



## RESEARCH PAPER

# A study on assessment of nutritional status of females residing in selected slum area of Varanasi

Ishita Mishra\* and Akriti Mishra<sup>1</sup>

Mahatma Gandhi Kashi Vidyapith University, Varanasi (U.P.) India (Email : [ishitamishra@gmail.com](mailto:ishitamishra@gmail.com))

**Abstract :** Women are an integral part of the society they are nucleus around which the atmosphere of the society revolves. Their roles are very important for agriculture and ranching, household economy and market activities besides their domestic chore and reproductive function. The present study was conducted on the nutritional status of females (20-40 years) residing in slum area of Varanasi. An interview method was used to collect the general information (regarding age, marital status, family size etc.). Socio-economic status of the respondents was assessed by also interview and compared with B.G. Prasad socio economic status scale. Socio economic data revealed that majority of the respondents belonged to lower middle class (Grade VI). Anthropometric measurement of an individual were recorded by research and conclude that the BMI of the respondents was normal range when BMI compared to WHO classification of BMI and WHR of the respondents was 0.85. According to dietary assessment the diet of the respondents was deficit in energy, protein and iron whereas the intake of fat and carbohydrate were found to be higher. The dietary intake of respondents were also compared with SES and the result revealed were as same as with 24 H dietary recall method and also indicated that the heavy worker who belonged to upper SES were consumed high energy, protein and carbohydrate diet.

**Key Words :** Socio-economic status, Nutritional adequacy ratio, Body mass index

**View Point Article :** Mishra, Ishita and Mishra, Akriti (2023). A study on assessment of nutritional status of females residing in selected slum area of Varanasi. *Internat. J. agric. Sci.*, **19** (1) : 296-300, DOI:10.15740/HAS/IJAS/19.1/296-300. Copyright@2023: Hind Agricultural Society.

**Article History :** Received : 24.09.2022; Revised : 22.11.2022; Accepted : 23.12.2022

## INTRODUCTION

India's first prime minister said that, You can tell the condition of a nation by looking at the status of women. The word "slum" is often used to describe informal settlements within cities that have inadequate housing and squalid, miserable living conditions. They are often overcrowded, with many people crammed into very small living spaces. These settlements lack basic municipal services such as water, sanitation, waste collection, storm drainage, street lighting, paved

sidewalks and roads for emergency access. Most also do not have easy access to schools, hospitals or public places for the community to gather. Many slums have been unserved and unrecognized for long periods, over 20 years in some cities. All slums are not the same and some provide better living conditions than other.

Nutritional status is the maintenance of health with well balanced diet and proportionate work. The nutritional status of slum women is integrately related to their nutritional requirement, dietary intake, dietary practices, culture, traditions and meal pattern. Diets of slum females

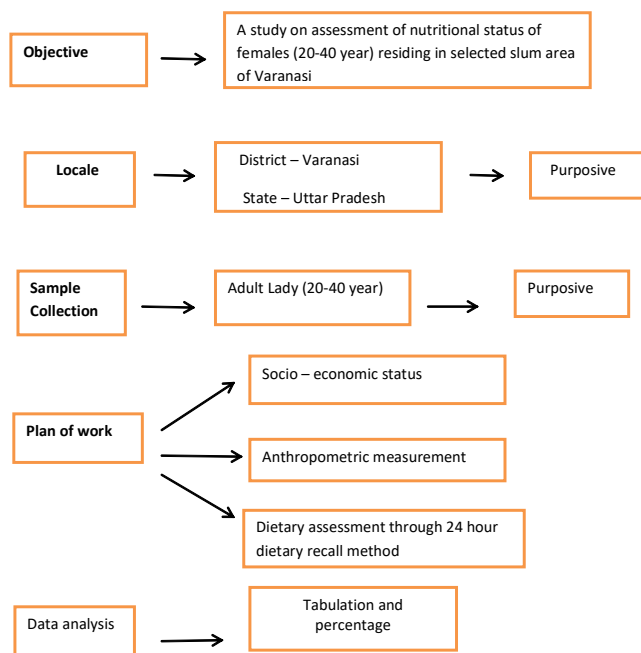
\*Author for correspondence:

<sup>1</sup>Department of Home Science (Food and Nutrition), Shri Agrasen Kanya P.G. College, Varanasi (U.P.) India

are inadequate both in terms of quality and quantity. They mainly consume cereal based food but grossly deficient in green leafy vegetables, fruits, milk and milk products. If we look at the problems faced by the women who are living in slum, then it is common to have problems like bone pain, stomach pain, knee pain. Also there is lack of hygiene and sanitation. Because of this the life of slum is very painful. The main reason of painful life is the lack of basic needs like there is no water facilities, due to water unavailability people do not take bath for so long weeks. Also there is a shortage of water for cooking and have to go far to get water. Slum peoples are not aware about their diet and dietary habits due to poverty. The aim of the study is to find out the dietary intake, nutritional status and socio-economic status of slum population in Varanasi district. The intake of the population who belonged to the low socio-economic status were found to be deficit in protein and iron whereas the intake of high socio-economic status were found to be higher in carbohydrate, energy and fat.

## MATERIAL AND METHODS

100 samples in the adult age group (20-40 year) residing in selected slum area of Varanasi was selected through purposive sampling. After selecting the respondents, Socio-Economic Status, anthropometric measurement (height, weight, BMI, WHR) and dietary assessment through 24 hour dietary recall method was



recorded through a designed questionnaire.

### Statistical analysis :

Obtained data was collected and analysed statistically by tabulation, percentage and mean.

## RESULTS AND DISCUSSION

The above Table 1 depicts that majority of the respondents *i.e.* 30% belongs to the Grade III category, 45% belongs to the Grade IV category and 25% belongs to the Grade V category according to BG Prasad classification for May 2021.

### Anthropometric measurement :

Anthropometric measurement involves obtaining physical measurements of an individual and relating them to standards that reflects the growth and development of the individuals. These physical measurements are another component of the nutritional assessment and are useful for evaluating over nutrition and under nutrition. They can be used to monitor the effects of nutritional intervention. Anthropometric data are most valuable when they reflect accurate measurements and are recorded over the period of time. Common valuable measurements are height, weight, BMI, waist circumference, hip circumference and waist to hip ratio (Krause, 2004).

The above Table 2 depicts that majority of the respondents were in normal range *i.e.* 54%, 20% respondents were underweight, 14% respondents were overweight while only 12% respondents were obese. Not a single respondent were lying in obese grade I, II and III category.

Varma (2020) conducted a study on Anthropometric Assessment Of Nutritional Status In Relation To Socio-Economic Determinants Among Bhatra Women Of Bastar, Chhatisgarh, India collected anthropometric data from 258 women and BMI is calculated in relation to their socio-economic determinants. The mean BMI is found to be  $17.93 \pm 0.13 \text{ kg/m}^2$ . The proportion of underweight is found to be 73.64%. The BMI indicate that only 37.60% women are normal.

This Table 3 shows that majority of the respondents *i.e.* 75% having  $\text{WHR} > 0.85$ , 13% respondents having  $\text{WHR} 0.81-0.85$  and only 12% having  $\text{WHR} < 0.80$ .

### Energy :

Our body needs energy for maintaining body temperature, metabolic activity, supporting growth and

for physical work. The energy allowances recommended are designed to provide enough energy to promote satisfactory growth in infants and children and to maintain constant body weight and good health in adults.

The mean daily intake of energy by the moderate respondents was 1825.16 which were 85% of the RDA while the mean intake of energy by the heavy worker was found to be 2353.74 which were 86% of the RDA.

#### Protein:

Proteins are vital to any living organism. Proteins are the important constituents of tissues and cells of the body.

The mean nutrient intake of protein by the moderate worker was 37.60 which were 82% of the RDA while the mean intake of protein by the heavy worker was 37.32 which were 81% of the RDA.

#### Fat:

The body uses fat as a fuel source and fat is the major storage form of energy in the body. Fat also has many other important functions in the body and a moderate amount is needed in the diet for good health.

The mean daily intake of fat by the moderate worker was 24.6 which is 98% of the RDA and the mean intake of fat by the heavy worker were 37.35 which were 124% of the RDA.

#### Carbohydrate:

Carbohydrates are the main source of energy for the body. They are the sugars, starches and dietary fibers that occur in plant foods and dairy products.

The mean daily intake of CHO by the moderate worker was 152.13 which were 117% of the RDA and the mean daily intake of CHO by the heavy worker was

Social class	Per capita income (Rs.) as per original classification in 1961	Per capita income (Rs.) as per modified classification for May 2021	Percentage
I	≥100	≥ 7863	-
II	50-99	3931-7862	-
III	30-49	2359-3930	30
IV	15-29	1179-2358	45
V	<15	<1179	25

Weight status	BMI	Percentage
Underweight	<18.5	20
Normal range	18.5-24.9	54
Overweight	25-29.9	14
Obese	>30	12

Sr. No.	WHR categories	Percentage
1.	0.80 or below	12
2.	0.81 to 0.85	13
3.	0.85+	75

Nutrients	Moderate worker (n=30)		Heavy worker (n=70)	
	Mean	NAR%	Mean	NAR%
Energy (kcal)	1825.16	85.68	2353.74	86.53
Protein (g)	37.60	82.27	37.32	81.66
Fat (g)	24.6	98.4	37.35	124
Carbohydrate (g)	152.13	117	183.87	141
Iron (mg)	20.5	70.68	23.79	82

183.87 which were 141% of the RDA.

### Iron:

Iron is an essential element for the formation of hemoglobin of red blood cells and play important role in the transportation of oxygen.

The mean daily intake of iron by the moderate worker was 20.5 which were 70% of the RDA and the mean intake of iron by the heavy worker was 23.79 which were 82% of the RDA.

The above Table 5 depicts that the mean calorie consumption was found to be higher in respondents who belonged to grade IV and V socio-economic status,

respectively

The above Table 6 depicts that the mean protein consumption was found to be higher in respondents who belonged to grade III and grade V socio-economic status, respectively.

The above Table 7 depicts that the mean fat consumption was found to be higher in respondents who belonged to grade III and IV socio-economic status, respectively.

The above Table 8 depicts that the mean carbohydrate intake was found to be higher in respondents who belonged to grade IV and V socio-economic status, respectively .

**Table 5 : Categorization of respondents according to the comparison of mean calorie intake with socio-economic status**

SES	Moderate worker (n=30)		Heavy worker (n=70)	
	Mean(calorie)	NAR%	Mean(calorie)	NAR%
Grade I	-	-	-	-
Grade II	-	-	-	-
Grade III	1825(Kcal)	85	-	-
Grade IV	-	-	(45)2383(Kcal)	87.61
Grade V	-	-	(25)2300(Kcal)	84.55

**Table 6 : Categorization of respondents according to the comparison of mean protein intake with socio-economic status**

SES	Moderate worker ( n=30)		Heavy worker (n=70)	
	Mean protein	NAR%	Mean protein	NAR%
Grade I	-	-	-	-
Grade II	-	-	-	-
Grade III	37.60	82.27	-	-
Grade IV	-	-	(45)36.75	80.41
Grade V	-	-	(25)38.31	83.82

**Table 7: Categorization of respondents according to the comparison of mean fat intake with socio economic status**

SES	Moderate worker ( n=30)		Heavy worker (n=70)	
	Mean fat	NAR%	Mean fat	NAR%
Grade I	-	-	-	-
Grade II	-	-	-	-
Grade III	37.60	150.4	-	-
Grade IV	-	-	n= 45 40	133.33
Grade V	-	-	n= 25 32.4	108

**Table 8 : Categorization of respondents according to the comparison of mean CHO intake with socio-economic status**

SES	Moderate worker (n=30)		Heavy worker (n=70)	
	Mean CHO	NAR%	Mean CHO	NAR%
Grade I	-	-	-	-
Grade II	-	-	-	-
Grade III	152	116	-	-
Grade IV	-	-	n=45 192	147
Grade V	-	-	n=25 168.48	129

**Table 9: Categorization of respondents according to the comparison of mean iron intake with socio-economic status**

SES	Moderate worker (n=30)		Heavy worker (n=70)	
	Mean iron	NAR%	Mean iron	NAR%
Grade I	-	-	-	-
Grade II	-	-	-	-
Grade III	20.5	70.68	-	-
Grade IV	-	-	n=45 23.66	81
Grade V	-	-	n=25 24	82

The above Table 9 depicts that the mean iron consumption was found to be higher in respondents who belonged to grade IV and V socio-economic status, respectively.

### Summary and conclusion :

The present study was conducted on “Assessment of nutritional status of females (20-40 years) residing in selected urban slum in Varanasi.” A slum is a highly populated urban residential area consisting of densely packed housing units of weak build quality and often associated with poverty. Slums differ in size and other characteristics, most lack reliable sanitation services, supply of clean water, reliable electricity and other basic services.

An interview method was used to collect the general information (regarding age, caste category, religion, literacy level, types of house and family income of the respondents) and anthropometric measurements viz height, weight, BMI and WHR of an individual were recorded by researcher. A dietary survey was carried out with the help of food frequency questionnaire. Information related to health and hygiene of the respondents was also collected with the help of questionnaire.

Socio-economic status data revealed that majority of the respondents *i.e.* 45% were belonged to the grade IV category 30% were belonged to the grade III category and only 25% were belonged to the grade V category.

According to anthropometric assessment majority of the respondents *i.e.* 54% were in normal range, 20% were underweight and only 14% were overweight. 75% of the respondents had high waist to hip ratio and only 13% were in normal ratio.

The mean calorie intake of moderate worker was 1825 which were 85% of the RDA while the mean calorie intake of heavy worker was 2353 which were 86% of the RDA. The mean protein intake of moderate and heavy worker was 37.60 and 37.32 which were 82% and 81% of the RDA. The mean fat intake of moderate

and heavy worker was 24.60 and 37.325 which were 98% and 124% of the RDA. The mean CHO intake of moderate and heavy worker was 152 and 183 which were 117% and 141% of the RDA. The mean iron intake of moderate and heavy worker was 20.5 and 23.79 which were 70% and 82% of the RDA.

When the nutrient intake of the respondents was compared with socio economic status the results depicts that the mean calorie intake of moderate worker who belonged to grade III category was 1825 while the mean of heavy worker who belonged to grade IV and V was 2383 and 2300, respectively. The mean protein intake of moderate worker who belonged to grade III category was 37.60 while the mean of heavy worker who belonged to grade IV and V was 36.75 and 38.31, respectively. The mean fat intake of moderate worker who belonged to grade III category was 37.60 while the mean of heavy worker who belonged to grade IV and V was 40 and 32.4, respectively. The mean CHO intake of moderate worker who belonged to grade III category was 152 while the mean of heavy worker who belonged to grade IV and V was 192 and 168, respectively. The mean iron intake of moderate worker who belonged to grade III category was 20.5 while the mean of heavy worker who belonged to grade IV and V was 23.66 and 24, respectively.

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