups that indicated a better situation for the Pod women. The number of live births, dietary intake and BMI of the women of the two ethnic groups varied differentially among socioeconomic factors, such as women's education and working pattern and poverty level of the household, which are the most recognized measures of women's status.

Thus, the diverse socioeconomic status in various cultural groups in traditional Indian societies reflects a more complex situation of women's status and their health. Different factors were responsible for the differential health status of women, which is culture and location specific. Women who are more educated and employed are not necessarily more healthy, since poverty remains an integral factor, based on which literacy and employment status of women in India is determined. Furthermore, suppression of women is rooted in the very fabric of the Indian society, in tradition, in religious doctrine and practices, within the educational

Received 18 October 2003; accepted 30 September 2004.

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systems, and within the families. Along with education, therefore, income-generating schemes for the women of the economically deprived population should be strengthened to bring equality in overall health status of a region that consists of diverse cultural populations with vast economic disparity.

Ethnic disparity in women's health is the outcome of various biological, sociocultural, and economic factors; and women's status is an important socioeconomic factor by which their health is intricately entwined. Status of women is often described in terms of their income, employment, education, health, fertility, as well as their roles within the family, the community and society. The status of Indian women varies between diverse cultural groups across different regions, as India is a multiethnic country with vast socioeconomic disparity among and between these different cultural populations. The health surveys conducted in India by large-scale studies indicate vast differences in women's health (National Family Health Survey [NFHS], 2000). The specific causes of this health differential is difficult to understand, unless studied at micro level or household level, as there is a complex interaction of these socioeconomic factors affecting health, which are location and culture specific. The effect of these factors on women's health may allow us to understand the reasons for the vast health differentials across the country, as it is the health of the women that determines the health of the children—the future of any country.

Women in the developing countries are mostly engaged in economic activities at each stage in their life cycle during which there are clear-cut biological, economic and cultural roles (McGuire & Popkin, 1990). Women's multiple work responsibilities such as child care, household maintenance, market work (agricultural work, personal work, and wage employment), and community support, usually for long hours in traditional societies, have resulted in health risks including fatigue, malnutrition, chronic back pain and exposure to water-borne diseases (International Center for Research on Women [ICRW], 1989).

Women's status is an important factor because family's lifestyle is controlled more by their resources than by the men (Haddad, Hoddinott, & Alderman, 1997; Kishor & Neitzel, 1996; Smith, 1998). Women's access and control of income and assets are also important determinants of her dietary adequacy (Bisgrove & Popkin, 1996; Hamilton, Popkin, & Spicer, 1984; Quisumbing, Brown, Feldstein, Haddard, & Pena, 1995). Moreover, employment outside the home delays females' age at marriage, fosters economic independence, and enables women to participate in decision making with respect to family planning (Chaudhury, 1976; Mukherjee, 1975; Oppong, 1983; Sathar & Chidambaram, 1984; Shapiro & Tambashe, 1994; Singh & Casterline, 1985; Standing, 1983).

Status of women has strong association with fertility behavior, and education is an important indicator of social status in both developed and developing countries (Anker, 1982; Caldwell, 1979; Hoque & Murdock, 1997; Jain, 1981; Mhloyi, 1994; Nataranjan, 1989; Vaidyanathan, 1989). Education enhances women's employment opportunities and exposes them to a wide range of information on birth control and family planning. Educated women alter the traditional balance of power within the family, leading to changes in decision making and allocation of resources within the household (Caldwell, 1979; Caldwell, Reddy, & Caldwell, 1983).

The position of women in traditional Indian society can be measured by their autonomy in decision making and by the degree of access they have to the outside world. Women's culturally and socially determined roles have direct impacts on their health through a complex web of physiological and behavioral interrelations and synergies that permeate every aspect of their lives. Girls are married young and dominated by in-laws, are prevented from working outside the home, and have poor access to health care and education. According to 1991 Census, only 39% of the Indian females above 7 years of age are literate. In the Northern states, the female literacy level is as low as 21%–26%. In both urban and rural India, the elementary school participation rates of girls from the schedule caste and tribes are low (Kurrien, 1990). A variety of socioeconomic factors are responsible for women's lower educational attainment, including direct costs, the need for female labor, low expected returns and social restrictions. The consequences of women's unfavorable status in India includes discrimination in the allocation of household resources, such as food intake, access to health care and education, as well as marriage at a young age (World Bank, 1996).

The tribal populations concentrated in the remote areas of India present a somewhat different picture. The position of women in tribal societies is better with respect to physical freedom and their ability to control resources (World Bank, 1996). The reason for the cultural differences between various societies in India and the consequences of these differences on Indian women has been the subject of much speculation. Sometimes the cultural differences have been attributed to socioeconomic causes (Bardhan, 1981; Miller, 1981). In a study on the position of North and South Indian women, however, a difference in autonomy was observed between the two groups in spite of similar socioeconomic conditions (Basu, 1989, 1990). There have been studies on the status of women relating to their economic rights, their participation in management and their access to employment, food, health, and so on (Chauhan, 1990; Mann, 1987; Singh, Vyas, & Mann, 1988), but very few studies have focussed on the health of tribal women, especially in a periurban area. With increasing periurban areas in India, it will be interesting to study the health status of the traditional populations like a tribe, an aboriginal group, and a caste, as tribes are mostly found in the remote areas of India.

Examining the contrasts among regional cultural norms in India is one approach to analyze the status of women and its consequences on women's health. Within and across regions, however, socioeconomic differentials may determine the status of women's health. In a diverse and changing world, with increasing periurban areas, due to rapid expansion of cities and immense migration of people of various cultural backgrounds in search of livelihood, factors affecting women's health are less understood. In countries where the status of women is poor and largely determined by their cultural background it would be interesting to investigate the effect of women's status on her health in a transitional environment of a periurban habitat. This study may reveal some answers to the vast health differentials in areas around the world with similar conditions. In view of the above, we conducted a study to determine the effect of the health status of women who belonged to a tribe and a caste population in a periurban area of Kolkata City, India, as measured by their education, employment and poverty level of the household.

METHODOLOGY

Population Survey and Setting

The study was conducted in 1999–2000 (by RG) for the Microenvironment and Health project of the Indian Statistical Institute, Kolkata. Anthropometric measurements were taken from 127 Munda (tribe) and 174 Pod (caste) women from the periurban area of Kolkata City, West Bengal. The periurban community is often heterogeneous with respect to ethnicity, income level, language, and social norms. Periurban areas, which are believed to be in a state of transition from rural to urban health hazards, constitute a challenging environment to study because there is increasing periurban problems in almost all cities of the developing countries, due to their expansion (Birley & Lock, 1999; World Health Organization [WHO], 1991). The study area is located in the periphery of the southern outskirts of Kolkata City, West Bengal, India. The people residing in this region depend largely on agriculture as their main source of livelihood. The area of study is well connected with roads to the city center, though the transport facilities are very poor. The area is heterogeneous with respect to ethnicity and socioeconomic development. The Munda and Pod form the largest segment of the heterogeneous population in the study area and therefore considered for this study. Moreover, the caste and tribes are considered to be the disadvantaged population in terms of overall socioeconomic development (Government of India, 1950). The area of study was selected intentionally on the basis of the distribution and concentration of the Munda and Pod populations. All the households composed of the two ethnic groups were selected for the study. Verbal consent of the villagers was taken before collecting the data for the project, and a local administrative unit was

consulted. The review committee for the protection of research risks to humans of the Indian Statistical Institute, Kolkata, India, found no gross ethical violation during the conduct of the project.

The status of women was determined by her education and working status. Women were classified as literate (went to school) and nonliterate (never went to school). Working women were considered to be those who worked outside (both wage and nonwage laborers) and nonworking women were restricted to household activities only. We found that the Pod families mostly possess land and the women generally work in their own fields to reduce the cost of hired laborers. On the other hand, Munda are mostly landless and the women work in the fields of the landowners as daily wagers. A substantial percentage of the Munda families were below the poverty line, which is calculated as Rs. 401.99 (approximately equivalent to U.S.$9) per person per month (Ninth Five Year Plan, 1999).

Data Collection

The health status of the women was assessed by measuring the height and weight of the women (Weiner & Lourie, 1981). The women's BMI (weight in kilograms divided by height in meters square) was calculated to measure their chronic energy deficiency (James, Ferro-Luzzi, & Waterlow, 1988). We gathered information on the type of diet consumed by the members of the families from the women for one single day. The food for each meal was weighed in a Salter pan-type balance prior to cooking. Members of the families absent or guests present in the households were taken into account. The amount of nutrients for each food item consumed by each family member per consumption unit of the two ethnic groups was calculated from the reference values of Gopalan and colleagues (1993). Ninety-four Munda and 129 Pod families were analyzed for the diet survey.

Information on age, sex, marital status, place of birth, occupation, education of the household members and income of the family were collected with the help of a pretested household schedule from the head of the family, or, where absent, from an elderly member of the household. Pretested fertility schedules were used to gather information from the women on the number of live births, dead children, reproductive wastage, age at marriage and use of family planning practices. Information about women's education, working pattern (type of work and distance of work place), household work, time allocation for various activities and leisure time activity were gathered from the women. Income earned from various sources and income spent on various items was recorded.

Analytical Procedures

The result of the study was described using the mean and standard deviation for the various socioeconomic, dietary and anthropometric variables.

Student's t test was used to find out the difference in means between these factors (dependent and independent variables) of the women in both the ethnic groups. Correlation analysis was done separately for each ethnic group to examine the relationships among various factors such as socioeconomic, demographic, dietary and the BMI of the adult women. Stepwise regression analysis was performed on the continuous variables for each ethnic group to find out the effects of each independent variable such as age, live births, total expenditure, expenditure on food, time spent in leisure, and dietary intake of protein, calories, and fat on the health status as measured by the BMI of the women. All the analyses were done using SPSS 7.5 for Windows. A significance value of 0.5% was considered for this study.

FINDINGS

Socioeconomic, Demographic, Dietary, and Anthropometric Profile of the Two Ethnic Groups

Women's status was measured by her education, work status and poverty level of the household (Table 1) for the two ethnic groups. The literacy level of the Munda women was only 8.66% in comparison to 55.17% of the Pod women. The percentage of working women was 44.88% among the Munda and 44.83% among the Pod women, respectively. A considerable number of the Munda households were below the poverty level (43.31%). The family planning prac-

TABLE 1. Education, Work Status, of Women and Poverty Level of the Family of the Two Ethnic Groups

	Munda		Pod	
Variables	*N*	%	*N*	%
Education				
Literate	11	8.66	96	55.17
Nonliterate	116	91.34	78	44.83
Work status				
Working	57	44.88	78	44.83
Nonworking	70	55.12	96	55.17
Poverty level				
Above poverty level	72	56.69	149	85.63
Below poverty level	55	43.31	25	14.37
Family planning				
Not practicing	88	41.51	75	19.63
Sterilized*	50	23.58	182	47.64
Pills	16	7.55	47	12.30
Abstinence	17	8.02	9	2.36
Traditional**	41	19.34	69	18.06
Total	212	100.00	382	100.00

*This includes therapeutic hysterectomy as well as tubal ligation.
**Use of leaf extract.

TABLE 2. Summary Characteristics of the Women of the Two Ethnic Groups

	Munda			Pod			
Variables	*N*	X	sd	*N*	X	sd	*t*
Demographic							
Live births	127	2.96	1.76	174	1.98	1.14	5.76**
Socioeconomic							
Total activity time	127	1081.57	714.90	174	721.55	208.35	6.21**
Mean income	127	2824.15	1476.08	174	3626.54	1881.26	3.94**
Mean expenditure	127	2250.02	1249.63	174	2727.75	1749.81	2.59**
Diet intake							
Calories	94	2220.60	978.25	129	2461.22	814.41	1.97*
Protein	94	50.53	23.87	129	63.48	36.46	2.96**
Fat	94	18.82	14.75	129	27.42	13.04	4.53**
Iron	94	11.06	14.01	129	16.80	9.71	3.57**
Anthropometry							
Body mass index	127	17.74	1.84	174	19.19	2.25	5.68**

*Significant at 5%.
**Significant at 1%.

tices of the married women of the two ethnic groups suggest that a greater percentage of Pod women practice family planning. Sterilization was more prevalent among the Pod women (47.64%). Traditional family planning practices (like using leaf extracts) is common in both the ethnic groups (Munda 19.34% and Pod 18.06%).

Significant differences in the sociodemographic, dietary and anthropometric values were observed between the Munda and Pod women (Table 2). The number of live births was significantly higher among the Munda women ($p < .01$). Munda women also spend significantly more time in various activities (both household and work related) than the Pod women ($p < .01$). The total income earned by all the household members and expenditure on various items was significantly higher among the Pod women ($p < .01$). Intake of calories, protein, fat, and iron was also found to be significantly higher among the Pod women. Pod women had a significantly higher BMI ($p < .01$) than the Munda women.

Women's Status and Live Births

The number of live births of the literate, nonworking and women of families above poverty level were found to be lower in both the ethnic groups (Table 3). A significant difference in the number of live births was observed between literate and nonliterate ($p < .01$), working and nonworking Pod women ($p < .01$) and women living in the above and below the poverty level households ($p < .01$). In the case of the Munda, a significant difference in the number of live births was observed between the working and nonworking women ($p < .05$).

TABLE 3. Women's Education, Work, Poverty Level and Live Births of the Two Ethnic Groups

	Munda			Pod		
Women's status	Mean	sd	t (df)	Mean	sd	t (df)
Education						
Literate	2.18	0.98	1.54	1.76	1.07	2.92**
Nonliterate	3.03	1.80	(125)	2.26	1.17	(172)
Work status						
Working	3.33	1.97	2.18*	2.31	1.22	3.50**
Nonworking	2.60	1.52	(125)	1.72	1.00	(172)
Poverty level of the household						
Above poverty level	2.76	1.66	1.79	1.85	0.98	4.04**
Below poverty level	3.35	1.90	(125)	2.80	1.61	(172)

*Significant at 5%.
**Significant at 1%.

Women's Status and Diet Intake

Food consumption of calories, protein, fat, and iron; women's education and work status; and poverty level of the family are shown in Table 4. In case of the Munda, the working women were found to consume significantly more protein than their nonworking counterparts ($p < .05$). Among the Pod, literate women consumed significantly more fat than the nonliterate women ($p < .05$). Working Pod women consume a significantly greater amount of calories than their nonworking counterparts ($p < .05$). On the other hand, the nonworking Pod women consume more fat than the working women and the difference in fat consumption is significant ($p < .05$).

Health Status

The health status of the women was measured as chronic energy deficiency (CED) by the gradation of BMI. Chronic energy deficiency was higher among the Munda women (Table 5). Significant difference in the CED was observed between the Munda and Pod women ($p < .001$).

Socioeconomic Factors and Women's Health

The test of significance between various socioeconomic factors and BMI of the Munda and Pod women is shown in Table 6. Literate mothers in both ethnic groups were found to have a higher BMI than the nonliterate mothers and in the case of the Munda, the difference is significant ($p < .05$). In the Pod population, nonworking women and women belonging to above-poverty level households show a significantly higher BMI than the working women ($p < .05$) and women belonging to below-poverty-level households ($p < .01$). In both ethnic groups, women who performed agricultural work and who

TABLE 4. Women's Education, Work Status and Poverty Level of Family and Essential Diet Consumption

Education								
	Munda				Pod			
Food intake	L Mean	ILL Mean	*t*	(df)	L Mean	ILL Mean	*t*	(df)
Calories	1870.17	2257.71	1.13	(92)	2420.14	2522.05	0.696	(127)
Protein	41.96	51.44	1.13	(92)	63.85	62.93	0.14	(127)
Fat	19.51	18.75	0.15	(92)	30.34	23.09	3.21**	(127)
Iron	9.48	11.23	0.36	(92)	18.13	14.84	1.91	(127)
Work status								
	Munda				Pod			
Food intake	W Mean	NW Mean	*t*	(df)	W Mean	NW Mean	*t*	(df)
Calories	2408.10	2069.16	1.69	(92)	2632.83	2321.03	2.20*	(127)
Protein	55.90	46.19	1.99*	(92)	64.51	62.63	0.29	(127)
Fat	17.72	19.71	0.65	(92)	24.92	29.46	1.99*	(127)
Iron	13.76	8.89	1.69	(92)	16.86	16.76	0.59	(127)
Poverty level								
	Munda				Pod			
Food intake	APL Mean	BPL Mean	*t*	(df)	APL Mean	BPL Mean	*t*	(df)
Calories	2244.09	2172.88	0.33	(92)	2479.46	2361.79	0.60	(127)
Protein	50.46	50.68	0.04	(92)	64.48	58.02	0.73	(127)
Fat	19.45	17.55	0.58	(92)	28.13	23.54	1.46	(127)
Iron	11.89	9.38	0.82	(92)	17.08	15.30	0.75	(127)

*Significant at 5%.
**Significant at 1%.
L—literate; ILL—illiterate; W—working; NW—nonworking; APL—above poverty level; BPL—below poverty level.

TABLE 5. Chronic Energy Deficiency (CED) of the Women and chi^2 for Intergroup Differences with Respect to Various Grades of Malnutrition

	Munda		Pod	
Chronic energy deficiency	*N*	(%)	*N*	(%)
Gradation of chronic energy deficiency				
<16.0	17	13.39	14	8.05
16.0–16.9	25	19.69	12	6.90
17.0–18.4	47	37.01	40	22.99
18.5–24.9	38	29.92	108	62.07
Chi^2	$\chi^2 = 32.43^*$, df = 3			

*Significant at 1% level.

TABLE 6. Test of Significance of Difference in Body Mass Index of Munda and Pod Mothers between Various Socioeconomic and Cultural Factors

	Munda				Pod			
Variables	Mean	sd	*t*	df	Mean	sd	*t*	df
Literacy								
Literate	18.91	2.09	2.24*	125	19.32	2.18	1.09	172
Nonliterate	17.63	1.79			18.95	2.33		
Poverty level								
Above poverty level	17.74	2.01	0.02	125	19.31	2.25	2.16*	172
Below poverty level	17.75	1.48			18.27	2.07		
Work status								
Nonworking	17.74	1.73	0.02	125	19.54	2.28	2.50**	172
Working	17.75	1.98			18.69	2.14		
Type of work								
Agriculturalist	18.66	1.53	1.32	55	18.97	2.21	0.18	76
Daily wagers	17.62	2.01			18.78	1.84		
Distance to work								
<4 kms	18.51	1.93	2.62**	55	18.65	2.16	0.80	76
≥4 kms	17.19	1.85			19.53	1.53		
TA[1] in work								
<10 hours	18.31	1.94	1.11	55	18.72	2.21	0.34	76
≥10 hours	17.60	1.98			18.48	1.63		

*Significant at 5% level.
**Significant at 1% level.
[1]Time spent outside for work.

worked fewer than 10 hours outside the home had a higher BMI. Munda women who traveled fewer than 4 kms. to work have a significantly higher BMI than the women who traveled more than 4 kms. ($p < .01$).

Determinants of Women's Health

The matrix of correlation coefficients is presented in Table 7 to determine the association between the various determinants of the women's health. The BMI of the Pod women was strongly and negatively correlated with the number of live births and positively significantly correlated with the amount of fat consumption. Age was positively and significantly correlated with the number of live births among both the ethnic groups. Time spent in leisure was negatively correlated with the amount of calories consumed and positively correlated with fat consumption among the Pod women. Regarding the economic factors, an interesting fact observed was the total amount of money spent was negatively associated with the money spent for food among the Munda women, while it was strongly and positively correlated among the Pod women, which indicates that the Munda spent money on items other than food, while the Pod spent a considerable amount on food. The diet intake of protein, calories and fat are all significantly and positively correlated with one another in both the ethnic groups.

TABLE 7. Pearson's Correlation among Various Dependent and Independent Factors among the Adult Women of the Two Ethnic Groups

	1	2	3	4	5	6	7	8	9
Munda									
1. BMI	1.00	−.174	−.097	.111	.034	.127	.084	.100	−.039
2. Age		1.00	.749**	−.011	−.077	.115	.219*	.099	−.021
3. Live births			1.00	−.029	−.018	.134	.170	.073	−.104
4. Leisure				1.00	.140	−.091	.097	.040	−.026
5. Total expenditure					1.00	−.210*	.082	.073	.058
6. Food expenditure						1.00	.122	.003	−.006
7. Protein							1.00	.869**	.318**
8. Calories								1.00	.314**
9. Fat									1.00
Pod									
1. BMI	1.00	.006	−.199**	.071	.100	−.042	.141	.009	.220*
2. Age		1.00	.622**	.092	.009	.029	.028	−.073	−.007
3. Live births			1.00	−.029	−.110	−.029	.037	.035	−.078
4. Leisure				1.00	.053	.029	−.084	−.175*	.210*
5. Total expenditure					1.00	.446**	−.057	.281**	.022
6. Food expenditure						1.00	.028	−.058	−.099
7. Protein							1.00	.553**	.293**
8. Calories								1.00	.342**
9. Fat									1.00

*Correlation is significant at the .05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

Stepwise regression was used to determine the effect of each independent variable on the BMI of the women of the two ethnic groups (Tables 8 and 9). Total expenditure and leisure remain as significant predictors of BMI in all the models (Table 8) in the case of the Munda women, while age and live births were found to significantly affect the BMI among the Pod women (Table 9). Intake of fat, however, was also found to be predictive of the BMI of the Pod women when leisure and calorie intake were controlled. The effects of the explanatory variables like age, live births, total expenditure, expenditure on food, leisure, and protein, calories, and fat intake are more predictive of the BMI of the Pod women than the Munda, as evident from the R^2 value ($R^2 = 0.122$ in Munda and $R^2 = 0.154$ in Pod).

DISCUSSION

Individuals and families in all societies make culturally informed choices about education and working patterns of women. In traditional societies like India, the circumstances of both individuals and households and access to key social resources are to a large extent structured by family, marriage, and kinship relationships; and girls' enrollment in school is linked to socioeconomic status. Girls from families with little land and with limited resources (such as agricultural laborers) are less likely to be enrolled in school than girls from the landed families (World Bank, 1996). This was observed among the Munda women whose literacy level was only 8.66% in comparison with 55.17% of the Pod women. A significant difference in BMI between the educated and uneducated Munda women was also noticed. Extreme poverty (43.31% household below poverty line) among the Munda may be responsible for low literacy among their women, as girls are forced to leave school early to go to work.

The education and communication efforts should be directed toward improving women's role in decision making and encouraging interspousal communication in family affairs. Women's role in decision making, women's "perceived status" in the community, and interspousal communication are substantially correlated with fertility behavior at the microlevel. Because of cultural and institutional restrictions, including lack of access to family planning services, the choices available to individual women and their ability to carry them out are often very limited (Lloyd, 1991). The Munda women were found to have a significantly higher number of live births than the Pod women, which may be due to a very low practice of family planning, as evident from Table 1. In societies where poverty remains the integral factor, women are forced to work and bear a large number of children. Illiterate, working women and women of below-poverty-level families were found to have a higher number of live births in both the ethnic groups. Prevalence of strong male preference coupled with a belief that the sons will become the economic support in future has accentuated the high fertility performance (Santow, 1996).

TABLE 8. Regression (Stepwise) of the Demographic, Economic, and Dietary Variables on BMI of the Munda Women

Models	Variables	Unstandardized coefficients		Standardized coefficients			R square	Adjusted r square
		β	Std. error	β	t	Sig.		
1	Constant	16.73	1.55	—	10.82	.000	.122	.040
	Age	−.008	.059	−.202	−1.29	.201		
	Live birth	.009	.170	.078	0.51	.614		
	Total exp.	.000	.000	.238	2.14	.035		
	Food exp.	.001	.012	.091	0.85	.399		
	Leisure	.000	.002	.226	2.19	.032		
	Protein	−.000	.017	−.103	−0.47	.643		
	Calories	.000	.000	.209	0.97	.333		
	Fat	−.000	.013	−.066	−.060	.548		
2	Constant	16.90	1.92	—	11.33	.000	.120	.048
	Age	−.008	.058	−.211	−1.37	.174		
	Live birth	.008	.169	.075	0.49	.625		
	Total exp.	.000	.000	.226	2.01	.039		
	Food exp.	.001	.012	.085	0.80	.424		
	Leisure	.000	.002	.220	2.16	.034		
	Calories	.000	.000	.123	1.14	.258		
	Fat	−.001	.013	−.072	−0.69	.506		
3	Constant	16.61	1.36	—	12.18	.000	.117	.057
	Age	−.001	.039	−.156	−1.49	.139		
	Total exp.	.000	.000	.227	2.12	.037		
	Food exp.	.001	.012	.087	0.83	.411		
	Leisure	.000	.002	.219	2.15	.034		
	Calories	.000	.000	.125	1.17	.247		
	Fat	−.001	.013	−.080	−0.75	.457		
4	Constant	16.51	1.35	—	12.20	.000	.112	.061
	Age	−.006	.039	−.152	−1.46	.148		
	Total exp.	.000	.000	.226	2.12	.037		
	Food exp.	.001	.012	.084	0.80	.425		
	Leisure	.000	.002	.222	2.19	.031		
	Calories	.000	.000	.100	0.98	.328		
5	Constant	17.17	1.07	—	16.04	.000	.105	.065
	Age	−.006	.039	−.155	−1.50	.138		
	Total exp.	.000	.000	.203	1.98	.051		
	Leisure	.000	.002	.227	2.26	.027		
	Calories	.000	.000	.106	1.05	.296		
6	Constant	17.50	1.02	—	17.10	.000	.094	.064
	Age	−.005	.039	−.144	−1.40	.165		
	Total exp.	.000	.000	.201	1.96	.053		
	Leisure	.000	.002	.231	2.29	.024		
7	Constant	17.29	1.09	—	15.92	.000	.111	.060
	Age	−.006	.039	−.159	−1.53	.130		
	Total exp.	.000	.000	.203	1.97	.052		
	Leisure	.000	.002	.225	2.22	.029		
	Calories	.000	.000	.130	1.22	.225		
	Fat	.001	.013	−.076	−0.72	.474		

Dependent variable: BMI.

TABLE 9. Regression (Stepwise) of the Demographic, Economic, and Dietary Variables on BMI of the Pod Women

Models	Variables	Unstandardized coefficients		Standardized coefficients			R square	Adjusted r square
		β	Std. error	β	t	Sig.		
1	Constant	15.93	1.56	—	10.20	.000	.154	.097
	Age	.131	.063	.228	2.08	.040		
	Live birth	−.639	.215	−.324	−2.98	.004		
	Total exp.	−.000	.000	−.116	−1.12	.267		
	Food exp.	.000	.000	.110	1.13	.261		
	Leisure	.000	.003	.047	0.51	.611		
	Protein	.001	.007	.109	1.01	.316		
	Calories	−.000	.000	−.038	−0.32	.750		
	Fat	.003	.018	.181	1.89	.062		
2	Constant	15.71	1.40	—	11.20	.000	.153	.104
	Age	.134	.063	.232	2.14	.034		
	Live birth	−.646	.212	−.328	−3.04	.003		
	Total exp.	.000	.000	−.131	−1.41	.160		
	Food exp.	.000	.000	.117	1.23	.220		
	Leisure	.000	.003	.053	0.59	.555		
	Protein	.001	.006	.090	1.00	.318		
	Fat	.003	.017	.173	1.87	.063		
3	Constant	15.76	1.40	—	11.27	.000	.150	.109
	Age	.140	.061	.243	2.28	.024		
	Live birth	−.654	.211	−.332	−3.10	.002		
	Total exp.	−.000	.000	−.132	−1.43	.155		
	Food exp.	.000	.000	.126	1.35	.181		
	Protein	.001	.006	.081	0.92	.361		
	Fat	.003	.017	.188	2.11	.037		
4	Constant	15.96	1.38	—	11.57	.000	.145	.110
	Age	.139	.061	.241	2.26	.025		
	Live birth	−.641	.211	−.325	−3.04	.003		
	Total exp.	.000	.000	−.140	−1.53	.128		
	Food exp.	.000	.000	.134	1.45	.150		
	Fat	.003	.016	.213	2.52	.013		
5	Constant	16.37	1.36	—	12.07	.000	.130	.102
	Age	.149	.061	.258	2.43	.017		
	Live birth	−.677	.210	−.343	−3.22	.002		
	Total exp.	−.000	.000	.086	−1.02	.308		
	Fat	.003	.016	.197	2.34	.031		
6	Constant	16.08	1.33	—	12.12	.000	.123	.102
	Age	.148	.061	.257	2.42	.017		
	Live birth	−.673	.210	−.341	−3.20	.002		
	Fat	.003	.016	.195	2.32	.022		
7	Constant	16.31	1.49	—	10.97	.000	.124	.095
	Age	.145	.062	.251	2.33	.021		
	Live birth	−.662	.213	−.336	−3.11	.002		
	Calories	−.000	.000	−.031	−0.35	.729		
	Fat	.004	.017	.206	2.29	.024		

Dependent variable: BMI.

In addition to their reproductive roles, Indian women fulfill important productive functions throughout their adult life (Chatterjee, 1990). Munda women work as daily wagers in the fields of local landowners, often far from home. The significance of many interactions with work status underlines the complexity of the importance of situational effects. In areas with very different socioeconomic structures mostly in the developing countries like India, where women participate heavily in agricultural production, time constraints are more important. We found that the distance to the Munda women's workplace plays significant role in determining their BMI. Time spent in leisure also showed a significant effect on the BMI of the Munda women, indicating that if Munda women get more time to rest, a better health status in terms of BMI can be achieved. On the other hand, the Pod women perform agricultural work in their own field, nearer to their home to reduce the cost of paying daily laborers for agricultural work. The nonworking Pod women are mostly in the high-income group, possessing sufficient land and means to hire laborers, and a significant difference in BMI was observed between the working and nonworking Pod women.

Along with work status, the economic condition (as measured by the poverty level of the family) also indicates a significant effect on the BMI of the Pod women ($p < .005$). This may be due to the fact that the Pod women, living in the above-poverty-level households, mostly remain at home and can allocate more time toward and consume a better-quality diet. Intake of calories, protein, fat, and iron were found to be higher among the women of above-poverty-level families in both the ethnic groups, indicating that better quality and quantity of food was purchased and consumed by this group. The correlation coefficient, however, shows that total expenditure is negatively correlated with expenditure on food among the Munda. This indicates that expenditure on other items is more important to the Munda population, rather than spending money for food. Stepwise regression analysis also showed a significant effect of total expenditure on the BMI of the Munda women. Illiteracy and cultural beliefs among the Munda may have resulted in this distressing behavior. On the other hand, in case of the Pod population, positive correlation was observed between total expenditure and expenditure on food, which may have resulted in a better health status of the Pod women than the Munda women. The number of live births seems, however, to affect the BMI negatively among the Pod women.

Therefore at microlevel, among the two ethnic groups, factors affecting the health status of women are different. A significant difference in various grades of CED between the Munda and Pod women was noticed. Immense poverty along with illiteracy force the Munda women to work hard and as a result they suffer more from CED due to insufficient food intake and long working hours. It is also clear from the study that although the Munda women are wage earners, their health is poorer than the Pod women, who are mostly nonwage earners. The notion that the tribal women are in a better position appears to be incorrect in this situation.

Thus, the diverse socioeconomic status in various cultural groups in traditional Indian societies reflects a more complex situation of women's status and their health. A large amount of money is spent on the welfare of these scheduled tribe and caste populations in India, yet their health status remains unimproved due to this sociocultural and economic disparity with other populations. Poverty remains the integral factor, which results in low educational attainment among these women. As a result women's status, usually measured by education and employment does not improve their health, as poverty remains an integral factor, based on which literacy and working status of women in India is determined. Furthermore, women's suppression is rooted in the very fabric of the Indian society—in tradition, in religious doctrine and practices, within the educational systems, and within the families. Along with education, therefore, income-generating schemes should be provided to the more economically deprived populations, after intensive survey at the micro or village level. Intensification of these programs should be strengthened for the more vulnerable populations for the overall development of the nation.

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