

Socio-economic status associated with Body mass index of females residing in slum areas

¹Priya Yadav and Achla Gakkhar

Lecturer¹ & Director²

Institute of Home Science, Dr. Bhim Rao Ambedkar University,
Agra-282004 (India)

Abstract

Nutrition is a crucial component of human existence, health, and growth throughout the lifespan. The nutritional status of the slum population is affected due to poor healthcare resources. The study was conducted in urban and rural areas of Agra district. Multi-stage random sampling was used for area selection. Two hundred ten females were selected aged between eighteen to sixty-five years by lottery method. A self-structured questionnaire was used. The association of body mass index with age, education, occupation, family income, and type of family was assessed. The finding of the study explains that a significant association was observed between the association of body mass index with age, education, occupation, and type of family. An insignificant association was found in the association of body mass index with the monthly family income of females.

Key words : Socio-economic status, Body mass index, Slum areas, economic status.

Census of India¹ defines “all clusters of 20-25 or more households, having no roofs or non-concrete roofs, and not having any facility of drinking water, toilets or drainage is considered as slums”. As per the World Cities Report, In developing countries, the slum population gradually increased from 689 million to 880 million, revealing that a quarter of the world’s urban population lives in slum areas. The nutritional status of the slum population is affected due to poor healthcare resources⁹. Nutrition is a crucial component of human existence, health, and growth throughout the

lifespan⁶. Due to factors like low socioeconomic status, poverty, socio-cultural traditions, and differences in household patterns, females are more likely than men to experience undernutrition³. Undernutrition has serious repercussions among females⁵. These effects cross generations and affect people individually, communally, and nationally⁷. The poor nutritional status of females is linked to the nutritional status of the children. National Family Health Survey revealed that children whose mothers are underweight (with a body mass index less than 18.5 kg/m²) are more prone to be stunted,

wasted, and underweight than those children whose mothers have normal Body Mass Index⁸. Socioeconomic factors influence household and community access to nutrient-dense food, increasing the risk of undernutrition¹¹. Socioeconomic status has been demonstrated to have a long-lasting impact on health status. A household's purchasing power and dietary preferences are impacted by insufficient money, which lowers the quality and amount of food consumed³. Socioeconomic status has a detrimental impact on the nutritional status of females and children which results in low body mass index among females and increases the risk of childhood stunting¹².

Objectives

- To assess the socioeconomic status of females.
- To find the association of body mass index with the socioeconomic status of females.

The study was conducted in urban and rural areas of Agra district. Multi-stage random sampling was used for area selection. Two villages and two slum areas were selected. Door to door survey was conducted to collect the data. A list of females was prepared. Two hundred ten women were selected aged between eighteen to sixty-five years by lottery

Table-1. Distribution of females according to socio economic status

S.no.	Socio-economic characteristics		Number (210)	Percentage (%)
1.	Age (yrs)	18-25	96	45.71
		26-35	59	28.09
		36-45	20	9.52
		46-55	19	9.04
		56-65	16	7.61
2.	Education status	Illiterate	69	32.85
		Primary	25	11.90
		High School	42	20.00
		Intermediate	47	22.38
		Graduation	27	12.85
3.	Occupation	House wife	99	47.14
		Labor work	20	9.52
		Service	56	26.66
		Students	35	16.66
4.	Family Income (in Rupees)	Less than 10,000	60	28.57
		11,000-20,000	100	47.61
		21,000-30,000	37	17.61
		31,000-40,000	13	6.19
5.	Type of family	Nuclear	103	49.04
		Joint	83	39.52
		Extended	24	11.42

method. A self-structured questionnaire was used. It consists the information regarding socio-economic characteristics and anthropometric measurements of females. The Kuppuswamy scale was used for assessing the socioeconomic status of the selected respondents. The body mass index of females (fig. 1) was taken and evaluated. The association of body mass index with age, education, occupation, family income, and type of family was assessed.

The above table (table-1) shows the age-wise distribution of females. Out of the total respondents, the majority of them (45.71%) were in the age group of 18-25 yrs, followed by (28.09%) of females in the age group 26-35yrs, and the least (7.61%) were in the age group of 56-65 yrs. The table further depicts that, the majority of the females (32.85%) were

illiterate, followed by (22.38%) were intermediate and the least females (11.90%) obtained education at the primary level. According to the occupation of females, the majority of the females (47.14%) were housewives, 26.66 % of females were engaged in labor work and only 16.66% of females were students. As per the family income of the females, the majority of them (47.61%) were from families having monthly income between Rs. 11,000-20,000, followed by 28.57% of females belonging to families having monthly income less than Rs. 10,000 and the least (6.19%) were seen to belong to families having monthly income between Rs. 31,000-40,000. As per the type of family, mostly females (49.04%) belonged to nuclear families, followed by (39.52%) were belonged to joint families and only 11.42% belonged to the extended family.

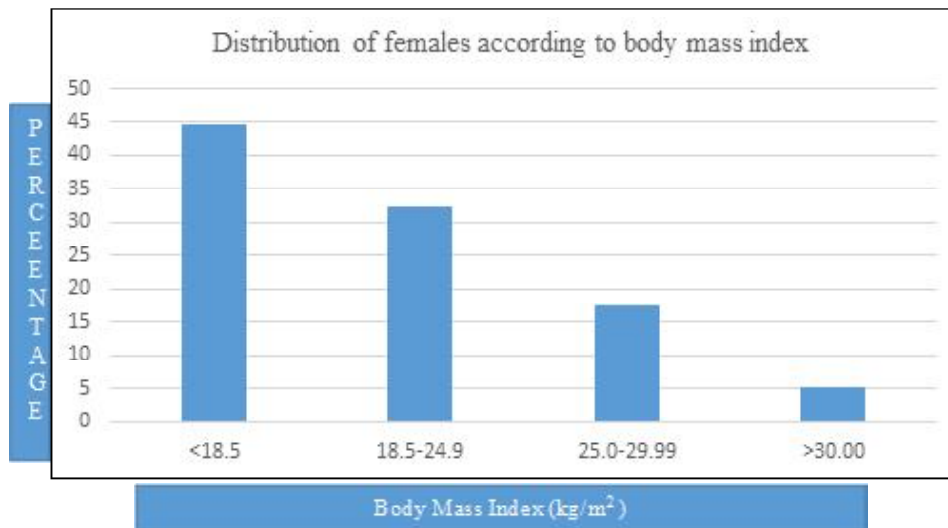


Figure 1: Distribution of females according to body mass index

The figure 1. highlights the distribution of females according to body mass index. Out of the total respondents, the majority of the females (44.76%) were undernourished, followed by (32.38%) of females who had normal body mass index and only (5.23%) of females who were obese.

Table-2. Association of body mass index with the age group of females

Age (yrs)	N	Bmi Classification				X ²	df	p-value
		<18.5 (Underweight)	18.5-24.9 (Normal)	25.0-29.99 (Overweight)	>30.00 (Obese)			
		N (%)	N (%)	N (%)	N (%)			
18-25	96	52(55.91)	33(47.82)	11(29.72)	0(0.00)	52.79	12	.000
26-35	59	23(24.73)	20(28.98)	9(24.32)	7(63.63)			
36-45	20	7(7.52)	3(4.34)	10(27.02)	0(0.00)			
46-55	19	2(2.15)	6(8.69)	7(18.91)	4(36.36)			
56-65	16	9(9.67)	7(10.14)	0(0.00)	0(0.00)			
Total	210	93(44.28)	69(32.85)	37(17.61)	11(5.23)			

The association of body mass index with the age group of females is presented in Table 2, it is clear from the table that the majority of the females (55.91%) were underweight between the age group of 18-25years, followed by 24.73% females were underweight between the age group of 26-35years and least number of females 2.15% were underweight (Table-2). According to the normal range of body mass index, 47.82% of females between the age group of 18-25years, while 28.98% of females between the age group of 26-35years and only 4.34% between the age group of 36-45years

had normal body mass index. As per the overweight status of the females, most of the 29.72% females were overweight between the age group of 18-25years, followed by (27.02%) females were overweight between the age group of 36-45years and least number of females (24.32%) were overweight between the age group of 26-35years. In above data, it seems that lowest number of females were obese. Significant association was observed between the association of body mass index with the age group of females ($X^2 = 52.79$).

Table-3. Association of body mass index with the education status of females

Educational status	N	Bmi Classification				X ²	df	p-value
		<18.5	18.5-24.9	25.0-29.99	>30.00			
		N (%)	N (%)	N (%)	N (%)			
Illiterate	69	32 (34.40)	16(23.18)	12(32.43%)	9(81.81)	45.94	12	.000
Primary	25	2(2.15)	17(24.63)	4(10.81%)	2(18.18)			
High School	42	20(21.50)	9(13.04)	13(35.13%)	0(0.00)			
Intermediate	47	28(30.10)	14(20.28)	5(13.51%)	0(0.00)			
Graduation	27	11(11.82)	13(18.84)	3(8.10%)	0(0.00)			
Total	210	93(44.28)	69(32.85)	37(17.61%)	11(5.23)			

Table-3 explains the association of body mass index with the education status of females and found that out of the total respondents, most of the illiterate females (34.40%) reported that they were underweight, followed by (30.10%) underweight females who had education at intermediate level and only 21.50% of the females who had education at high school level. Normal body mass index was seen among females at the primary level, and an almost similar finding was seen among illiterate females. Followed by 20.28% of females who reported normal body mass index at the intermediate level and the lowest number of females (13.04%) who had normal body mass index at high school level. As per the education status of the overweight females, those who had an education at the high school level (35.13%) were mostly overweight,

followed by (32.43%) of illiterate females who were overweight and only (8.10) of graduate females who were overweight. In the case of obesity, the lowest number of illiterate females (81.81%) of females were obese. A significant association was found between the association of body mass index with the education status of females ($X^2=45.94$). Educational status affects the nutritional status of females.

Smith and Subramanian¹⁰, analyzed in their study that females aged between 15 to 49 years had no education, and they are more prone to undernutrition. Similarly, Kamal, *et. al.*,⁴ showed that females with no education were 1.78 times more likely to be underweight compared to those with post-secondary education.

Table-4. Association of body mass index with the monthly family income of females

Monthly family Income(Rs.)	Bmi Classification					X ²	df	p-value
	N	<18.5	18.5-24.9	25.0-29.99	>30.00			
		N (%)	N (%)	N (%)	N (%)			
Less than 10,000	61	28(30.10)	17(24.63)	16(43.24)	0(0.00)	13.87	6	.031
11,000-20,000	136	62(66.66)	45(65.21)	18(48.64)	11(5.23)			
21,000-30,000	13	3(3.22)	7(10.14)	3(8.10)	0(0.00)			
	210	93(44.28)	69(32.85)	37(17.61)	11(5.23)			

Table 4 reveals the association of body mass index with the family income of females, out of the total respondents, the majority of the underweight women (66.66%) belonged to families who had family income between Rs. 11,000-20,000. Followed by (30.10%) of underweight females who had a family income of less than 10,000 rupees. Only (3.22%) of underweight females had a family income between 21,000-30,000 rupees. According to

the normal body mass index of females, the majority (65.21%) of females had a family income between Rs. 11,000-20,000. However, (24.63%) of females had a family income of Less than 10,000 rupees, and very few females (10.14%) had a family income between 21,000-30,000 rupees. Distribution of females according to overweight status, Monthly income of 48.64% and 43.24% females between Rs. 11,000-20,000 and Less than

10,000 rupees. The least number of females (8.10%) had a monthly family income between 21,000-30,000 rupees. The monthly family income of 5.23% of obese females was rupees 11,000-20,000. The insignificant association was depicted as the association of body mass

index with the monthly family income of females ($X^2=13.87$). Smith and Subramanian, (2006) explained in their study that 96% of Indian women were undernourished in low socioeconomic status than those of higher socioeconomic status (Table-4).

Table-5. Association of body mass index with the occupation of females

Occupation	Bmi Classification					X ²	df	p-value
	N (%)	<18.5	18.5-24.9	25.0-29.99	>30.00			
		N (%)	N (%)	N (%)	N (%)			
Housewife	99	51(54.83)	24(34.78)	24(64.86)	0(0.00)	51.98	9	.000
Labor work	20	0(0.00)	16(23.18)	2(5.40)	2(18.18)			
Service	56	23(24.73)	17(24.63)	7(18.91)	9(81.81)			
Students	35	19(20.43)	12(17.39)	4(10.81)	0(0.00)			
	210	93(44.28)	69(32.85)	37(17.61)	11(5.23)			

Table-5 highlights the association of body mass index with the occupation of females, out of the total respondents, the majority of the underweight females were housewives (54.83%), followed by underweight women were engaged in service (24.63%) and the least number of underweight females (20.43%) were students. According to the normal body mass index, findings reveal that

34.78%, 24.63% & 23.18% of females were housewives, engaged in service and labor. As per the overweight criteria, 64.86 %, 18.91% & 10.81% of females were housewives, engaged in service, and students. Obesity was prevalent only in 5.23% of females. Significant association was observed between the association of body mass index with the age group of females ($X^2= 51.98$).

Table-6. Association of body mass index with the type of family of females

Type of family	Bmi Classification					X ²	df	p-value
	N (%)	<18.5	18.5-24.9	25.0-29.99	>30.00			
		N (%)	N (%)	N (%)	N (%)			
Nuclear	103	47(50.53)	33(47.82)	23(62.16)	0(0.00)	19.92	6	.003
Joint	83	35(37.63)	27(39.13)	10(27.02)	11(100.00)			
Extended	24	11(11.82)	9(13.04)	4(10.81)	0(0.00)			
	210	93(44.28)	69(32.85)	37(17.61)	11(5.23)			

Table-6 reveals the association of body mass index with the type of family of females, Majority of the underweight females (50.53%), normal body mass index females (47.82%), and overweight women (62.16%) belonged to the nuclear family, followed by (37.63%) underweight females, (39.13%) females had normal body mass index and (100%) obese females belonged to joint family and least number of underweight females (11.82%), (13.04%) females had normal body mass index and (10.81%) females belonged to extended family. A significant association was found between the association of body mass index with the education status of females ($X^2=19.92$).

On the basis of results obtained from the present study entitles, “Socio-economic status associated with body mass index of females residing in slum areas” It can be concluded that a significant association was observed between the association of body mass index with age, education, occupation, and type of family. An insignificant association was found in the association of body mass index with the monthly family income of females.

References :

1. Census of India. (2011). Ministry of Home affairs, Government of India. Retrieved from <http://www.censusindia.net/>
2. Hassan, F., M. Asim, S. Salim, and A. Humayun (2017). *International Journal for Equity in Health*, 16(1): 122.
3. Haseen, F. (2010). Malnutrition among ultra poor women in Bangladesh: Malnutrition among Bangladeshi Women in Ultra Poor Households: Prevalence and Determinants. Germany: LAP Lambert Academic Publishing, p-52.
4. Kamal, S.M.M., C.H. Hassan, and G.M. Alam (2015). *Journal of health, population, and nutrition*, 33(1): 92-105.
5. Melaku, Y.A., G. A. Zello, T.K. Gill, R.J. Adams, and Z. Shi, (2015) *Archives of Public Health*, 73(1): 44.
6. Nigatu, M., T.T. Gebrehiwot, and D.H. Gemeda (2018). Household Food Insecurity, Low Dietary Diversity, and Early Marriage Were Predictors for Undernutrition among Pregnant Women Residing in Gambella, Ethiopia. *Advances in Public Health*, 10.
7. Reinhardt, K. and J. Fanzo (2014). *Frontiers in nutrition*, 1: 13.
8. Singh, D.P., R.A. Biradar, and S.S. Halli, and L.K. Dwivedi, (2018) *Child Youth Services Review*, 1–9.
9. Sminkey, P. V. and J. Le, Doux, (2016). *Professional Case Management*, 21(4): 193–198.
10. Smith, G.D. and S.V. Subramanian, (2006). *The American Journal of Clinical Nutrition*, 84(3): 633-40.
11. Tigga, P.L., J. Sen, and N. Mondal, (2015). *Ethiopian Journal Health Sciences*, 25: 63–72.
12. Vir, S. C. (2016). *Maternal & Child Nutrition*, 12: 72-90.