A STUDY OF BMI & HEALTH STATUS OF ADOLESCENT GIRLS (AGE GROUPS 13 TO 18 YEARS) OF SURAT CITY.

PATHAN SABIHA B., SHAH NEHAL D. & DHOLAKIA ARUN H.

Dept. Of Zoology, Sir P. T. Sarv. College of Science, Athwalines, Surat - 395001, Gujarat

(shahnehal29@gmail.com, ahdholakia@gmail.com)

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ABSTRACT

Keywords: BMI (Body Mass Index), Adolescent girls, underweight, obesity, Non-veg. & vegetarian diet.

Nutrients obtained from diet promote & maintains health of an individual. Adolescence in girls has been identified as a special period of their biological life cycle that demands special attention in terms of nutrition & balanced diet. Inappropriate food habits can lead to ill-health or malnutrition. As per National Nutrition Monitoring Bureau data, India shows high level of under nutrition amongst teens. Whereas, globally, an estimated 10% of children (aged 5 to 17 years) are overweight or obese, which persist into adulthood with high health risks.

Body Mass Index (BMI) is the measure of body weight based on a person's weight and height. Though it does not actually measure the percentage of body fat, it is used to estimate a healthy body weight based on a person's height, assuming an average body composition. BMI percentile indicates the relative position of the child's BMI number among children of the same sex & age.

We aimed to use BMI & BMI percentile values as a screening tool to check health status of randomly selected 300 adolescent girls (age group 13 to 18 years) of Surat city. Efforts were also made to analyze, understand & predict from these values future health problems in these subjects. Also we tried to check the role of Diet on the value of BMI & percentile.

From above values, 180/300 (60%) adolescent girls were found to be healthy but yet another 97/300 (32.3%) girls were underweight. Such lower BMI (less than 5th BMI percentile) can make teenagers nutrient deficit. Also when BMI is in the danger zone (85 to <95th BMI percentile), one could be at risk for developing a bunch of dangerous conditions, like, Type II Diabetes, Heart disease, etc. as a result of obesity. Here 20/300 (6.6%) subjects were found to be overweight while 3/300 (1%) were obese.

Also when analyzed, we found that diet has an impact on BMI values. 57/152 (37.5%) girls were underweight vegetarians as compared to 41/148 (27.7) non-vegetarian girls. Similarly, number of obese & over-weight was high in vegetarian group.

Thus, we can conclude that diet, BMI and health are closely associated.

INTRODUCTION

Adolescence is a period of transition between childhood and adulthood. Adolescents constitute over 21.4 % of the population in India. It is the period of life which is extended from 10-19 years. As per Patil, *et al* (2009), this period is very crucial since these are the formative years in the life of an individual when major physical, psychological and behavioural changes take place.

To assess their health status Body mass index (BMI) is used. BMI is calculated from a person's weight and height. It is used as a screening tool for assessment of possible weight problems like obesity, underweight and overweight in the population. For children the interpretation of BMI is both age & sex – specific. According to Centre for disease control (CDC), USA, the BMI percentile indicates the relative position of the teen or child's BMI value among children of the same sex and age (http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html).

When BMI is below 18.5, weight status is considered to be underweight (UW), in between 18.5 – 24.9, it's normal/ healthy (H), when it's in the range of 25 – 29.9 Overweight (OW) & if above 30, person is Obese (OB) (www.cdc.gov; WHO, 1983). The values of BMI serve to be one of the reliable indicators of growth, health risks, diseases & body fatness.

In this research paper an attempt has been made to observe health status of three hundred adolescent girls of Surat city. Also we have tried to observe the influence of vegetarian & non- vegetarian food on their health.

METHODOLOGY

A random survey was conducted in different areas of Surat city. 300 respondents (50 subjects per age group) were interrogated with prior consent. The information was noted in a well framed Proforma wherein data related to their lifestyle, family background, health, food habits, etc. were noted. Height & weight of these adolescents of age group 13 to18 years was also measured. BMI & BMI percentiles were calculated using online BMI calculator for adolescents available on www.cdc.gov. Collected information was further analyzed scientifically.

RESULT & DISCUSSION

BMI is an important index of nutritional assessment (Cherian et al. ,1988; Rao ,1996 & Patil ,2009). It predominates the other methods used for nutritional assessment. Taking this into account, we have tried to analyze the health status of adolescent girls of surat city by calculating BMI and BMI percentile values. The reason for using BMI age - and sex specific percentiles for children and teens is that, the amount of body fat changes with age and the amount of body fat differs between girls and boys.(http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html).

As per Chart -1**,** 60% (180/300) were with normal nutritional status, 32.30 % (97/300) adolescent girls were underweight (UW) & 6.6 % (20/300) were categorized as overweight (OW). While only 1 % (3/300) of the study subjects were labeled as obese. Even though majority respondents are found to be healthy, yet the other values are equally significant & alarming. Each age group of the present study showed many girls with underweight, while it is a point to be noticed that number of overweight girls was found to increase from age 13 to 17 (Chart-2).High level of under nutrition in the present sample might be due to the differences in socio-cultural practices, level of socio economic development, values attached to the girl child and prevailing dietary practices in different settings. But if this undernutrition prevails consistently for a long period of their life then they may suffer diseases like anemia, osteoporosis, immune system deficiencies, infertility & type 1 diabetes (http://weightgain.lifetips.com/cat/61224/health-risks-of-being-underweight/index.html)**.** About 6.6 % girls were found to be obese. This might be one of the confounding factors in their later life & cause hypertension, dyslipidemia, type 2 diabetes, coronary heart disease, osteoarthritis and overall increase in morbidity and mortality during adult life (Kapil, et al 2002).

The increase of overweight subjects with increase in age might be due to their irregular life style, mental pressure due to studies, on-set & setting of menstrual cycle, adolescent psychology, for which they are inclined to frequent eating. This requires further analysis to find the exact cause of overweight.

In adolescence there is increase demand for energy, proteins, minerals and vitamins which can be duly fulfilled by varied diet. Non- Vegetarian foods are high fat content & are rich in trans fatty acids which may lead to obesity & chronic heart diseases in long run (www.NutritionVista.com).In present study half of the subjects were vegetarians and remaining half consume non vegetarian food. The impact of such dietary habits on the health of the surat girls can be seen in chart – 3. To our surprise the percentage of healthier girls was more in non-vegetarian group (66.89 %, 99/148) compared to vegetarian ones (53.3 %, 81/152) although the difference is not very high. Also it was striking to note that number of overweight girls in vegetarian group (7.23%, 11/152) was found to be more compared to overweight in non-vegetarian girls (Chart – 3).

It's worth mentioning that when the outcomes of present study were compared with the results obtained in 270 adolescent girls of rural areas of Varanasi and more than 2 lakhs girls of 168 villages of Ratnagiri district which can be seen in chart -4**.** 68.52 % adolescent girls of Varanasi and 69.3 % subjects of Ratnagiri were found to be underweight compared to only 32.30 % present study subjects. The lower figures of under nutrition in the subjects may relate to urban habitation which makes them accessible to food and lesser physical activities compared to above mentioned rural girls. Number of overweight and obese girls was also high in Surat subjects compared to the Varanasi and Ratnagiri subjects' percentage of overweight and obese in Ratnagiri subjects (chart – 4**).** This clearly indicates that there are all possible reasons to believe that adolescents in the urban area have more sedentary life style, less outdoor activities & have excess of fast – junk food (Kapil, et al., 2002). This needs detail study to find out facts which can reveal rational reasons behind the differences between these two types of sample groups – rural & urban.

Thus BMI reveals that adolescent girls of Surat city are not completely free from the vicious cycle of malnourishment & prone to many health issues if they fail to check their domestic life style & food habits right in time. Also BMI values can serve to be indeed a simple yet reliable tool to keep a check of their health profile. We still need to find appropriate solutions for upbringing the health status of adolescent girl child in our urban societies who are also the future mothers.

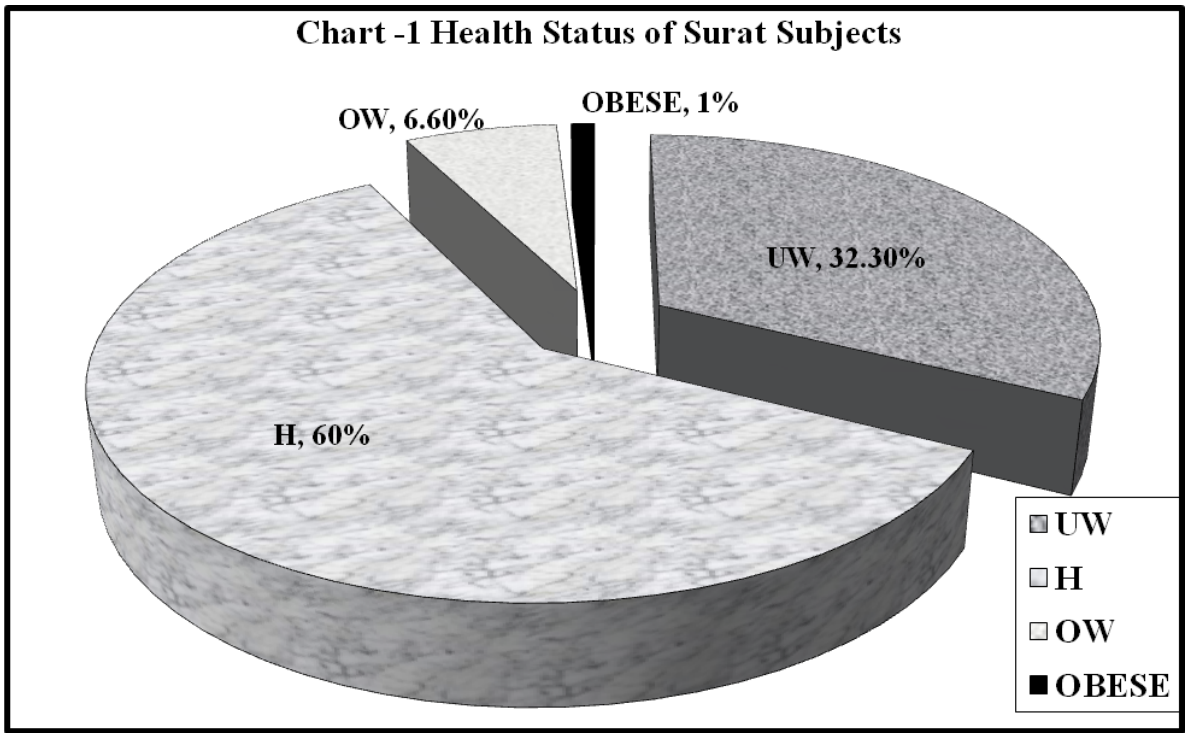


Chart -1 Health Status of Surat Subjects
OW, 6.60%
OBESE, 1%
UW, 32.30%
H, 60%
UW
H
OW
OBESE

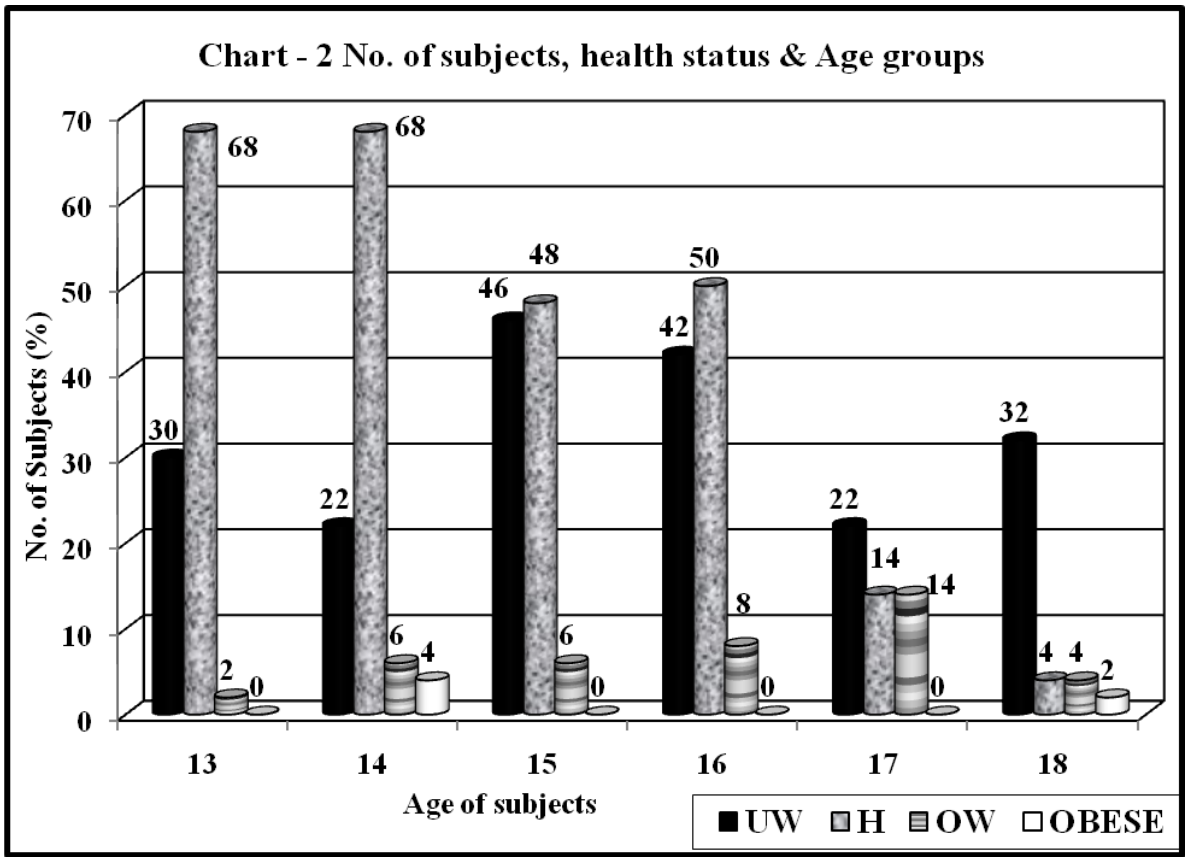


Chart - 2 No. of subjects, health status & Age groups
No. of Subjects (%)
70
60
50
40
30
20
10
0
30
68
2
0
22
68
6
4
46
48
6
0
42
50
8
0
22
14
14
0
32
4
4
2
13
14
15
16
17
18
Age of subjects
UW
H
OW
OBESE

Chart - 3 Health status of vegeterian and nonvegeterain subjects

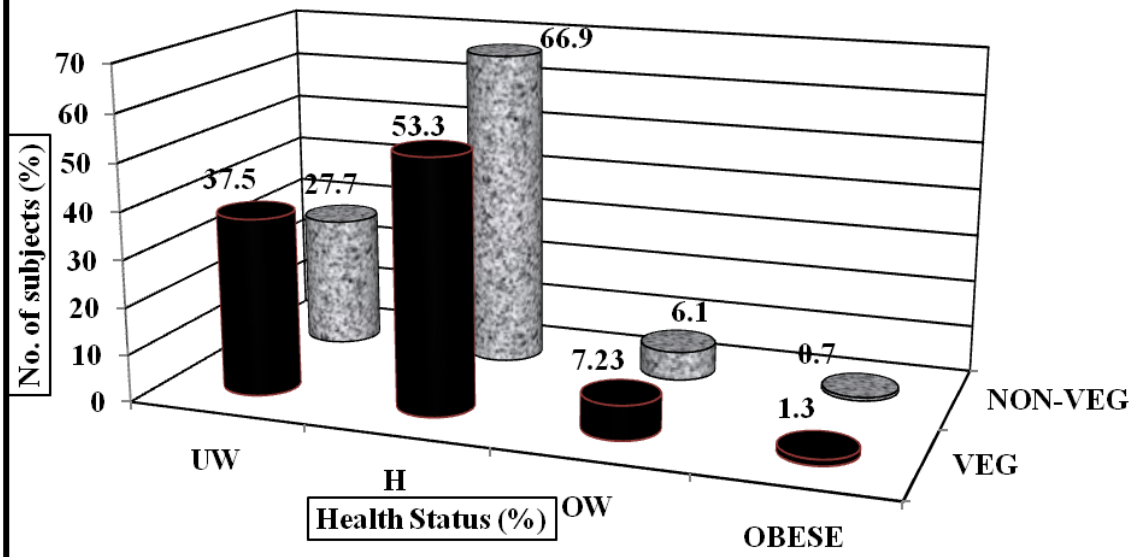
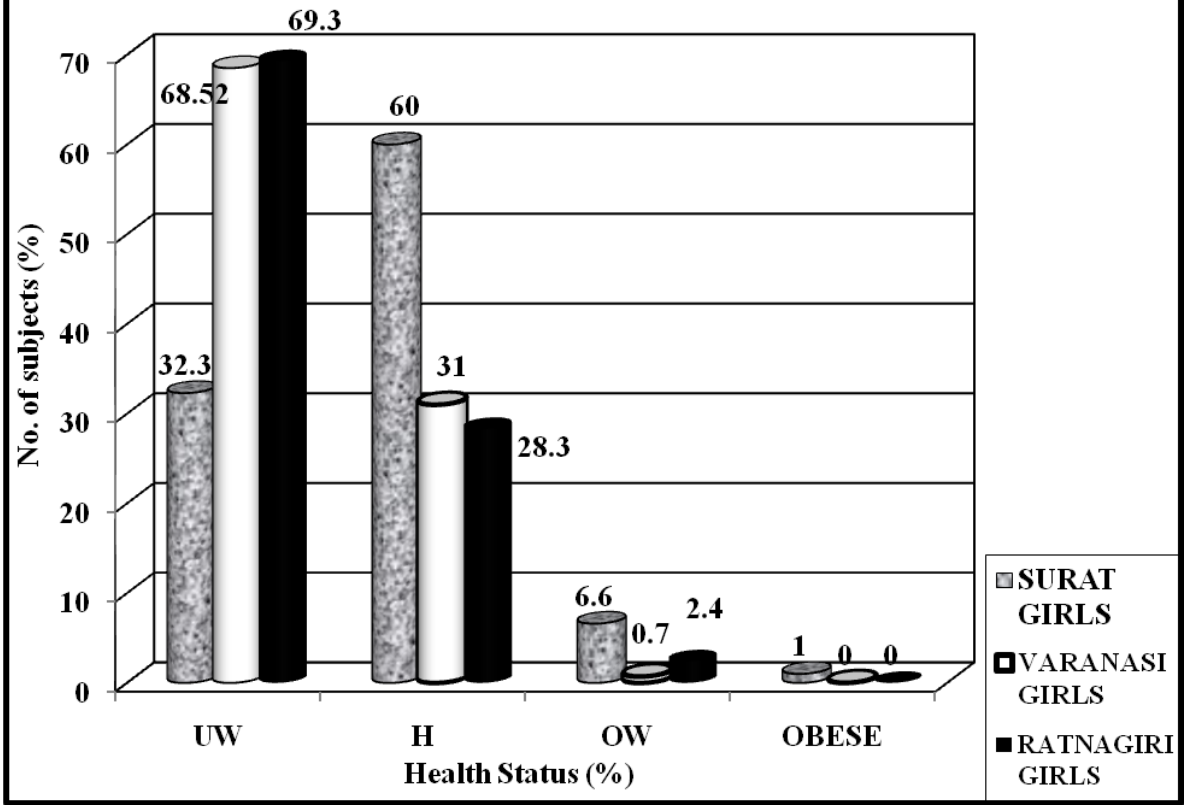


Chart - 4 Comparison of Health Status of Surat subjects with girls from Varanasi & Ratnagiri



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