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Role of Heredity and Lifestyle in Perspectives of Obesity among Male Adolescents Aged 14-16 Years

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Abstract

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Keywords: Adolescents, Heredity, Life Style, Prevalence, Obesity, Students

Authors:

Mohibullah Khan Marwat: (Corresponding Author) Professor, Department of Sports Sciences & Physical Education, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Punjab, Pakistan. (Email: mohibullah.khan@ed.uol.edu.pk)

Abdul Basit: Lecture (PhD Scholar), Department of Sports Sciences & Physical Education, Gomal University Dera Ismail Khan, KP, Pakistan.

Amer Latif: Assistant Professor, Department of Sports Sciences & Physical Education, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Punjab, Pakistan.

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Title

Role of Heredity and Lifestyle in Perspectives of Obesity among Male Adolescents Aged 14-16 Years

Abstract

The study aims to evaluate the relationship of obesity to lifestyle and heredity, focusing the adolescent male school students aged 14–16 in Abbott Abad city. A sample of 190 adolescent male high school students was selected. For the analysis of data, SPSS version 23.0 was employed and the data were evaluated through Pearson correlation. The Bivariate Analysis of Variance revealed a positive correlation between heredity and the prevalence of obesity ($p = 0.05$) and ($r = 0.488$). The analysis also revealed a positive correlation between lifestyle and the prevalence of obesity ($p = 0.05$) and ($r = 0.510$). Pearson Correlation analysis revealed ($p = 0.05$) and ($r = 0.568$) positive and significant associations between heredity, lifestyle, and obesity.

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Mohibullah Khan Marwat: (Corresponding Author) Professor, Department of Sports Sciences & Physical Education, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Punjab, Pakistan.
(Email: mohibullah.khan@ed.uol.edu.pk)

Abdul Basit: Lecture (PhD Scholar), Department of Sports Sciences & Physical Education, Gomal University Dera Ismail Khan, KP, Pakistan.

Amer Latif: Assistant Professor, Department of Sports Sciences & Physical Education, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Punjab, Pakistan.

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Contents

Introduction

The global graph of the increase of the incidents of obesity has been on sharp rise and the situation in Pakistan is also deteriorating day by day. Both genders, all ages, and all sections of the community have equally been prone to the menace of obesity. In view of the vitality of the problem, the present study was undertaken focusing upon the prevailing position and trend of obesity among the targeted population of the middle adolescents. World Health Organization, has declared the prevalence of obesity among children as a massive health burden globally (WHO, 2000). On

account of obesity-related health issues among adolescents and children, a sharp rise has been observed in healthcare costs during the last two decades (Belleri et al., 2024). Among other issues, obesity is a major problem among school-going children in Pakistan. It leads to many serious diseases, such as strokes, heart disease, and cancer (Huang et al., 2024). The need of the hour is to initiate immediate preventive steps to curb the spread of obesity worldwide. Obesity has alarming implications for both the physical and mental health of the populace.

The Pivot of the present study was to investigate the prevalence of overweight and obesity, as well as the association between BMI, heredity, and lifestyle among adolescent school students, 14-16 years of age in Abbott Abad City. Since the last two decades, it has been considered a global pandemic, particularly among growing children. In different age groups and among young adults, the prevalence of the BMI obesity index is more than 30 kg/m2 worldwide. By 2030, half of the world, according to the study, will be affected by obesity and overweight (Maratovna, 2020). Obesity is a multi-factorial disorder, which means that the recent rise in obesity prevalence is due to lifestyle, biological, psychological and family causes. Frequent intake of mixed diets with high levels of fats and high-glycerin sugars leads to weight gain and obesity. Although genetic variants impact a child's vulnerability to an obesity-promoting environment, environmental variables as well as the changing lifestyles of the people tend to encourage the growing tendency of obesity. Obesity in children is a major problem that must be addressed. It happens when a child's weight is higher than the norm for his or her height and age. Obesity is a major avoidable cause of mortality all over the world (Singh et al., 2021). Obesity is a worldwide epidemic defined by an increase in adipose tissue that contributes to various chronic illnesses and untimely deaths. Obesity is becoming more common among children, and it is a leading cause of death due to high blood pressure, cholesterol, diabetes, and mental stress Sehn et al., 2024).

Incidents of obesity among children have also been increasing at a fast pace, affecting developing as well as developed countries on a wider scale (Zong et al., 2024). Youngsters today who are overweight are likely to become obese in later adulthood and most likely they may fall victim to a number of non-communicable diseases such as diabetes and cardiovascular diseases (Heitkamp et al., 2020). As a consequence, it leads to a rise in healthcare costs and low human resource productivity. The need of the hour is to prevent and eradicate childhood obesity by timely identifying overweight and obese children for proper medical attention. The weight and height ratio in relation to age is one of the most accurate measures for measuring a child's health. Anthropometric measures are most widely used as a tool for assessing society's nutritional condition.

Global public health problems arise from overweight and obesity in adolescents 10-19 years of age. The overall prevalence of child and adolescent overweight and obesity at 5–19 years of age rose quickly from 4% in 1975 to 18% in 2016. Overall, over 158 million children between the ages of 5 and 19 are predicted to live with obesity by 2020, with 254 million projected by 2030 (WHO, 2017). The incidents of overweight and obesity have been the highest among the developed countries, though in the developing countries, it is concentrated in urban regions. However, in developing countries, the proportion of children who are overweight or obese is projected to reach 13% (Zhang et al., 2024). Obesity in childhood is more likely to persist into adulthood, resulting in a long-term illness load that includes a greater risk of type 2 diabetes mellitus, cardiovascular diseases, and psychiatric disorders. Overweight and obesity in children are caused by a number of modifiable risk factors. Lifestyle, heredity and family background, dietary consumption, and physical inactivity are the few most common risk factors in this regard.

In order to diagnose childhood obesity, the recommendation of the WHO, (2017) is one of the most often used literature approaches, which utilizes the Body Mass Index (BMI) as the main tool for identification of the issue. Obesity among adolescents has both short-term as well as long-term health consequences. With reference to the overall status of obesity in Pakistan, according to the World Obesity Federation (2019) report, we stand at tenth position among the world community of 188 nations, around fifty percent of its inhabitants are either obese or overweight. The report further declares that by 2030, around 5.4 million school-going adolescents will enter the circle of the obese population.

Literature Review

Relevant literature helps to identify the gaps between the previous work and the present standing of knowledge regarding the problem in question. Let us have a brief overview of the existing body of literature.

Obesity

Obesity has become a global pandemic, almost most of

the countries in the world have been suffering from this problem. Obesity also causes many harmful diseases, so proper measures are needed to prevent and control it. Yearly the menace of overweight and obesity is responsible for around 2.8 million deaths and inflicting disability to around 35.8 people globally (WHO, 2017). Obesity may affect all the physical psychological and cardiovascular health. Whilst the combination of food, exercise, physiological, and psychological factors continues to overlook a full picture of all the risk factors connected with obesity, in this view, prevention is the main strategy to manage the current problem and is therefore agreed upon by all researchers. In a study by Ahmed et al. (2020), in terms of obesity, research work on obesity has been done in many cities in Pakistan, and out of 188 countries, Pakistan ranks ninth among the obesity-victim nations.

Heredity and Obesity

Obesity, according to Hu et al. (2024), is a complex genetic characteristic impacted by the interaction of genetics, epigenetics, met genomics, and the environment. Obesity development in children, adolescents, and young adults is heavily influenced by genetic and environmental factors that influence gene expression. Consideration of genetic factors, as well as awareness of the growing evidence of epigenetic changes influencing the burgeoning obesity pandemic, provides clinicians with valuable tools in the management of obesity. In a study by Liao et al. (2020), they investigated the age and gender differences in the association between obesity and depression in Chinese rural adults. Underweight was linked to a higher prevalence of depressive symptoms, indicating that health care should focus on both underweight and obese patients, especially women and children. Furthermore, gender and age differences in obesity measurements and depressive symptoms were found. As a result, more attention must be paid to women and young people in depression prevention measures. Prospective studies are needed in the future to further understand the mechanism of this correlation. Students with a family history of obesity should be actively advised to avoid obesity.

Lifestyle and Obesity

Changing one's lifestyle, eating healthy foods, exercising or walking on a regular basis, and promoting sports activities in daily life are very helpful measures to reduce the prevalence of obesity. According to Podraza et al. (2024), obesity is becoming increasingly common across the world. Obesity or being overweight, is the fifth biggest cause of mortality worldwide (Graham et al., 2020). According to WHO categorization, overweight and obesity were prevalent at 14% and 1.5%, respectively. It may be inferred that obesity and being overweight are fairly common among children, adolescents, adults, and the elderly as well. To timely detect the problem, of BMI is a simple and efficient way in order to take action before the situation worsens and causes further complications. People with a BMI of more than 24.99 kg/m2 should be encouraged to engage in regular physical exercise. The findings emphasize the importance of promoting a healthy lifestyle, healthy eating habits, and a healthy and active normal routine among adolescents. Students with a family history of obesity should be counseled actively about lifestyle and food changes. Pippi et al. (2020) suggested that promoting physical activity programs and reducing sedentary behavior in at-risk children appears to be an effective strategy for improving health outcomes and social well-being. We used objective methods to assess anthropometric data (BMI, waist size, and waist-to-height ratio index). Furthermore, we used conventional tests to assess physical performance factors (speed, strength, and flexibility). A validated questionnaire was used to examine self-reported measures (weekly physical activity, sedentary behaviors, and psychological well-being). We saw a significant reduction in the waist-to-height ratio, as well as improvements in physical performance measures and self-reported questionnaire measures. According to our findings, encouraging physical exercise in the school context is likely to result in physically, psychologically, and socially better school-age children.

Objectives

1. To examine the correlation between the heredity and prevalence of obesity in male school students aged 14-16 from Abbott Abad city.
2. To examine the correlation between the lifestyle and prevalence of obesity in male school students aged 14-16 from Abbott Abad city.
3. To determine the significant relation between the role of heredity and lifestyle in the prevalence of obesity in school students aged 14-16 from Abbott Abad City.

Hypotheses

1. There is a significant correlation between the heredity and prevalence of obesity in male school students aged 14-16 from Abbott Abad City.
2. There is a significant correlation between the

lifestyle and prevalence of obesity in male school students aged 14-16 from Abbott Abad city.

3. There is a significant correlation between the role of heredity and lifestyle prevalence of obesity in male school students aged 14-16 from Abbott Abad City.

Material and Methods

The present research study was conducted to investigate the role of heredity and lifestyle in the onset and occurrence of obesity in male school students aged 14-16 years from 9th and 10th classes representing different high schools of Abbott Abad city. A population of 360 apparently obese students in the specified age group was discovered and finally, a sample of 190 was drawn through the purposive sampling technique for the proceedings of the study. The data were collected through the adapted questionnaire developed by Doñate Carramiñana et al., 2024). The collected data were analyzed, and Pearson correlation and linear regression analysis were also used at a 5% significance level. The statistical level was set at $p \leq 0.05$ for all statistics.

Results:

Correlation Analysis

To find out the role of heredity and lifestyle in the onset and prevalence of obesity among adolescent school students at the high school level in Abbott Abad City.

Table 1

Shows the relationship between heredity in the prevalence of obesity

Correlations

		Obesity Status	Heredity and Obesity
Obesity Status	Pearson Correlation	1	.488**
	Sig. (2-tailed)		.000
	N	190	190
Heredity and Obesity	Pearson Correlation	.488**	1
	Sig. (2-tailed)	.000	
	N	190	190

**. *Correlation is significant at the 0.01 level (2-tailed).*

Table 2

Variables	N	R	p-value
Obesity Status	190	0.488	< 0.001
Heredity and Obesity	190		

Table 1 shows that the correlation between the role of heredity in the onset and prevalence of obesity among adolescent school students was found positive and statistically significant ($r = 0.488$, $p < 0.001$). In light of the analysis, hypothesis 1, "There is a significant correlation between the heredity and prevalence of obesity in the male school students aged 14-16 from Abbott Abad city" is accepted. The figures in the table reflect the significant association between heredity and obesity.

Table 3

Shows the relationship between lifestyle in the prevalence of obesity

Correlations

		Life Style	Obesity Status
Life Style	Pearson Correlation	1	.510**
	Sig. (2-tailed)		.000
	N	190	190
Obesity Status	Pearson Correlation	.510**	1
	Sig. (2-tailed)	.000	
	N	190	190

**. *Correlation is significant at the 0.01 level (2-tailed).*

Table 4

Variables	N	R	p-value
Obesity Status	190	0.510	< 0.001
Life Style	190		

Table 2 shows that the correlation between the lifestyle and prevalence of obesity among adolescent school students was found positive and statistically significant ($r = 0.510$, $p < 0.001$). In light of the analysis, hypothesis 2, "There is a significant correlation between the lifestyle and prevalence of obesity in the male school students aged 14-16 from Abbott Abad city" is accepted. The figures in the table reflect the significant association between lifestyle and obesity.

Table 5

Shows the relationship between lifestyle and heredity in the onset and prevalence of obesity

Correlations

		Heredity and Lifestyle	Obesity Status
Heredity and Lifestyle	Pearson Correlation	1	.568**
	Sig. (2-tailed)		.000
	N	190	190
Obesity Status	Pearson Correlation	.568**	1
	Sig. (2-tailed)	.000	
	N	190	190

***. Correlation is significant at the 0.01 level (2-tailed).*

Table 6

Variables	N	R	p-value
Obesity Status	190	0.568	< 0.001
Life Style	190		

Table 3 shows that the correlation between heredity and lifestyle in the prevalence of obesity among high school students was found positive and statistically significant ($r = 0.568$, $p < 0.001$). In light of the analysis, hypothesis 2, "There is a significant correlation between the lifestyle and heredity in the prevalence of obesity in the male school students aged 14-16 from Abbott Abad city" is accepted. The figures in the table reflect a significant association between heredity and lifestyle in the onset and prevalence of obesity.

Discussion

Lamiquiz et al. (2019) define obesity as one of the major issues in public health that affects all developing and non-developed nations. It was clarified in the aforementioned study that a large cohort of overweight participants eating a homogeneous diet was used to classify the genetic and weight loss-related genetic factors that could be used in weight loss treatments as predictive markers. According to the WHO (2017), obesity among children aged 15-19, 39.4 % of children are overweight. Normal BMI refers to between 18.5 to 24.9, overweight ranges from 25 to 29.9, and obese is 30 or above. Khosa et al. (2019) revealed that adolescent obesity is a threatening wellbeing problem worldwide. Raziani and Raziani (2020) indicated that, according to WHO, 30% of the Middle East's population is overweight. Obesity remains one of the 21st century's most severe public health issues. In 2016, more than 340 million adolescents suffered from either overweight or obesity (WHO, 2017). Obesity in children and teens must be reduced at a young age and at a high rate. According to the results of other variables, 45.8% of students participate in any game in the evening to engage in healthy activities. However, 54.2% did not participate in any sports on a regular basis in the evening. In addition to that, the school distance from home for 90% of the students was 1–5 kilometers. The distance from home to school was 6–10 kilometers for 10% of the students.

In both rural and urban regions, it was discovered that children who used cycle or come on foot to school had lower and more acceptable BMI scores, but children who used to come to school in buses or rode

other modes of transportation, such as bikes, had higher BMI levels in both rural and urban regions. School physical education is an indicator that has an impact on health.

Conclusion

The majority of respondents' parents were uneducated, and a sizable %age of respondents came from families with a decent income. The bulk of the samplers were from two-parent households. It was also revealed that, in order to attract students, schools lacked athletics and sports facilities. Obesity among children was shown to be greater among households with a higher socioeconomic level. Children from wealthy households were fat because they carried pocket money to school and frequented fast food restaurants during or after school hours, as well as having access to transportation. Compared children whose mothers had a high education were less overweight than those whose mothers had a low education. The education of fathers was shown to have little bearing on the obesity pandemic among children. Obesity in schoolchildren is caused by family eating habits, junk food, watching TV for extended periods of time, using computers late at night, waking up late in the morning, and doing no physical activity.

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