

## **Understanding Nutritional Situation of Farm women in Rural Arid Areas of Rajasthan: A Case Study**

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### **Abstract**

*The study was undertaken to assess nutritional status of rural women population in arid area of western Rajasthan. The socio-economic status (SES) of families was assessed by using Kuppaswami Scale (modified), and nutritional status was measured using BMI based classification proposed by WHO, 2004. Undernutrition was found in women of all socio-economic classes and age groups. It was found that highest number of women with low body mass index (BMI) was in upper lower class 25.87 % followed by lower middle 19.57 % and upper middle 3.33 %. It was also observed that the proportion of severe and moderate under nutrition was high in upper lower and lower middle class. The observations indicated that young females of 18-30 year age group were most affected while the extent of under nutrition in the increasing age groups was lesser than the earlier.*

**Keywords:** Nutritional Status, Socio-economic class, under nutrition, Body mass index

### **1. Introduction**

Women are nutritionally the most vulnerable next to young children in India. Although women are food producers at farm and household level their own nutrition situation is not very encouraging all over the developing countries including India. Malnutrition is still prevalent at significant levels especially in rural areas and the most vulnerable are children, women and elderly especially of lower income groups. According to the latest round of NFHS-3, 39 per cent of rural women in the age group of 15 – 49 years suffer from chronic energy deficiency and 58 per cent are anemic (<http://www.unicef.org>). Desert areas are not an exception, but the problems are rather severe in these areas. Arid lands are severely affected with low soil fertility, harsh weather conditions, and erosion results in decreased crop and livestock productivity and lessen the sources of income which significantly affect the food availability and accessibility of households especially in rural areas where the income and food availability are largely dependent of agriculture. Arid areas are primarily mono cropping areas where agriculture is mainly rainfed. Recurrent drought in these areas further worsens the condition. Hence, an attempt was made to study the nutritional status of farmwomen in rural areas of arid western Rajasthan.

### **2. Material and Methods**

#### **2.1 Setting, Sampling and Design**

In India, the great Indian desert of *Thar*, forms a part of the country's north-west arid zone. The greater part of desert has remained arid to hyper arid conditions. The study took place in Sar village of Jodhpur district of arid western Rajasthan.

The annual precipitation in the study area is low, and ranges from 250-300 mm. Our survey unit was the household, which was defined as a group of persons sharing housing and meals, managing a common budget, and led by a head of household. The households in each village were selected by cluster sampling. Proportionate samples were selected randomly, covering Schedule caste /Schedule Tribe (group of disadvantaged people recognized in article 341 and 342 of the constitution of India) households. A total of 30 households were selected from each village representing different caste, landholding size and settlement pattern. All the data were collected by trained enumerators in face-to-face interviews.

## 2.2 Socio-Economic Status

Primary data were collected from 30 farm households representing different land holdings and caste category from village 'Sar' under the tehsil 'Luni' of Jodhpur district. The Data were collected on various aspects such as age, educational status, size of land holding, occupation, sources of income etc. through a semi structured interview schedule by personal interview method. The socio-economic status (SES) of families was assessed by using Kuppaswami Scale (*modified*), 1976 and Ghosh and Ghosh (2009). In the modified scale, the educational and occupational criterion remains the same. However, to modify economic criteria, national urban consumer price index for India was noted for the year (2011-12) and the conversion factor between the index of 1976 and 2012 was determined. Subsequently, all the income groups in the scale were multiplied with the conversion factor to get appropriate income groups.

## 2.3 Anthropometric Measurement

All the members in the household were examined by anthropometric measurements (height and weight). All the measurements were taken following standard techniques (Bamji et al., 2010). Body weight is the most widely used and the simplest reproducible anthropometric measurement for the overall evaluation of nutritional status. For measurement of body weight electronic balance (Atlas weighing equipments, India) was used. The weight of individual was taken with minimum clothing, standing erect without shoes, or holding any support. Height was measured by using antropometer on a leveled surface, without shoes, looking straight with heels together and toes apart. To calculate the Body Mass Index (BMI) following formula was used.

$$\text{Body Mass Index (BMI)} = W / H^2 \quad \text{W= Weight (Kg), H= Height (mt)}$$

Individuals (adults > 18 yrs.) were classified according to their BMIs based on classification proposed by WHO, 2004.

## 3. Findings

General parameters of sample population such as age, educational level, caste, size of land holding and family type has been presented in table 1. The distribution of sample population according to age groups showed that approximately half of the women 45.16 % were below 30 years of age while 29.03 % were between 30-50 and 25.80 % were above 50 years of age. The educational status of women was quite depriving as more than half i.e. 61.29 % had never attended school and were illiterate while 22.58 % had primary to secondary level education and only 9.67 % of women attended senior secondary level education. As per the caste distribution 83.50 % were in other backward caste category while 9.8 % in general and 6.84 % in scheduled caste / tribe as listed in article 341 and 342 of the constitution of India. According to land size based classification majority of women in small farmer category while 35.40 % in medium and in large farmer category. It was observed that nuclear family system was predominant in the village as 74.14 % were in nuclear and 25.80 % were living in joint family system.

Socioeconomic status has been commonly conceptualized as the social standing or class of an individual or group which has been measured as a combination of three attributes education, income and occupation in the present study. Data on the socio-economic characteristics of women showed that 45.16 % were from upper lower category while 48.38 % from lower middle and only 6.45 % were from upper middle category.

**Table 1: General Parameters of Sample Population**

Socio-economic Characteristics	Category	Percentage (%)
Age	Below 30 yrs.	45.16
	31-50 yrs.	29.03
	>50 yrs.	25.80
Education	Illiterate	61.29
	Primary	22.58
	Secondary- High school	6.45
	Intermediate	9.67
Caste	General	9.66
	OBC	83.50
	SC	6.84
Land holding size	<22 bigha (up to 3.5 Ha)	58.06
	22-44 bigha (3.51-7.00 Ha)	35.48
	>45 bigha (> 7 Ha)	6.45
Family type	Nuclear	74.19
	Joint	25.80

Anthropometric measurements (height and weight) were taken following standard techniques and body mass index were calculated of sample population. The percentage distribution of female population having low Body Mass Index of different Socio-Economic Status was determined by using the International classification of WHO (2004).

All the individuals having body mass index more than 18.50 were considered as normal. The cases which reflected BMI, <18.50 were subdivided in to three categories according to the degree of severity viz. severe (BMI<16.00), moderate (BMI 16.00-16.99) and mild (BMI 17.00-18.49), respectively. It was found that highest number of women with low BMI was in upper lower class 25.87 % followed by lower middle 19.57 % and upper middle 3.33 % (Table. 1). It was also observed that the proportion of severe and moderate under nutrition was high in upper lower and lower middle class. No cases of severe under nutrition were reported in upper middle class (Table. 2).

**Table 2: Prevalence of Malnutrition in Women (>18 yrs.) of Different Socio-Economic Status According to International Classification of WHO (2004)**

Socio - Economic Status	Farm Women (%)	Severe under nutrition (BMI >16.00) (%)	Moderate under nutrition (BMI 16.00-16.99) (%)	Mild under nutrition (BMI 17.00-18.49) (%)	Total (%)
Upper Lower	45.16	6.45	3.33	16.12	25.87
Lower Middle	48.38	3.33	12.90	3.34	19.57
Upper Middle	6.46	-	-	3.00	3.00

The percentage of women with low body mass index is also seen in different age groups. Sample population was categorized in three age groups 18-30 yrs, 31-50 yrs and > 50 yrs to understand the severity of under nutrition at different ages in females. It was seen that highest percentage of undernourished women were in age group of 18-30 yrs i.e. 25.79 per cent followed by 12.91 and 12.89 per cent in 31-50 yrs and >50 yrs, respectively.

**Table 2: Prevalence of Malnutrition in Women (>18 yrs.) of Different Age Groups According to International Classification of WHO (2004)**

Age groups	Farm Women (%)	Severe under nutrition (BMI >16.00) (%)	Moderate under nutrition (BMI 16.00-16.99) (%)	Mild under nutrition (BMI 17.00-18.49) (%)	Total (%)
18-30 yrs.	45.16	-	9.67	16.12	25.79
31-50 yrs.	29.03	-	6.46	6.45	12.91
>50 yrs.	25.81	9.70	3.22	-	12.89

The observations indicated that young females of 18-30 year age group were most affected while the extent of under nutrition in the increasing age groups was lesser than the earlier. When the data was analyzed to assess the severity of under nutrition, it was observed that severe under nutrition was not seen in women of 18-30 and 31-50 years but the incidences were reported in women in age group of >50 years. The extent of moderate and mild under nutrition was much higher in women of 18-30 years which indicated that the age group most affected by different kinds of under nutrition were either 18-30 years represented young females or the older ones of >50 years. When the correlation coefficient was calculated between the age of females and severity of under nutrition it showed a significant positive correlation which indicated that the severity of under nutrition was increased with increasing age of women. Severe under nutrition was absent in the women of age group of 18-30 and 31-50 years. Women of > 50 years were also affected with under nutrition 12.91 per cent which shows that under nutrition was also prevalent in old age which is quite vulnerable.

#### **4. Conclusion and Implication**

It may be concluded that the under nutrition was found in women of all socio-economic classes and age groups. Highest numbers of the cases were of mild under nutrition followed by moderate under nutrition. In fact, an improvement in livelihood affect dietary pattern and food intake positively. Thus, the improvement in socio-economic status and reduction in poverty have significant effect on the food security and nutritional status of families.

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