

# BMI analysis among Kashmir Valley students from urban and rural areas

Farooq Ahmad Kumar

**Abstract:** Objective: The primary method of defining and diagnosing obesity in national and international public health policy is the Body Mass Index (BMI). Compared to urban dwellers, Rural residents have a higher incidence of chronic diseases, and obesity may play a significant role in this gap. The aim of the present study was to estimate the BMI (Body Mass Index) of the school-going students of government schools in Kashmir, India. the study to access underweight, overweight, and healthy weight. Material and Methods: The total number of (n=90) out of (n=45) urban (Pulwama district) and (n=45) as rural (Shopian district) subjects are under the group of 15 to 20 aged are randomly selected, the physical dimension height and weight. body mass index by measured with the highest measured by a stadiometer in meters and weight was measured by weighing a digital machine in kilograms. Results: the data of 90 subjects strongly indicated that are mostly underweight as compared to healthy or Normal and overweight or obese. The healthy-weight students are mostly from living in urban areas.

**Key Words:** Health, BMI, Underweight, Nutrition. Urban, Rural

## INTRODUCTION

Growing obesity rates around the world are a concern to public health and are just as responsible for the burden of disease much as smoking. Diabetes, hypertension, heart disease, stroke, cancer, dyslipidemia, liver and gallbladder disease, sleep apnea and respiratory issues, osteoarthritis, irregular menstruation, and infertility are all elevated by obesity. Adolphe Quetelet, a Belgian astronomer, statistician, mathematician, and sociologist, established “Social Physis,” which is now known as the BMI (Body Mass Index), in 1830 and 1850 to calculate the ratio of a person’s body weight in kilograms to their height squared. As a “Standard for obesity statistics body mass index is a value resultant from a person’s weight and height squared and it is expected in kg/m square which is the mass of a body in kilograms and height in meters. In general, BMI is a satisfactory tool for whether sedentary subjects and underweight, overweight, or obese”

National Health and nutrition examination survey (NHANES) shows that there is a strong correlation between physical inactivity and weight gain in both sexes. India’s rank in 94th spot among 107 countries in global hunger index 2020, calculated on the basis of total undernourishment of population child stunting, child motility, and waste places, shows child malnutrition rates are still one of the most alarming in the world. In 2019 to 2021 national family health survey (NFHS) from 25 status out of 6 in underweight, 9 as a decline in the number of stunted children, and 10 in Wasted children.

In the first analysis, the weight of an individual is expressed as a percentage of the average weight of people who are the same height, age, and sex in a specific group, which is the most basic expression of relative weight used by life insurance companies. Based on actuarial analyses of mortality conducted in 1912 and 1959, these average values were first referred to as “normal” weight, then “standard” weight, and finally “ideal” weight. The qualities that are influenced by both hereditary and nongenetic variables are height, weight, and BMI. Genome-wide association studies have recently been used to investigate complicated quantitative traits. Recessive genetic influences of quantitative traits still need more study, though. Body mass index (BMI) is a simple method for tracking population health in the context of various hereditary or environmental factors. BMI, a well-known indicator of adiposity that varies from underweight to obesity, is frequently used by both adults and adolescents to assess health consequences. The majority of studies on height, weight, and BMI put a strong emphasis on social and economic variables. Childhood and teenage obesity are independently correlated with race/ethnicity, socioeconomic status (SES), and behavioral variables. Increased BMIs often indicate above body fat, and when BMI rises—especially when it reaches levels of 30 or higher—health risks rise as well. Early experiences shape early conceptions of one’s body image. Dietitians can advise parents, teachers, and students on healthy body weight and measurements. The numerical assessments of body fatness Keys from a previous, enormous study with Joseph Brozek at the

Laboratory of Physiological Hygiene at Minnesota, published in 1953 as “Body fat in adult man,” are utilized here to confirm the relative weight indices. Policies including land use and economics that make chain supermarkets more accessible may improve the weight outcomes for children. Even yet, early intervention is required to stop overweight from having negative impacts on one’s health and finances during this period of transition. In India’s urban population, chronic underweight and overweight are equally prevalent, with substantial public health consequences for the burden of diseases linked to both physical status extremes. A major cause for concern is the high incidence of overweight among urban populations with higher levels of education and the high prevalence of thinness among those populations. Malnutrition is estimated by the World Bank to cost India at least US\$10 billion yearly in lost productivity, disease, and mortality. 42 Less educated agricultural male laborers are more likely to migrate if the current trend of rural to urban migration keeps up since industrialization and agriculture’s declining GDP contribution may compel them to look for alternate income sources in cities. One major factor affecting the prevalence of thinness is the size of the urban population with lower levels of education. Therefore, a significant public health issue in urban India will likely be the burden of diseases linked to thinness. As migration increases, the middle class and those seeking to join it experience a shift from low to higher education. As a result, the burden of diseases linked to being overweight will also continue to rise. Policymakers may need to think about developing an integrated health and education policy that strives to improve educational standing and reduce illiteracy-related thinness while containing the rise in obesity in urban India in order to address this dual burden of public health concerns. Therefore, concerted efforts should be made to control this in young adults for their present well-being and to possibly avoid the risk of disease later in life.

**METHODS**

The purpose of this study was to identify the BMI (Body Mass Index) of the school-going children. The sample was randomly selected from the school-going students of Kashmir. 90 students were selected from school going students, calculated by means of measuring tools stadiometer was used to weight with the digital weighing machine, Hight was measured with stadiometer and age was calculated from the chronological order from the date of birth. The BMI was selected as a variable which is calculated  $BMI = \text{Weight}(\text{kg}) / \text{Height}(\text{H}^2)$ .

*Test Administration*

*Standing height*

Have to Stand barefoot against the wall. The heels, buttocks, shoulder, and the back of your head touch the wall. Look forward and stretch your back. Slide the body meter down until this touches the skin of the head, or read the number of centimeters on the measuring tape.

*Weight*

Have the subject remove shoes and heavy clothing, such as sweaters. Have the child or teen stand with both feet in the center of the scale. Record the weight to the nearest decimal fraction.

**RESULTS**

**Table 1** Weight status of rural and urban subjects

	Urban area	%	Rural Area	%
Underweight	44	2.27 %	26	73.07 %
Normal Weight	1	97.72	19	26.92
Overweight	0	0%	0	0%
Total	45	100	45	100

**Table 2** Percentiles Ranks

Weight Category	Percentile Range
Underweight	Less than the 5 <sup>th</sup> percentile
Healthy Weight	5 <sup>th</sup> percentile to less than the 85 <sup>th</sup> percentile
Overweight	85 <sup>th</sup> to less than the 95 <sup>th</sup> percentile
Obesity	95 <sup>th</sup> percentile or greater

The total 45 selected students FROM RURAL AREA out FROM 1 (2.27%) were underweight,44 (97.72%) was in normal or healthy weight and NO were in overweight or obesity risk. The total 45 selected students from urban area out from 26 (73.07%) were underweight, 19 (26.92%) was in normal weight and nowhere is in overweight. Explanation of percentile used in both the boys and percentile chart. The charts show the (BMI) percentile for both boys and girls from 2- 20 years old.

**Table 3** Comparative Statistics

	N	MEAN	SD	(t)	F	P-Value
Urban	45	18.9558	1.22423	3.905	3.567	.062
Rural	45	17.4971	2.18603	3.905		

**CONCLUSION**

Throwing light on the study of several findings related to BMI which is a good indicator of different factors of child health-related problems such as height occurrence of underweight during childhood years the study also indicate the age and gender

differences which has a strong impact on body mass index and is a good indicator of well-defined underweight, healthy weight or normal weight and adiposity or overweight. Malnutrition and Socio demographic characteristics are also associated with health risks and body proportions is particularly when parametric predictions are used in the Body Mass Index model. The result of the study facilitates defensive health in children up to the age between 10 to 20 years and an overview of the city shows that underweight rates in children and adolescents are not just among the higher-income families but also lower-income families via overweight or obese it will remain a foremost concern. The frequent and excessive consumption of fast-food products carries a host of risk factors for the general health such as obesity, diabetes mellitus or cardiovascular diseases. The frequent consumption of food high in energy density.

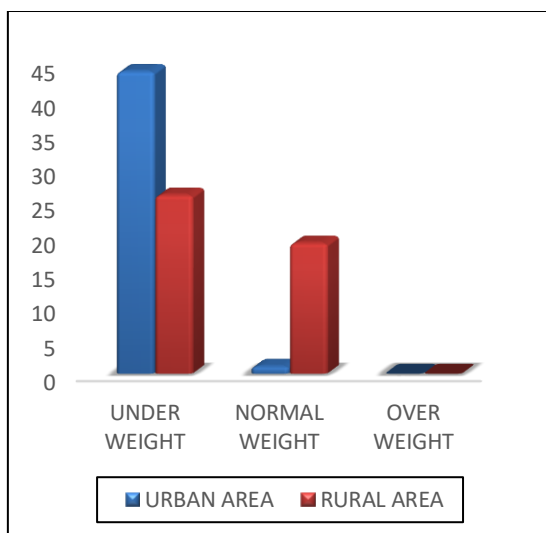


Figure 1 Graphical Representation of Weight

The relative BMI can be used to track changes in relative overweight and presumptive fatness over time. There will always be those kids with high relative BMIs who are moderately hefty but not obese. In terms of the centile distribution of BMI, current experience with age-related norms is insufficient to distinguish between normal and pathological behavior. With practice and time, separating pathological from physiological obesity may become easier by comparing relative BMI to other measures of fatness such as skinfold thicknesses and correlations with obesity like hypertension, hyperinsulinemia, and hypertriglyceridemia. A fluctuating relative BMI clearly shows a break from the pre-existing link between weight and height for age. The upward movement of a child's BMI for age centiles indicates an imbalance in weight gain relative to height, most likely as a result of excessive fat deposition.

Compared to high school students in urban regions, high school students in rural areas had a statistically significant increased likelihood of having a normal BMI-for-age. In comparison to high school pupils in rural areas, the percentage

of overweight and obese kids in metropolitan areas is statistically not much greater. High school students from urban regions identify overweight and obese status with low accuracy, but high school students from rural areas typically overestimate their weight. Additionally, compared to teenagers in rural settings, adolescents from metropolitan areas have a stronger tendency to underestimate their body weight. In terms of height-for-age. The results of this study suggest there are rural–urban differences in children's prevalence of overweight and physical activity even within a fairly homogenous.

The present study concludes that overweight and obese children do not get more counseling sessions compared to their healthy peers. There is a need for more interactions at home and more reinforcement of counseling sessions in the school curriculum with special emphasis on overweight and obese children regarding their nutrition, physical activity, and weight. The present trial had few shortcomings including bias of geographical area; non-inclusion of the interaction of obese children to their parent/ teacher in study questionnaire, way of assessing the counseling availability was children response to the questionnaire which cannot be fully trusted, small sample size, and short monitoring period. The prospective longitudinal trials with a larger sample size and longer monitoring period are required to reach a definitive conclusion.

**Conflict of interest:** No conflict of interest

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## REFERENCES

- Jia H, Lubetkin EI (2010) Trends in quality-adjusted life-years lost contributed by smoking and obesity. *Am J Prev Med* 38(2): 138–44.
- Malnick SD, Knobler H (2006) The medical complications of obesity. *QJM* 99(9): 565–79.
- Eknoyan, G. (2008). Adolphe Quetelet (1796–1874)—the average man and indices of obesity. *Nephrology Dialysis Transplantation*, 23(1), 47-51. In 1980 BMI was used by WHO (World Health Organization)
- Pitts, N. B., Zero, D. T., Marsh, P. D., Ekstrand, K., Weintraub, J. A., Ramos-Gomez, F., ... & Ismail, A. (2017). Dental caries. *Nat Rev Dis Primers* 3: 17030.
- Kuczmarski, R. J., Flegal, K. M., Campbell, S. M., & Johnson, C. L. (1994). Increasing prevalence of overweight among US adults: the National Health and Nutrition Examination Surveys, 1960 to 1991. *Jama*, 272(3), 205-211
- Rolland-Cachera, M. F., Deheeger, M., Bellisle, F., Sempe, M., Guillaud-Bataille, M., & Patois, E. (1984). Adiposity rebound in children: a simple indicator for predicting obesity. *The American journal of clinical nutrition*, 39(1), 129-135
- Singh, G. K., Kogan, M. D., Van Dyck, P. C., & Siahpush, M. (2008). Racial/ethnic, socioeconomic, and behavioral

- determinants of childhood and adolescent obesity in the United States: analyzing independent and joint associations. *Annals of epidemiology*, 18(9), 682-695.
- Hiza, H. A., Pratt, C., Mardis, A. L., & Anand, R. (2001). Body Mass Index and health.(Insight 16: March 2000). *Family economics and nutrition review*, 13(2), 52-55.
- Welch, C., Gross, S. M., Bronner, Y., Dewberry-Moore, N., & Paige, D. M. (2004). Discrepancies in body image perception among fourth-grade public school children from urban, suburban, and rural Maryland. *Journal of the American Dietetic Association*, 104(7), 1080-1085.
- Powell, L. M., Auld, M. C., Chaloupka, F. J., O'Malley, P. M., & Johnston, L. D. (2007). Associations between access to food stores and adolescent body mass index. *American journal of preventive medicine*, 33(4), S301-S307
- Phogat, P. (2022). Importance of diet and exercise for good health of women. *Sports Science & Health Advances*, 1(01), 21-23.
- Chirilă, S., Hangan, L. T., Broască, V., Beatrice, S., & Elena, M. (2015). Difference of height, body mass index and self-assessment among high-school students in Constanta County-A comparison between rural and urban areas. *ARS Medica Tomitana*, 20(3), 144-149.
- Tuan, N. T., Tuong, P. D., & Popkin, B. M. (2008). Body mass index (BMI) dynamics in Vietnam. *European journal of clinical nutrition*, 62(1), 78-86.
- Shukla, H. C., Gupta, P. C., Mehta, H. C., & Hébert, J. R. (2002). Descriptive epidemiology of body mass index of an urban adult population in western India. *Journal of Epidemiology & Community Health*, 56(11), 876-880.
- Sola, A. O., Steven, A. O., Kayode, J. A., & Olayinka, A. O. (2011). Underweight, overweight and obesity in adults Nigerian living in rural and urban communities of Benue State. *Annals of African medicine*, 10(2).
- Sagre, S., Kumar, N., & Kumar, S. (2022). effects of circuit training on selected physical fitness components of kabaddi players. *Sports Science & Health Advances*, 1(01), 12-15.
- Wang, H., Du, S., Zhai, F., & Popkin, B. M. (2007). Trends in the distribution of body mass index among Chinese adults, aged 20–45 years (1989–2000). *International Journal of Obesity*, 31(2), 272-278
- Joens-Matre, R. R., Welk, G. J., Calabro, M. A., Russell, D. W., Nicklay, E., & Hensley, L. D. (2008). Rural–urban differences in physical activity, physical fitness, and overweight prevalence of children. *The Journal of rural health*, 24(1), 49-54.
- Befort, C. A., Nazir, N., & Perri, M. G. (2012). Prevalence of obesity among adults from rural and urban areas of the United States: findings from NHANES (2005-2008). *The Journal of Rural Health*, 28(4), 392-397.
- World Health Organization, & World Health Organization. (2006). WHO Multicentre Growth Reference Study Group: WHO child growth standards: length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development. Geneva: WHO, 2007

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#### Author Information

**Farooq Ahmad Kumar**; Research Scholar, Department of Physical Education and Sports, Central University of Haryana, Mahendergarh, Haryana, India

**Corresponding Author:** Farooq Ahmad Kumar, Email: farooqkumar8888@gmail.com

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