



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 9, Issue, 5(B), pp. 26589-26593, May, 2018

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

IMPACT OF SOCIOECONOMIC FACTORS ON NUTRITIONAL STATUS IN SCHOOL CHILDREN OF MARATHWADA REGION

MassratFirdos*, MujtabaNausheen., SudhaKaradkhedkar and MukundKulkarni,

Department of Physiology, Dr. Shankarraochavan Government Medical College Nanded,
Maharashtra 431604

DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0905.2086>

ARTICLE INFO

Article History:

Received 16th February, 2018

Received in revised form 12th
March, 2018

Accepted 20th April, 2018

Published online 28th May, 2018

Key Words:

Overweight, obese, stunting, SES -
socioeconomic status, underweight

ABSTRACT

A cross sectional type of study was carried out to compare nutritional status among, 6-10 years old 750 school children of three different socioeconomic statuses during January 2012- January 2013.

Method: weight and height was recorded and BMI is calculated. Height for age and BMI for age was calculated. Analysis was done using chi square test with the help of open EPi version 2.3.

Result: In present study the prevalence of stunting in low SES was 16.8 %, versus 3.6 % in middle SES and only 0.8% in high SES ($P < 0.01$). The prevalence of underweight was 20.3% in low SES and 3.6% in middle SES; and only 0.5% in high SES ($P < 0.01$). The prevalence of obesity in low SES was 0.4%,. In middle SES 4.5 % while In high SES 8.4%.The prevalence of obesity in low SES was 1.1%,. In middle SES 3.7 % while In high SES 6.9%.

Conclusion: we can conclude that there was presence of the double burden of malnutrition at the population level. Those who were belonging to low SES are at risk for under-nutrition, while those who belonged to high socio-economic status are more likely to be over-nourished.

Copyright © MassratFirdos et al, 2018, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

The child population is one of the most important sections of society which being vulnerable needs very careful nurturance. Their growth and development is strong reflection on the future of a country. In any development effort, the starting point should be children for several physiological, social and even economic reasons. A wise investment in children's health, nutrition and education is the foundation stone for all national development. Neglecting children's needs will by contrast condemn them and their society to a vicious cycle of poverty and deprivation (UNICEF 1991). A healthy generation of children will lead to a healthy generation of productive young people and adults. (jitendergulati et al)

The nutritional status of children is an important determinant of child health. Its assessment in groups of children is necessary in monitoring the health of a community, planning and implementing programmes to reduce malnutrition associated morbidity and mortality. (Akor Francis et al)

Malnutrition continues to be a primary cause of ill health and mortality among children in developing countries. It is a major public health problem and accounts for about half of all child deaths worldwide. About 150 million children in developing

countries are still malnourished and more than half of underweight children live in South East Asia Region (SEAR). (Joshi H S et al)

Malnutrition has for a long time been recognized as a consequence of poverty since most of the world's malnourished children live in the developing nations of Asia, Africa and Latin America where those mostly affected are from low income families. The children from households with a low or very low socioeconomic status had 2.5 times the risk of being underweight relative to children who came from households with middle to upper socioeconomic status. (NabeelaFazal Babar et al)

In India, approximately 19% (190 million) of the growing population comprises school-aged children of whom 30% (48 million) currently reside in urban India. Studies from metropolitan cities in India have reported a high prevalence of obesity among affluent school children. On the other hand some studies reported a high prevalence of under-nutrition among rural school children and children in urban slums. It can be said that children in developing countries presently suffer from double jeopardy of malnutrition- urban children are afflicted with problems of over-nutrition while rural and slum children suffer from effects of under-nutrition.(G. Srihari et al)

*Corresponding author: MassratFirdos

Department of Physiology, Dr. Shankarraochavan Government Medical College Nanded, Maharashtra 431604

Most of the research work that has been conducted on effect of socioeconomic status (SES) on health status of children is limited to infants and preschool children only. There is dearth of information on effect of SES on health status of school going children. Keeping this in view this study was conducted with the objective to assess the effect of SES on health status of school going children.

MATERIALS AND METHODS

The cross sectional type of study was conducted among 750 apparently normal healthy school going children of age group 6-10 yrs belonging to three different Socio economic status, over a period of one year from January 2012 – January 2013. The 6- 10 year old children from three different schools one public primary school and two private schools having tuition fees was selected randomly. They were categorized depending on per capita income of family using modified Prasad's socioeconomic status classification taking the AICPI for JAN 2012 i.e. 4519.52 in 3 different socioeconomic status High, Middle and Low as follows. (Kulkarni A P Text book)

Prasad's Socioeconomic status classification

SES Group	Modified Prasad's Scale	No. of subjects
High SES	22281 and above	250
Middle SES	11140 -22280	250
Low SES	11139 and BELOW	250
Total		750

Children who were found physically handicapped with both lower limbs affected and their anthropometric measurement could not be recorded were excluded from study. Students whom parents did not consent were excluded from study. Children having musculoskeletal disorders like muscular dystrophies were excluded. Children above 10yrs and below 06yrs were excluded.

The study was approved by Ethical committee. The study was conducted after taking permission of school board.. Age and dates of birth were verified by school records which were based on birth certificate and the age at the time of examination was calculated. The collection of data, and measurements was done in school. Detail history, detail general and systemic examination was done to exclude the diseases. Anthropometric measurements including weight, height, was taken by standard methods. Body mass index was calculated.

All the measurements was carried out during morning hours (10:00 am to 12:00 pm) in the measuring rooms, there was not more than 5 subjects of same sex.

Anthropometric Measurements

Weight: All students were weighed in their school uniform or clothes they had worn .The weighing machine was regularly standardized with known weight. The student were instructed about the procedure. It was assured that the student removed their belts and sweaters, emptied their pockets, and stood barefooted on weighing scale which was placed on a flat, hard surface. Students were made to stand erect with both feet together without any support with the body weight equally distributed on both feet and fix their vision on a point on the opposite wall such that the plane of vision was perpendicular to their body and parallel to the ground. After zeroing the scale Weight was measured. The weight was read to the nearest 100

g (0.1 kg). Two measurements were taken in immediate succession and average value was taken. Diurnal variations (cyclical changes occurring throughout the day) in weight of about 1 kg in children and 2 kg in adults may occur. For this reason, all the measurements were carried out during morning hours (10:00 am to 12:00 pm).

Height: For measurement of height, marking was made on the wall using measuring tape. The child was asked to stand upright , barefoot on ground with heels buttocks upper back of head making firm contact with the wall (this help the subject to stretch to his full height). The position of head should be in the Frankfort horizontal plane. The card board was pressed firmly onto subject's head to form a right angle to the wall and the subject was asked to bend his knees slightly when he steps away so that the cardboard should not disturbed before the height was recorded. The measurement was read to the nearest 0.1 cm.

Body mass index: It was calculated by Quelet's index as per formula

Body mass index= weight/height² Where Weight in kg and height in meters.

Height for age: Height for age was calculated as per the NCHS data for height for age of school children. Normal Height for age was considered if the height for age of student was between -2zscores to +2zscore. The student having height for age score less than 2 score were labeled as stunted. Those having height for age more than 2 Z score were labeled as tall.

BMI for age: BMI for age is calculated as per recommendation of NCHS WHO data tables for BMI for age for school children. The student having BMI for age score 5th to <85th were labeled as healthy weight. Those having BMI for age <5th percentile were considered as underweight. And those having BMI for age 85th to <95th percentile were labeled as overweight. And those having BMI for age >95th percentile were labeled as Obese.

Statistical analysis: The data was entered in Microsoft excel 2007. Mean and standard deviation was calculated. Analysis was done using statistical software open Epi version 2.3. (for chi square test) .For evaluating under-nutrition and over-nutrition comparisons was done with WHO 2007 standard charts. and chi square test was used as test of significance.

RESULTS AND DISCUSSION

Malnutrition continues to be a serious public health problem and has for a long time been recognized as a consequence of poverty since most of the world's malnourished children live in the developing nations of Asia, Africa and Latin America where those mostly affected are from low income families. The children from households with a low or very low socioeconomic status had 2.5 times the risk of being underweight relative to children who came from households with middle to upper socioeconomic status. Low levels of nutrition adversely affect physical and mental growth of children. Both prevalence and the severity of food insecurity increase as household incomes decrease. However, there is not a simple linear relationship or one-to-one correspondence between poverty-level incomes and measures of hunger or food insecurity .The main positive factors for malnutrition are

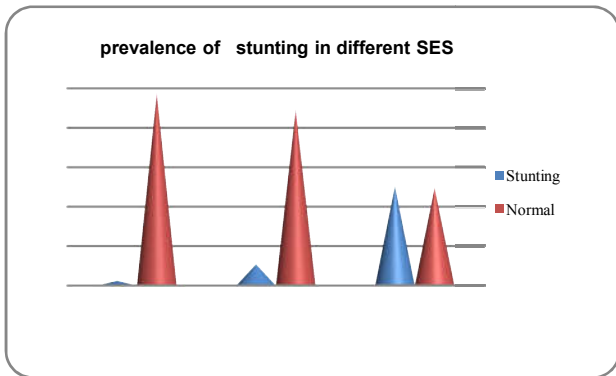
inadequate food intake and poor health status that are influenced by poverty and lack of access to food, feeding practices, and family size. (NabeelaFazal Babar *et al*) The Present study highlights the effect of socioeconomic status in school children.

Table 1 Showing prevalence of stunting

SES	Stunting (<2SD)	Normal (Mean ± 2SD)	Total
High	6(0.8)	244(32.53)	250(33.333%)
Middle	27(3.6)	223(29.73)	250(33.333%)
Low	126(16.8%)	124(16.5)	250(33.333%)
Total	159(21.2)	591(78.8)	750(100%)

* Note: In present study no child was found having height for age > 2SD of reference standard.

X2= 196.7 d(f) 2 p<0.0001 significant

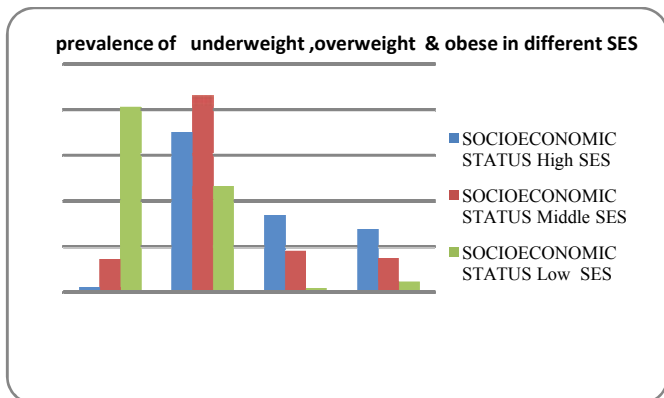


Graph 1 showing prevalence of stunting in different SES

Table 2 prevalence of underweight, overweight & obese in different SES

SES	underweight (BMI for age < 5th percentile)	Healthy weight (BMI for age 5th to <85th Percentile)	Overweight(BMI for age 85th to <95th percentile)	Obese(BMI for age >95th percentile)	Total
High	4(0.5)	131(17.5)	63(8.4)	52(6.9)	250(33.333%)
Middle	27(3.6)	161(21.5)	34(4.5)	28(3.7)	250(33.333%)
Low	152(20.3)	87(11.6)	3(0.4)	8(1.1)	250(33.333%)
Total	183(24.4%)	379(50.5%)	100(13.3)	88(11.7)	750

X2= 317 d(f) 6 p<0.0001 significant



Graph 2 Showing prevalence of underweight, overweight & obese in different SES

Present study was carried out to compare nutritional status among, 6-10 years old 750 school children of three different socioeconomic status, 250 students in each high middle and low SES .out of total 750 (100%) students 50% (375) were

males and 50% (375) were females, and 20%(150) students in each 6, 7, 8, 9, and 10 years age groups.

For both girls and boys, there were two clear patterns: (1) stunting and underweight, in the low SES groups and (2) overweight and obese in middle and high SES groups. In present study the prevalence of stunting in low SES was 16.8 %, versus 3.6 % in middle SES and only 0.8% in high SES ($P < 0.01$). In low SES groups the prevalence of stunting was significantly higher than the middle and high SES. While it was higher in children of middle SES than of high SES.

The prevalence of underweight was 20.3% in low SES and 3.6% in middle SES; and only 0.5% in high SES ($P < 0.01$). In low SES group the prevalence of underweight was significantly higher than the middle and high SES. While it was higher in children of middle SES than of high SES.

In low SES the prevalence overweight was 0.4%,. In middle SES the prevalence of overweight was 4.5 % while and In high SES the prevalence of overweight was 8.4%.The prevalence of overweight was higher in high socioeconomic status than in middle and low SES. While it was higher in children of middle SES than of low SES.

In low SES the prevalence of obesity was 1.1%,. In middle SES the prevalence of obesity was 3.7 % while In high SES the prevalence of obesity was 6.9%.The prevalence of obesity was higher in high socioeconomic status than in middle and low SES. While it was higher in children of middle SES than of low SES.

Of all four strata, children of high SES showed the highest prevalence of overweight and obesity. While children of low SES show highest prevalence of stunting, and underweight.

In order to assess the difference in nutritional status between children of low SES, middle SES and high SES, we explored on the one side the prevalence of undernutrition as defined by stunting underweight, and on the other side the prevalence of overweight and obesity.

Similarly Iris. Groeneveld in 2007 also took the same pattern to explore problem of malnutrition in high and low SES.

Our result was also in agreement with following studies Raheela M. A. Mian, Mohammad Ali *et al* in 2002, Shabana Tharkar and Vijay Vishwanathan in 2007, Joshi HS, Gupta R, Joshi M C *et al* in 2007, Mukherji in 2008, Supreetkaur in 2008, Haider in 2009, Ramesh K Goyal and Vitthaldas N Shah *et al* in 2009, Nabeela fazal 2010, António Prista, José in 2012 found that prevalence of underweight and stunting was significantly high in low SES than middle and high SES while prevalence of overweight and obese was significantly high in high SES than low SES.

It was obvious from the results of present study that nutritional problems are not just medical problems rather they have roots in many sectors of development such as economy, etc. Malnutrition is caused by a number of intertwining factors that form a web of causation and enhance each other's effect. It is largely the by-product of poverty, insufficient education, ignorance, low income, large family size, occupation, etc. These are the true determinants of malnutrition in society as they bear most directly on the quality of life. (NabeelaFazal Babar *et al*)

Our possible explanations for prevalence of overweight and obesity in high SES is in developing countries such as India influence of SES on people's lifestyle such as diet food consumption pattern and public services such as health care and transportation and physical activity may differ. Richer people have better access to meat and other energy dense foods which are much more expensive than other foods such as vegetables than the poor. While middle SES group usually consume more vegetables and fruits, which are less energy – dense, than high SES. While social deprivation results in unavailability of sufficient food and thus causes nutritional deficiencies. The low economic group probably reflects nutritional imbalance as a result of poverty. (Ramesh K Goyal et al)

The major cause of under-nutrition (underweight and stunting) has always been reported to be poverty along with ignorance. In the words of Margaret Khalakdina (1975) malnutrition is the most telling index of poverty. Poverty imposes restrictions on food intake of poorer sections of society and the worst sufferers are young children, adolescents and pregnant and nursing mothers. India with 16 percent of world's population, out of which 24% are living in rural poverty. (World Bank 2005). (http://en.wikipedia.org/wiki/Malnutrition_in_India)

Causes of malnutrition

Poverty affects buying capacity of families thus resulted into less quantity as well as frequency of food consumed

Socio-economic status of those who are poor are at risk for under-nutrition, while those who have high socio-economic status are relatively more likely to be overnourished.

Socioeconomic status: A determinant of Malnutrition in India

India is one of the fastest growing countries in terms of population and economics, sitting at a population of 1,139.96 million (2009) and growing at 10–14% annually (from 2001–2007). India's Gross Domestic Product growth was 9.0% from 2007 to 2008; since Independence in 1947, its economic status has been classified as a low-income country with majority of the population at or below the poverty line.

The combination of people living in poverty and the recent economic growth of India has led to the co-emergence of two types of malnutrition: under-nutrition and over-nutrition.

Malnutrition refers to the situation where there is an unbalanced diet in which some nutrients are in excess, lacking or wrong proportion. Simplify put, we can categorize it to be under-nutrition and over-nutrition.

Despite India's 50% increase in GDP since 1991, more than one third of the world's malnourished children live in India. Among these, half of them are underweight and a third of wealthiest children are over-nutriented.

Over-nutrition

At the same time as a large number of population suffers from malnutrition, more than 100 million people (11% of Indian population) in India are over-nourished. Over-nutrition can be defined as consuming either too much calories or the wrong types of calories such as saturated fat, trans fat or highly refined sugar which leads to obesity and many other chronic

diseases. The direct cause of overweight in India would be lack of physical activity due to sedentary life style, loss of traditional diet, faulty diet, high stress etc. Over-nutrition is most prevalent in the cities among affluences. from demographic transition due to sudden economic growth in India. This tells that indirect, underlying cause of over-nutrition would be significantly high rate of economic growth.

The results of the various studies found that being underweight had an inverse relationship with socioeconomic position, meaning that as socioeconomic position increased, the chances of being underweight decreased. A positive correlation, however, was found between socioeconomic position and being pre-overweight, overweight, and obese. The study concluded that under-nutrition and over-nutrition were epidemics of the impoverished and the affluent in India. (http://en.wikipedia.org/wiki/Malnutrition_in_India)

CONCLUSIONS

From results of present study we can conclude that there were presence of the double burden of malnutrition at the population level. Those who were belonging to low SES are at risk for under-nutrition, while those who belonged to high socio-economic status are relatively more likely to be over-nourished

In low SES chronic malnutrition and deprivation at the household level is major nutritional problems; it was reflected in the low values of height and weight in children,.

The higher prevalence of stunting in children of low SES than children of high SES might reflect low nutritional conditions over the years in low SES children. On the other hand, obesity prevalence among high SES children was also very high. Rates of both overweight and obesity in children increased with level of development within the household, a typical trait of the nutrition transition in countries emerging from poverty. Ecological and biological factors might explain the observed nutritional status of this population.

Sustainable intervention based on recuperation of ancient techniques of local food production and preservation, nutritional programmes targeting school children and nutritional education for the school children their parents and teachers should be aimed at preventing and solving major nutritional problems (http://en.wikipedia.org/wiki/Malnutrition_in_India)

Acknowledgments

The headmasters and the authorities of the schools are thankfully acknowledged for their help during data collection. Thanks to the school children who participated in this study.

References

1. Jatinder K. Gulati, Child Malnutrition: Trends and Issues. *Anthropologist*, 12(2): 131-140 (2010)
2. Akor Francis, Okolo Seline and Okolo Angela, Nutritional Status of Newly Enrolled Primary School Children in Jos-Plateau, Nigeria. *Pakistan Journal of Nutrition* 9 (12): 1166-1170, 2010.
3. Joshi HS, Gupta R, Joshi M C, Mahajan Vipul, Determinants of Nutritional Status of School Children -

- A Cross Sectional Study in the Western Region of Nepal. *NJIRM* 2011; Vol. 2(1).Jan-March page 10-15
4. NabeelaFazal Babar, RizwanaMuzaffar, Muhammad Athar Khan, SeemaImdad .impact of socioeconomic factors on nutritional status in primary school children. *j ayub med collabbottabad* 2010;22(4) page 15-18
 5. G. Srihari, A. Eilander, S. Muthayya, A.V. Kurpad and S. Seshadri, Nutritional Status of Affluent Indian School Children: What and How Much Do We Know? *indian pediatrics* volume 44 march 17, 2007 page 204-213
 6. Raheela M. A. Mian, Mohammad Ali Paola A. Ferroni and Peter Underwood, The Nutritional status of School-Aged children in an urban squatter settlement in Pakistan. *Pakistan Journal of Nutrition* 1(3): 121-123, 2002
 7. ShabanaTharkar & Vijay Vishwanathan. Impact of socioeconomic status on prevalence of overweight & obesity among children & adolescent in urban india. *The open obesity journal* 2009 ,1, 9-14
 8. Maj R Mukherji, Lt Col S Chaturvedi & col R Bhalwar. Determinant of nutritional status of school children. *MJAFI* vol 64, No.3, 2008. p227-231
 9. SupreetKaur, HPS Sachdev S N Dwivedi, R Lakshmy, UmeshKapil, Prevalence of overweight & obesity amongst school children in New Delhi, India. *Asiapac.j.clinNutr* 2008; 17 (4):592-596
 10. HaiderjavedWarriach, Faisal Javed, Mohammad Faraz-ul-Haq, FarihaBatoorKhawaja, Sarah Saleem, prevalence of obesity in school going children of Karachi. *PLoS ONE*4(3):e4816
 11. Ramesh K Goyal, Vitthaldas N Shah, Banshi D Saboo, Sanjiv R Pathak, Navneet N Shah, Mukesh C Gohel *et al*, Prevalence of overweight and obesity in Indian adolescent school going children : its relationship with socioeconomic status and lifestyle factors. *JAPI* march 2010, vol 58 pg.151-158.
 12. AntónioPrista, José AntónioRibeiro Maia, AlbertinoDamasceno, and Gaston Beunen, Anthropometric indicators of nutritional status: implications for fitness, activity, and health in school-age children and adolescents from Maputo, Mozambique. *Am J Clin Nutr* 2003; 77:952-9.
 13. Iris F. Groeneveld, Noel W. Solomons, & colleen M. Doak. Nutritional status of urban school children of high and low socioeconomic status in Quetzaltenango, Guatemala. *Pan American Journal public Health*22 (3).2007.
 14. Kulkarni AP, Baride JP Text book of community medicine 2006 3rd edition, Vora medical publications Mumbai. Page No. 30-32,711
 15. <http://www.who.int/growthref/en/> cited on 26/12/2012
 16. http://en.wikipedia.org/wiki/Malnutrition_in_India cited on 19/12/12

How to cite this article:

MassratFirdos *et al.* 2018, Impact of Socioeconomic Factors on Nutritional Status in School Children of Marathwada Region. *Int J Recent Sci Res.* 9(5), pp. 26589-26593. DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0905.2086>
