

Control of malnutrition among adolescent through intervention of 4 months residential camp

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■ **ABSTRACT :** Malnutrition is one of the greatest challenges that India is facing today. Some estimates indicate that India loses as much as \$35 billion every year because of the long-term impacts of malnutrition among the Indian population. Despite many government initiatives, India's children still struggle to get enough nutritious food to eat. The present study was undertaken with the objective of controlling malnutrition through intervention of nutritive diet in the residential camp of 4 months. The study was undertaken in Pisangan block of Ajmer district of Rajasthan. The sample of the study was 50 adolescent girls, who were attending the 4 months residential camp organized by Doosra Dashak. All the respondents from deprived community and purposively selected for the study. For the assessment of nutritional status height and weight of the respondents were recorded at the time of joining the camp and leaving the camp. In between same measurement were also recorded monthly. Body mass index was calculated and on this basis malnourished respondents were labeled. The result of the study shows that there was marked improvement in the nutritional status of adolescent girls after completion of such intervention of nutritive diet/ balanced diet for 4 months residential camp. The improvement was higher among severely malnourished adolescents as compare to those who were in normal nutritional status after the intervention of nutritive diet for 4 months residential camp.

■ **KEY WORDS:** Adolescent girls, Anthropometric Measurement, BMI, Malnutrition

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Almost half of Indian children under five years of age are chronically malnourished.

- Seven out of 10 Indian children are anemic.
- Over 40 per cent of Indian children are underweight, 20 times higher than would be expected in a well-nourished country.
- Of the approximately 180 million chronically malnourished children worldwide, more than one-third live in India. Source: (www.hungama

forchange.org/hungamatrainingmanual.pdf).

Nutrition status of Indian population :

There are enormous challenges for India's development. These include huge disparities among different geographical regions, between social groups, among different income levels and between the sexes. Poverty, rapid population growth, climate change, natural disasters, pockets of weak governance, gaps in nutrition

policies and poor health systems continue to pose serious challenges for hunger and under-nutrition in India Johnston and Susan (1999) and Horton (1999).

The Government of India, state governments, UN and many NGOs have numerous programmes to address these issues. Government programmes include ICDS, Mid-day-Meal, TPDS, MGNREGA and the NRHM, including specific SAM treatment centres in states like Rajasthan and M.P. Some of these programmes are old and some are very new. Despite these programmes, rates of under nutrition in India remain worryingly high.

In 2008, Dr. Veena Rao, Joint Secretary of the DWCD, Government of India, estimated the cost of under-nutrition for the country. According to this estimation, malnutrition in India leads to a 4 per cent loss of GDP, representing about USD 29 billion. This cost may consistently increase if the funds released for ICDS and if the larger health expenditure related to (a) rehabilitation of children with low weight at birth, (b) rehabilitation of the mothers who have pathologies related to low nutritional status; and (c) the cost of management of complications in HIV patients due to lack of proper nutrition support, etc. is added to these losses, the cost of under-nutrition and under-nutrition related pathologies would further rise. Today, India accounts for around 30 per cent of the wasted children under-5 in the world. 7.4 million children make up 40 per cent of the children born with low birth weight (less than 2.5 kg) in the world. The country is struggling to deal with high child and adult under-nutrition rates for some time with limited success.

- 19.8 per cent of children under-5 years of age are wasted or around 30 million children in India suffer from a form of acute malnutrition.
- 6.4 per cent (9,800,000) of them are severely malnourished or having 9 times higher risk to die than the normal children of their age.
- 48 per cent of same group is stunted and 43 per cent is underweight.
- Acute malnutrition has higher concentration within children from rural areas (21 %), tribal and scheduled caste (28 % and 21 %), illiterate mother (23 %) and children under-3 (23 %).
- More than 30 per cent of the children in India are born with weight < 2.5 kg. Children with low birth weights were found to be at the highest risk of impaired nutritional status.
- Children from households with improved toilet

facilities and safe drinking water have better nutritional status.

- Generally in urban zones children have better nutritional status than in rural but the slums of Indore and Chennai are highly affected by acute malnutrition (34 % and 23 %).
- 36 per cent of women and 34 per cent of men in India have BMI < 18.5 kg/m².
- Mothers found to be thin (BMI < 18.5 kg/m²) were more likely to have children who were stunted (54 %), wasted (25 %) and underweight (52 %).
- Infant mortality rate (IMR) was 57/1000 and under-5 mortality rate (U5MR) was 74/1000. More than half of the infant deaths occur in the first month after birth.
- More than half of under-5 deaths are related to malnutrition (54 %). Mild to moderate underweight contributes to 43 per cent of the deaths and severe underweight to 11 per cent.
- 7 out of every 10 children in India are found to be anemic in between the age group of 6-59 months.
- Anemia among children aged 6- 35 months increased from 74 per cent in NFHS 2 to 79 per cent in NFHS 3.

(Source: Nutrition in India, NFHS-3, MOHFW, Government of India, 2005-06).

The nutritional situation in India has hardly changed in the last 30–35 years in terms of the global level of malnutrition. For decades, under-nutrition in India was mainly related to hunger and food insufficiency.

Rajasthan: Nutrition situation :

The NFHS-3 in 2006 found that 20 per cent of children under-3 years of age in Rajasthan were wasted, 34 per cent were stunted and 44 per cent were underweight. 20.4 per cent of the children under-5 suffered from wasting and 7.3 per cent suffered from severe acute malnutrition. This means that about 620,000 children in Rajasthan needed emergency treatment in 2006. Same source has shown that adults are the next most affected group by under nutrition: 33.6 per cent women and 33.8 per cent men were found to be too thin compared to their height (BMI < 18.5). From the demographic groups, children from schedule tribes had highest prevalence of SAM (8.4 %) compared to children

from schedule castes (7.4 %) and other backward classes (5.2 %). Infant mortality rates are similar in urban and rural Rajasthan with an average of 65 deaths per 1,000 live births in the last few years.

The under-nutrition rates fluctuate differently by category in Rajasthan. If the stunting has seen an important decrease between NHFS-2 and NFHS-3, underweight remain relatively high (close to the national average of 43 %) and wasting has worryingly increased.

Despite exceptional economic growth, India still has major social issues and the current economic development has not sufficiently managed to reduce these. Social discrimination on the basis of caste continues to be practiced. People belonging to schedules castes, scheduled tribes and other backward classes remain marginalized and disadvantaged. Gender discrimination in favour of male child, has continued to oppress girl child and women. Poor women seem to be even more affected. Early marriages, low literacy among women, extreme workloads and many traditions limit women's independence and decision making capacity. Their nutrition status is generally compromised and this is transmitted to the children (Gender Gap Report, 2011). Putting these points in mind an attempt has been made for controlling malnutrition in 4 months residential camp with the objective of (1) pre and post-assessment of nutritional status with BMI in under privileged rural adolescent girls, (2) To increase the nutritional status through the intervention of nutritive diet in 4 month residential camp.

■ RESEARCH METHODS

The present study was undertaken in Pisangan block of Ajmer district Rajasthan. The size of the sample was 50 and exclusively purposive sampling technique was used. The sample of the study was drawn from 4 month residential camp which was organized by foundation for education (Doosra Dashak) in above mentioned block. For assessment of nutritional status anthropometry measurement e.g. weight for height and weight for age methodology was used, in which weight, height and age were taken and compared to BMI scale of WHO.

Weight-for-height (W/H) measures body weight relative to height and has the advantage of not requiring age data. Normally, W/H is used as an indicator of current nutritional status and can be useful for screening children at risk and for measuring short-term changes in nutritional

status. A child with low WfH is called wasted (too thin for their height), an indication that they are acutely malnourished (malnourished presently and from recent events).

Weight-for-age (WfA) is commonly used for monitoring growth and to assess changes in the magnitude of malnutrition over time. However, WfA confounds the effects of short and long-term health and nutrition problems. A child with low WfA is called *underweight* (too light for their age), which is seen as a composite of acute and chronic malnutrition.

Body Mass Index :

The BMI is defined as weight in kilograms divided by height in meters squared (kg/m^2). A cut-off point of 18.5 is used to define thinness or acute under-nutrition and a BMI of 25 or above indicates overweight or obesity. A BMI of 17.0-18.4 refers to mildly thin and <17.0 , refers to moderately/severely thin. A BMI of over 30.0 refers to obesity (Alderman, 2000).

Weighing machine calibration :

Every morning, researcher should test the scale by measuring the weight of the height board (or the researcher with and without the height board) to see if the height board weight is registered correctly. It is very necessary to check whether the scale is working properly or not. The scale should be checked while it is kept in a cool, shady location and on a hard, flat surface. If the scale does not register the weight correctly to within 0.2 kg, notify immediately. If the scale measures the weight of the height board correctly, one researcher should also record his/her weight and remember it for scale adjustments later in the day. While, the surveyor's weight will change slightly over the course of the day, it will be an indicator of whether the scale measurements are seriously inaccurate at any point.

Procedure of data collection :

Firstly the chairman of Doosra Dashak contacted and asked for permission for doing research work on their 4 month residential camps of adolescent girls. After getting permission respondents had contacted at camp and explained the purpose of study. Pre-assessment of weight, height, age and body mass index (BMI) has been taken. During the residential camp adolescent girls were contacted for fortnightly midterm assessment. Finally on

completion of camp the post assessment was done with extending thanks to all the respondents and also presented the result of intervention of 4 month residential camp to their parents. For statistical analysis mean and percentage were applied on data.

RESEARCH FINDINGS AND DISCUSSION

The findings of the present study as well as relevant discussion have been presented under following heads :

General information about respondents :

Table 1 depict that out of 50 respondents 24 girls from other backward community (OBC). Half of the girls were from deprived community *i.e.* scheduled cast and minority (Muslims).

Sr. No.	Number of girls	Community
1.	14	SC
2.	1	ST
3.	24	OBC
4.	11	Muslims
Total	50	

Anthropometric measurement:

In the present study weight and height were measured and BMI were calculated to assess the malnutrition, along with their nutritional status. Body weight was measured using bathroom spring weighing scale.

Fig. 1 depicted the Anthropometric measurements of adolescent girls. The result indicated that the mean score of weight for age of pre assessment was 27.18 kg, whereas, the post assessment mean value was 30.28 kg. Similarly pre and post-assessment mean value of height was 135.83 cm and 138.57. This reflects that there is drastic change in height and weight of adolescent girls who were attending the 4 month residential camp. The report of National Nutrition Monitoring Board (NNMB, 2000) also revealed the same results as the present study had. Report on diet and nutritional status of adolescents (2000) by NNMB, described that data on rural adolescents shows that most girls are still married during adolescence. One fourth to one fifth among the married adolescent girls is at risk during pregnancy on account of weight and height-related parameters. Under nutrition in girls' increases up to the age of 12 years and as adolescence progresses without improvement in their

food intake, it stagnates and results in 40 per cent adolescent girls being stunted, indicating that the proportion of stunting increased with age.

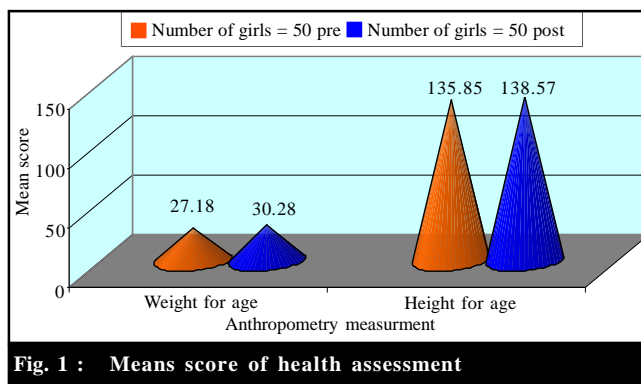


Fig. 1 : Means score of health assessment

Table 2 and Fig. 2 show the nutritional status of rural adolescent girls of 4 month residential camp. Table 2 shows the three categories of body mass index (BMI) that are underweight, normal and overweight or obese. Pre-assessment of the results shows that 68 per cent girls were fell in underweight, 15 per cent were normal and only 2 per cent girls were in overweight or obese categories. After intervention of 4 month residential camp more than sixty per cent girls improved their nutritional level and came in normal BMI index. The result of the study also shows that if adolescent are provided nutritional and health counselling as well as balanced diet than it will definitely improve their nutritional level. This result

Sr. No.	BMI scale	Number of girls (Percentage)	
		Pre	Post
1.	Underweight	34(68)	19(38)
2.	Normal	15(30)	31(62)
3.	Overweight or obese	1(2)	0(0)
	Total	50(100)	50(100)

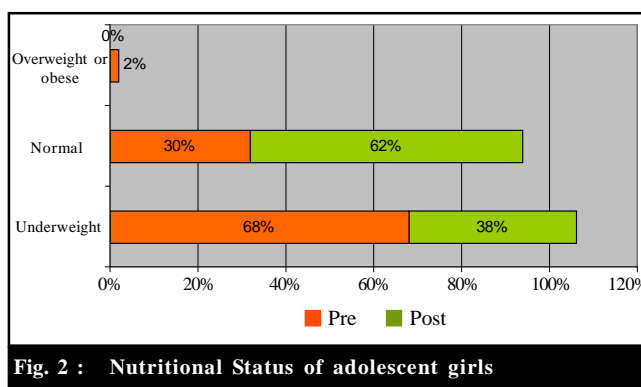


Fig. 2 : Nutritional Status of adolescent girls

supported by Deshmukh (2006) in their study on nutritional status of adolescents in rural Rajasthan, reveal that the anthropometric assessment at the community level is to provide an estimate of prevalence and severity of malnutrition. The prevalence of thinness (<5th percentile of BMI for age) was observed to be 53.8 per cent, chronic energy deficiency (BMI<18.5) 75.3 per cent and wasting (< -2 Z-value of weight for height) was observed to be only 20.8 per cent.

Some facts of NFHS-3 also support the study result that is dual burden of nutrition :

- More than a third (36 %) of women has a BMI below 18.5, indicating a high prevalence of nutritional deficiency. Among women who are thin, 44 per cent are moderately or severely thin.
- The percentage of ever-married women age 15-49 who are overweight or obese increased from 11 per cent in NFHS-2 to 15 per cent in NFHS-3.
- This is a growing problem in India. Women suffer from a dual burden of malnutrition with nearly half of them being either too thin or overweight as under nutrition decreases, over nutrition increases by about the same amount.
- Malnutrition levels are higher among young girls. Almost half of the girls in age 15-19 are undernourished.
- Under nutrition declines and over nutrition increases with age of women.
- The prevalence of under nutrition is nearly two times higher among women with no education than among those with 12 or more years of schooling.
- More than half of women in the highest income quintile are underweight.
- The anemia prevalence levels are more than two times higher among women than men with almost half of them with moderate to severe anemia.
- The prevalence of anemia is marginally higher in rural than urban areas but anemia is a common problem in both urban and rural areas.
- More than 50 per cent of women in urban areas are anemic, with almost a third of them with moderate to severe anemia.
- Indian women suffer a very high burden of nutritional deficiency; but the prevalence of overweight and obesity are also on the rise.
- This is a dual burden of malnutrition, with nearly

half being either too thin or overweight.

these facts from 2005-06 National Family Health Survey (NFHS-3). Indu *et al.* (2013) worked on prevalence of malnutrition among pre-school going children, Kumari and Jain (2011) on designing of biscuits to overcome dual burden of malnutrition and Mishra and Jain (2013) studied on prevalence of malnutrition among infants (6-12 months) in urban Udaipur.

Conclusion:

Malnutrition can be a hidden curse: children don't die of malnutrition. They often die of diseases, whether pneumonia, or malaria, or typhoid. But the truth is that those children would have had a much better chance of surviving had they been well-nourished. This is why nutrition issues have been easy to ignore, but also why they are so important to address. Good nutrition forms a broad foundation for better health that makes children more resilient to any challenges they face. However, over time, the underlying causes of under-nutrition have evolved and are now identified as: inappropriate children feeding and caring practices especially in the first years of life, low social and nutrition status of women, poor health and sanitation services and poor livelihood opportunities leading to casual work and migration. Malnutrition can be overcome if better implementation of any programme. After intervention of 4 month residential camp more than sixty per cent girls improved their nutritional level and came in normal BMI index. The result of the study also shows that if adolescent are provided nutritional and health counseling as well as balanced diet than it will definitely improve their nutritional level.

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