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Obesity and related factors among school going girls in Purnea district (With special reference to Muslim girls)

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Abstract
In India overweight and obesity are now so common that they are replacing more traditional problems such as under nutrition and other infectious disease as the most significant causes of ill health. According to WHO in 1995, there were an estimated 200 million obese adults worldwide and another 18 million under 5 years children classified as overweight. Now childhood obesity is reaching alarming proportions with India reporting around 22% prevalence rate over the last 5 years in children and adolescents aged between 5-19 years. The study was a cross-sectional study. Study conducted in four schools from Purnea block of Purnea district. 120 girls in the age group 7-12 years were selected randomly. Anthropometric measurement of weight and height has done by using weighing scale and height scale. Respondent's socio-demography, eating habit, physical activities and Knowledge about obesity and related factors were assessed by closed questions and opened questions. Near about three fourth (72.50%) of parents were illiterate. It is clear from the data that near about half (47.50%) of the girl's family earned below Rs. 5000. It was found that the 19.17% of the girls were obese while 25.83% of the girls were overweight. Study finding revealed that there was no significant relationship was found between nutrition knowledge of the girls and their obese status. A strong association between physical activities of the girls and their obese status was found in present study.

Keywords: obesity, nutritional status, Muslim girls, nutrition

1. Introduction
Obesity is due to an individual consuming in more calories than they burn over an extended period of time. These extra calories are stored in body as form of fat. Although there are several factors that can lead to this imbalance of energy in obese individuals, i.e., behavior, environment, lifestyle and genetics. In present scenario obesity is now recognized as a major cause of mortality and morbidity around the world. Its prevalence is increasing dramatically regardless of age, gender, income and geographical variation. According to a WHO report, there are 1 billion overweight people in the world, of whom 300 million are obese. Currently, 14% of children and adolescents in the United States are overweight and 20% are at risk for overweight. Twenty per cent of adult men and 25% of adult women in the US are obese. In recent decades childhood obesity has also become a serious public health problem because of its strong association with adulthood obesity and the related adverse health consequences. Increasing trends in the prevalence of childhood obesity are now being seen both in developed and developing countries of the world especially in India. In India overweight and obesity are now so common and replacing more traditional problems such as under nutrition and infectious disease as the most significant causes of ill health. According to WHO in 1995, there were an estimated 200 million obese adults worldwide and another 18 million under 5 years children classified as overweight, now childhood obesity is reaching alarming proportions with India reporting around 22% prevalence rate over the last 5 years in children and adolescents aged between 5 to 19 years.
A new report published by a commission formed by the World Health Organisation (WHO) has identified "marketing of unhealthy foods, packed food and non-alcoholic beverages" as a major factor in the increase in numbers of children being overweight and obese, particularly in the developing country especially now in India. Globally, the prevalence of childhood obesity has risen in recent years. The International Association for the Study of Obesity (IASO) and International Obesity Task Force (IOTF) now estimate that 200 million school children are

either overweight or obese. It is very difficult to compare prevalence rates of childhood obesity in different countries due to several limitations. The most prevalent obesity-related diseases include: High blood pressure, Diabetes, High cholesterol, Stroke, Heart disease, Gallbladder disease, Osteoarthritis, respiratory problems and Sleep apnea & some types of cancers. Keeping in the view of above said the study was undertaken to assess the obesity and its related factors.

2. Material & Methods

The study was a cross-sectional study, which was focused on the prevalence of childhood obesity in school going Muslim girls in Purnea district of Bihar. Study conducted in four Govt. schools i.e., M.S. Fasia Masjid Tola, M.S. Gulabbag Girl, M.S. Line Bazar Urdu & P.S. Mahboob Khan Tola from Purne ablock of Purnia district. 120 Muslim girls in the age group 7-12 years were selected randomly. Anthropometric measurement of weight and height has done by using weighing scale and height scale. The body mass index (BMI) was calculated as weight (Kg) divided by height (m^2).Body mass index (BMI) was used to classify the respondents according to their weight status using age- and gender-specific cut-points as per CDC (Center for Disease Control) growth charts which uses the 85th percentile of BMI for the age and sex as a reference point for overweight and the 95th percentile for obesity in children. School children were classified as: underweight (BMI < 5th percentile), normal (BMI < 5th -85th percentile), overweight(BMI between 85th and 95th percentile) or obese (BMI > 95th percentile). For the data collection, a structured schedule was used. Respondent's socio-demography, eating habit, physical activities and Knowledge about obesity and related factors were assessed by closed questions and opened questions. Frequency, percentage, mean, standard deviation, and P-Value) was used to describe the distribution of variables.

3. Results & Discussion

Table 1: Socio-economic & General profile of the respondents

Sr. no.	Variables	Respondents	
		f	%
1	Age (in years)		
	• 7-9	47	39.17
	• 10-12	73	60.83
2	Patents literacy		
	• Yes	33	27.50
	• No	87	72.50
3	Income/month (including family)		
	• Rs. <5000	57	47.50
	• Rs. 5001-10000	22	18.33
	• Rs. >10000	41	34.17
4	Birth Order		
	• 1st	11	09.17
	• 2nd	23	19.17
	• 3rd	39	32.50
	• >4th	47	39.17
5	Parent Marital status		
	• Living together	101	84.17
	• Divorced/widow	19	15.83

Table-1 revealed the data on socio-economic and general profile of the Muslim girls. According to the data, majority of the girls were 10-12 years old. Near about three fourth (72.50%) of parents were illiterate. It is clear from the data that near about half (47.50%) of the girl's family earned below Rs. 5000. However, near about one third of family earned more than Rs.10000. Demographic data on marital status of parents revealed that the more than three fourth parents were living together, while rest of them were widow/divorcee. Table also revealed the data of birth order of girls. According to table data, only 9.17% of the girl's birth order was first, while 19.17% and 71.67% of the girl's birth order was second and third respectively. Evidence from several upper-middle and high income countries has shown that parental overweight, and more predominantly maternal overweight status, is a risk factor for childhood overweight. Fewer studies have investigated associations between parental education level and childhood overweight status. One study in the USA revealed that mothers with higher academic scores had children with higher BMI compared to mothers with lower academic scores. Many study in India found that the Fathers' education was also positively correlated with childhood obesity.

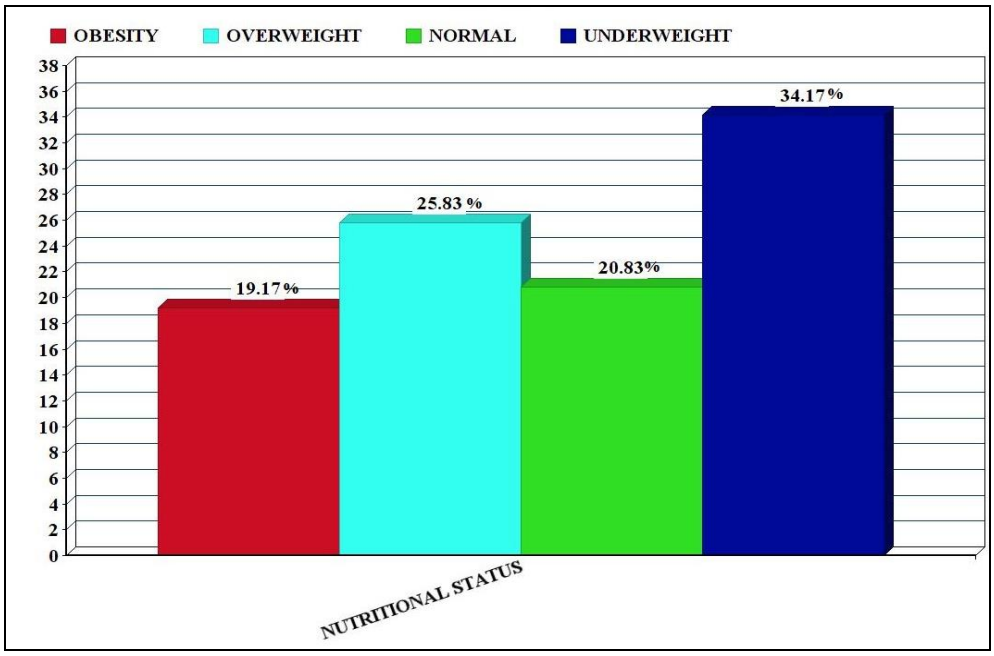

Fig 1: Revealed the nutritional status of the Muslim girls classified by BMI for age.

Figure-1 revealed the nutritional status of the Muslim girls classified by BMI for age. It was found that the 19.17% of the girls were obese while 25.83% of the girls were overweight. Majority (34.17%) of the respondents were underweight which is the major nutritional problem of Indian children. Now in present scenario obesity become a major problem. The table data also represent that the only 20.83% of the girls had normal nutritional status.

Table 2: Knowledge about obesity and related factors of student Frequency and percentage of the students by correct answer

No.	Knowledge item	Correct answer N=120	
		frequency	percentage
1	Cause of obesity is Bacteria	67	55.83
2	Cause of obesity is Poor physical activities	36	30.00
3	Cause of obesity is Positive balance food intake	51	42.50
4	Consequence of obesity is “Can not run”	45	37.50
5	Consequence of obesity is Heart disease	27	22.50
6	Consequence of obesity is Low school performance	75	62.50
7	Consequence of obesity is Sleeplessness	40	33.33
8	Doing more Physical activities prevent obesity	25	20.83
9	Eat a lot of fat food causes obesity	81	67.50
10	Eating a lot of sweet concern to obesity	66	55.00
11	Fast food is good for obese	26	21.67
12	Many kind of soda cause obesity	82	68.33
13	Obesity is prevented and treated	50	41.67
14	Obesity is a disease	19	15.83
15	Obesity is An infectious disease	91	75.83
16	Obesity is Eating too much	68	56.67
17	Obesity is Excess weight	54	45.00
18	Obesity is harmful for our health	83	69.17
19	Obesity is Shortage of physical activities	41	34.17
20	Obesity is very dangerous	29	24.17

Table –2 revealed the data of knowledge about obesity & related factors of the Muslim girls. According to the data, some question i.e. obesity is an infections disease, obesity is shortage of physical activities & consequence of obesity is heart disease were creating difficulty for respondents, they did not understood the such type of question, so many girls have incorrect answer.

Table 3: Relationship between obese status and knowledge

Knowledge level	Obesity status		p- value
	Obesity (n=23)	Non-obesity (n=97)	
	Frequency (%)	Frequency (%)	
Good	06 (26.09)	23 (23.71)	.061819
Fair	04 (17.39)	41 (42.27)	
Poor	13 (56.52)	33 (34.02)	
Significance level= 0.05 * significant at p <.05			

Table-3 shows that there was no significant relationship was (p-value is .061819) found between nutrition knowledge of the Muslim girls and their obese status. In this study significant association between obesity and nutrition knowledge of students was found, so this study inconsistent with study of Thakur and D Amico 1999; Gorden larsen' 2001, which were found that no significant relationship between knowledge of obesity and related factors of the students with obesity.

Table 4: Relationship between obese status and economical status

Family Income (Rs./Month)	Obesity status		p- value
	Obesity (n=23)	Non-obesity (n=97)	
	Frequency (%)	Frequency (%)	
Rs.< 5000	05 (21.74)	21 (21.65)	.400928
Rs.5001-10000	07 (30.43)	43 (44.33)	
Rs.>10000	11 (47.83)	33 (34.02)	
Significance level= 0.05 * significant at p <.05			

Table-4 shows the result that there was no significant relationship between family income of the Muslim girls and their obese status. The chi-square statistic is 1.8279 & the p-value is.400928.)

Table 5: Relationship between obesity status and fast food during passive entertainment

Kind of food during passive entertainment	Obesity status		P-value
	Obesity (n=23)	Non-obesity (n=97)	
	Frequency (%)	Frequency (%)	
Nothing	02 (08.69)	57 (58.76)	.000023*
Snack	18 (78.26)	28 (28.86)	
Other#	03 (13.04)	12 (12.37)	
Significance level= 0.05 * significant at p <.05			

Other#= soft drink, sweet/cake

Table-5 shows the result that there is significant relationship (The chi-square statistic is 21.3189 & the p-value is.00002) between kind of fast food during passive entertainment of the Muslim girls and their obese status.

Table 6: Relationship of physical activities in rest time and obesity

Physical activities in rest time	Obesity status		p-value
	Obesity (n=23)	Non-obesity (n=97)	
	Frequency (%)	Frequency (%)	
No physical activities	11 (47.83)	06 (06.18)	< 0.00001*
Outdoor games	03 (13.04)	29 (29.90)	
Indoor games	07 (30.43)	14 (14.43)	
Domestic work	01 (04.35)	33 (34.02)	
Other activities	01 (04.35)	15 (15.46)	
Significance level= 0.05 * significant at p <.05			

Table-6 revealed that there is strong association between physical activities of the Muslim girls and their obese status. (The chi-square statistic is 34.9564 & the p-value is < 0.00001).

4. Conclusion

In present study, family income did not affect the obesity. Study finding revealed that significant association of physical activity with obesity (P value- < 0.00001). Fast food (P value- .000023) is one of the important factors for obesity in Purnea district. It is conclude that the high rates of overweight and obesity (45%) point to a need for behavior change related to improved lifestyle through improved dietary practices and increased physical activity. This would help to prevent the development of overweight and obesity among Muslim girls, or mange it for those girls who are already overweight or obese. This could be through increasing their physical activity

5. Recommendations

Sustainable nutrition education programmes should be developed to improve the parents' knowledge of the importance of good nutrition in children.

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