

Childhood & Adolescent Obesity: Prevalence of Overweight and Obesity among School Going Adolescents, Rewa Madhya Pradesh**Kamini Goyal¹, Anurag Udhwani², Priyanka Shukla³, Karan Joshi⁴**¹Junior Resident, Department of Pediatrics, Shyam Shah Medical College, Rewa²Junior Resident, Department of Pediatrics, Shyam Shah Medical College, Rewa³Associate Professor, Department of Pediatrics, Shyam Shah Medical College, Rewa⁴Professor, Department of Pediatrics, Shyam Shah Medical College, Rewa

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Abstract:**Introduction:** Obesity is rapidly increasing and becoming a focus of interest among medical experts, and the frequency of obesity and overweight in teenagers may have an impact later in life. In this study, we wanted to determine the prevalence of obesity and overweight in the population.**Objectives:** To estimate the prevalence of Obesity and Overweight in school going adolescents.**Method:** Demographic and anthropometric data of pupils aged 10-19 years was collected through school visits during the period from September 2021 to September 2022.**Results:** Out of total 500 adolescents 4.2% & 7.8% were found to be Obese & overweight respectively.**Conclusion:** Obesity in adolescents and children has skyrocketed, becoming a serious public health issue with far-reaching repercussions. There should be an urgent focus on screening for metabolic abnormalities and promoting a healthy lifestyle among adolescents who have been identified with metabolic abnormalities and, if left untreated, can develop metabolic syndrome additionally to cardiovascular, emotional, and social problems.**Keywords:** Adolescents, Obese, Overweight, Obesity.

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Introduction

Obesity is rapidly spreading and becoming a topic of interest amongst the medical professionals, particularly prevalent in low and middle-income countries. There are numerous growing epidemics, including obesity, cardiovascular disease (CVD), and diabetes. Obesity is an independent risk factor for CVD, which increases the risk of morbidity and mortality and reduces life expectancy.

For children and adolescents, overweight and obesity are defined using age and sex specific Nomogram for body mass index (BMI). Children with BMI equal to or exceeding the age-gender-specific 95th percentile are defined obese. Those with BMI equal to or exceeding the 85th but are below 95th percentiles are defined overweight and are at risk for obesity related co-morbidities [1].

In compared to industrialized nations, the prevalence of long-term or non-communicable disease is increasing more rapidly in emerging nations. The cluster of dyslipidemia, elevated blood pressure, insulin resistance, and central obesity is termed as the metabolic syndrome (MS), which increases the risk of cardiovascular disease (CVD). Furthermore, metabolic syndrome carries a high risk of CVD

than any other single cause [2,3]. Etiopathogenesis of childhood obesity is multi-factorial and includes genetic, environmental, neuroendocrine, psychological, metabolic and social factors. Many co-morbid conditions like metabolic, cardiovascular, psychological, neurological, pulmonary, hepatic, and renal disorders are having association with childhood obesity in some extent. The treatment of overweight and obesity in children and adolescents necessitates a multidisciplinary and multi-phase strategy, which includes dietary control, physical activity management, avoiding sedentary lifestyles, medical therapy, and, finally, surgical intervention such as bariatric surgery.

Aims & Objectives: Estimate the prevalence of Obesity and Overweight in adolescents.

Methodology: The study was carried out in five schools in the Rewa district of Madhya Pradesh. The study was cross-sectional, including a representative sample of children and teenagers aged 10 to 19. Each participant's anthropometric data was collected including height, weight, basic metabolic index (BMI), hip circumference, waist circumference, and waist to hip ratio.

Anthropometrical data was collected by experienced health-care professionals, and a three-tier surveillance system was employed to ensure the quality of the data collection.

First-tier monitoring was used for internal quality control, and a team member and field observer oversaw the calibration of the anthropometric equipment and the taking of data.

An outside data quality assurance group was responsible for the second tier surveillance system and oversight. Everything was measured in accordance with protocol.

Inclusion Criteria:

- All children studying in high schools. (10 to 19 years)

- Parents/guardians willing to give consent for study.

Sample size: (n=500)

Result

Out of 500 adolescents, 88% had a BMI below the 85th percentile, while 12% had a BMI over the 85th percentile. 4.2% of children had a BMI over the 95th percentile. 4.2% population was Obese, 7.8% population was Overweight and rest was in normal range.

Out of the total students 35 (7%) had Family H/O Hypertension,40 (8%) students had Family H/O diabetes and 17 (3.4%) students had H/O Menstrual abnormalities.

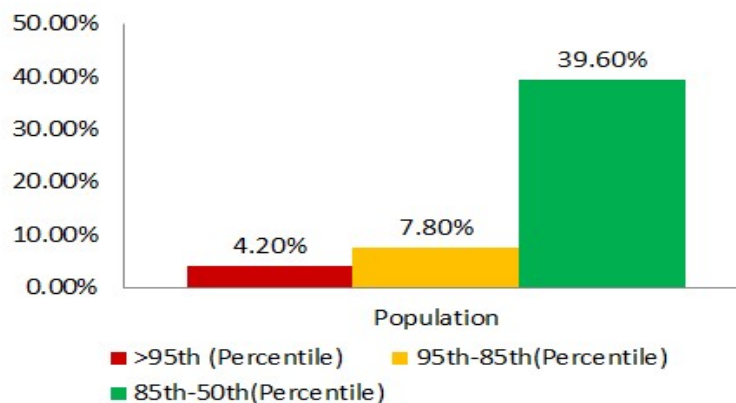


Figure 1: Showing the prevalence of the Obesity and Overweight in Adolescents

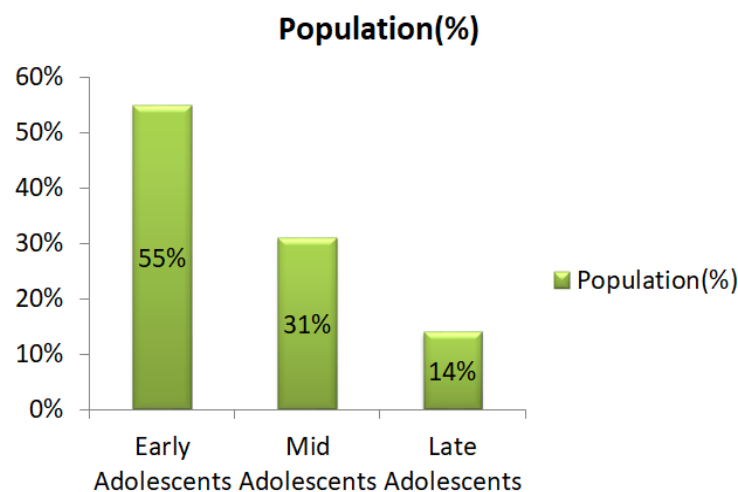


Figure 2: Showing the study populations divide in Early, Mid and Late Adolescents

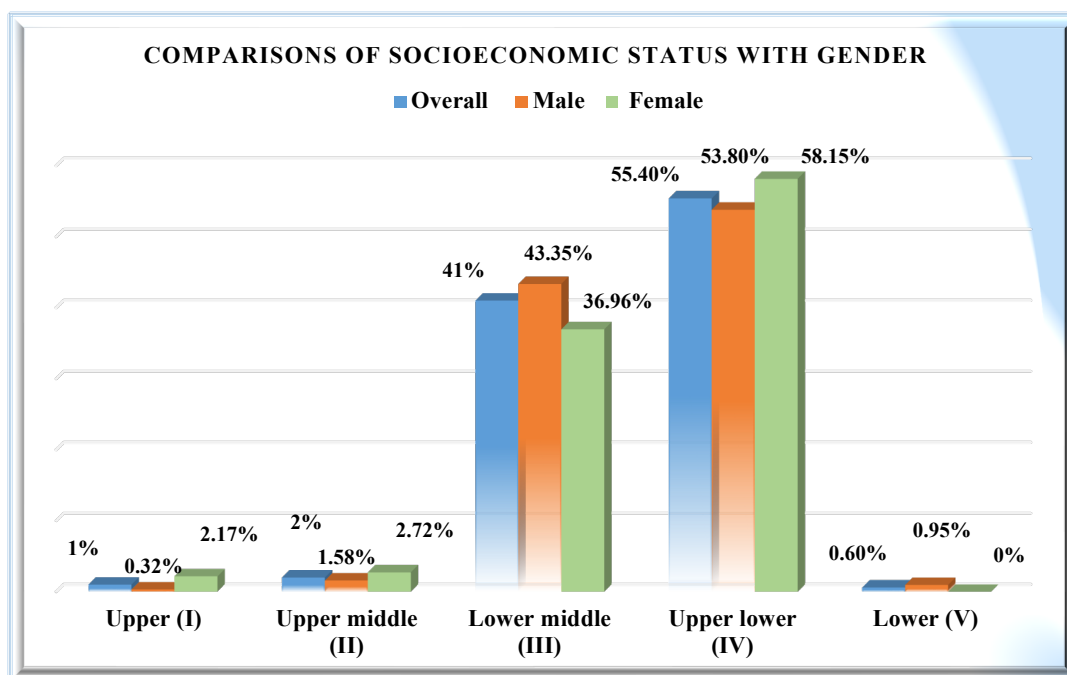


Figure 3: Showing the prevalence of the Socio-economic Status of specific gender

Table 1: SMR Staging amongst population as Male & Female

SMR staging	Overall (n=500)		Male (n=316)		Female (n=184)		P value	Results
	No. of children	Percentage	No. of children	Percentage	No. of children	Percentage		
2	137	27.4%	71	22.47%	66	35.87%	<0.0001	Significant
3	85	17%	55	17.41%	30	16.30%		
4	175	35%	103	32.59%	72	39.13%		
5	103	20.6%	87	27.53%	16	8.70%		

Table 2: Anthropometric Mean data with the Standard Deviation in Male and Females.

Anthropometric measurements	All (n=500) Mean ± SD	Male (n=316) Mean ± SD	Female (n=184) Mean ± SD	P value	Results
Waist circumference (cm)	59.54 ± 9.50	60.91 ± 10.02	57.19 ± 8.05	<0.0001	Significant
Hip circumference	71.92 ± 9.74	73.13 ± 9.94	69.83 ± 9.03	0.0002	Significant
Waist/Hip ratio	0.82 ± 0.06	0.83 ± 0.06	0.82 ± 0.05	0.0570	Significant
BMI	19.12 ± 3.21	19.44 ± 3.37	18.58 ± 2.84	0.0038	Significant

Table 3: Presence of one or more risk factors in population of our current study

No. of Components	No. of children (n=500)	Percentage
Family H/O diabetes	40	8%
Family H/O Hypertension	35	7%
Family H/O CVD	0	0%
H/O PCOD	17	3.4%
Personal H/O diabetes	1	0.2%
Personal H/O hypertension	0	0%

Family H/O diabetes was 40 (8%) patients, 35 (7%) patients were family H/O Hypertension, 17 (3.4%) were H/O PCOD and 1 (0.2%) patient were personal H/O diabetes respectively.

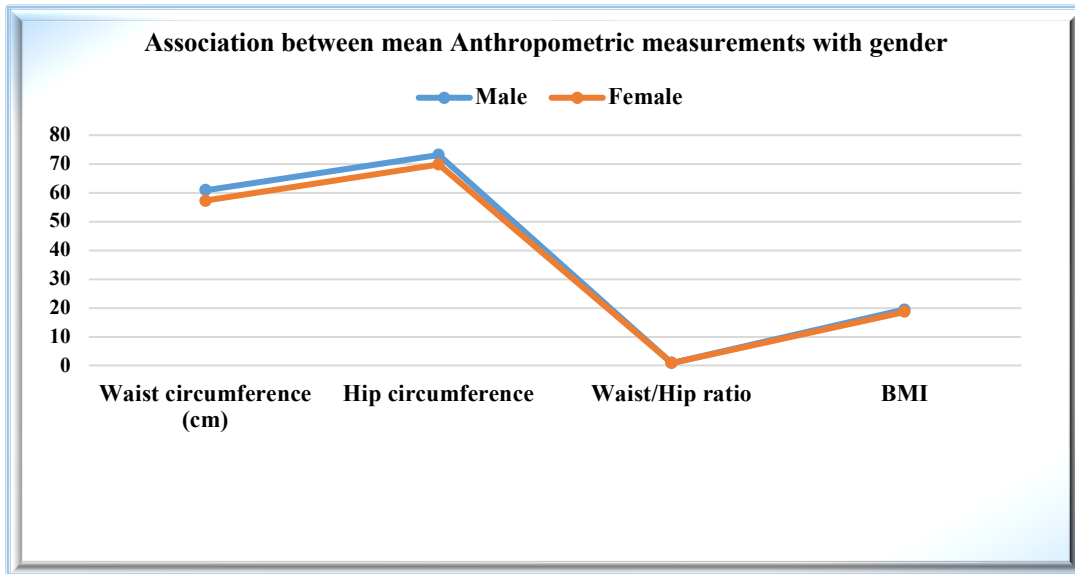


Figure 4: Association between mean anthropometric data in girls and boys

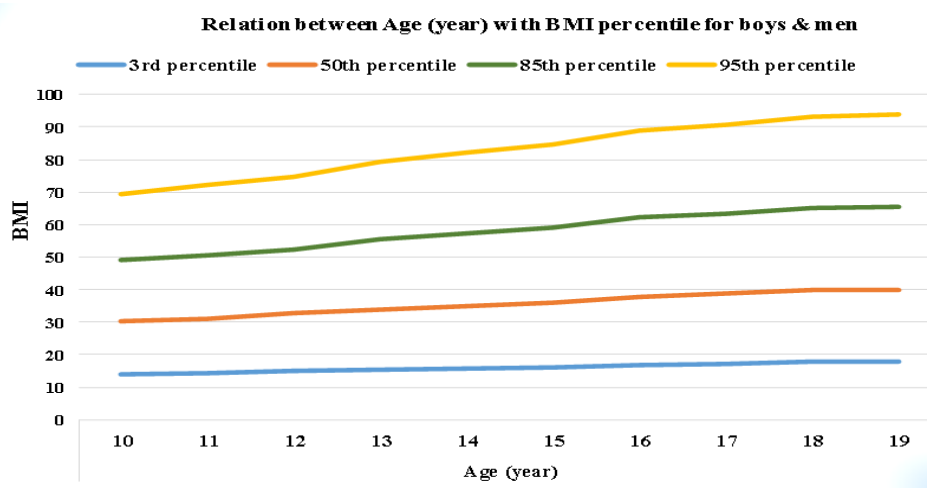


Figure 5:

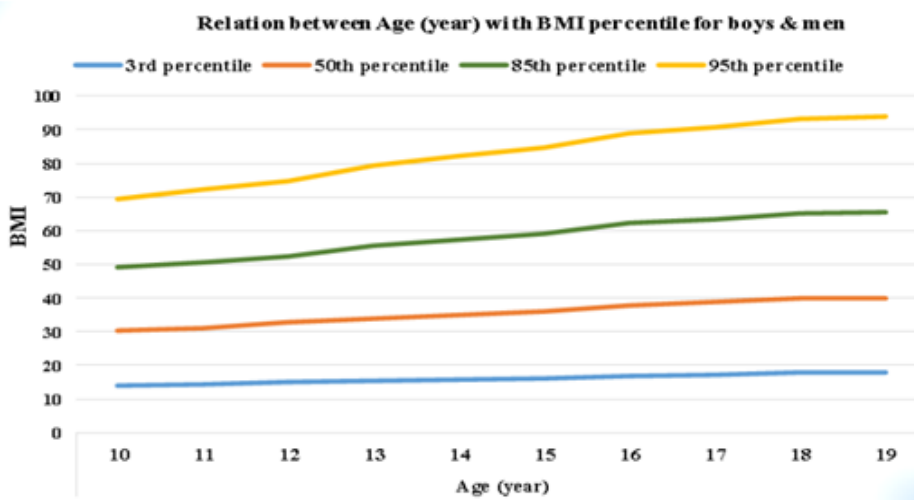


Figure 6:

Figure 5,6: Showing association between the gender and BMI

Conclusion

Obesity in children & adolescents has increased significantly & becoming a serious public health issue with its consequences. There should be an urgency to focus on screening for the Obesity, metabolic abnormalities and promote the healthy lifestyle among the adolescent who diagnosed, who left unaddressed can develop metabolic syndrome. In addition to cardiovascular, emotional and social issues. Its implications on future generations could be a serious issue. The reversibility of this disease with suitable intervention strategies should be seen as an opportunity.

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