

ORIGINAL ARTICLE

Young Adult Obesity Prevalence and Associated Risk Factors, A Cross-Sectional Anthropometric Study in Local Population

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ABSTRACT

Objective: This study was carried out to assess the prevalence of overweight, obesity, and risk factors among young adults in Pakistan.

Study Design: A cross-sectional anthropometric study in local population to assess the prevalence of overweight, obesity, and risk factors among young male and female.

Place and Duration: Present study was conducted in 25 high schools of Lahore, Islamabad and Karachi from January 2022 to November 2022.

Methodology: In this study 1000 young adults (500 girls and 500 boys) of age 15-17 years were selected and used population-based stratified cluster sampling method. To determine the prevalence of overweight and obesity, the participant's body mass indices (BMI) were compared to the BMI guidelines for Pakistani children and adolescents. In order to gather information about the study group's sociodemographic traits, Internet use, TV watching, physical activity, and family history of obesity, a standardized questionnaire was administered.

Results: According to the findings, there were 8.9% of teenagers who were obese overall (9.6% of females and 7.2% of boys). It was shown that BMI went up when computer use did. Compared to their peers who were of normal weight, a higher percentage of overweight and obese teenagers watched TV and used computers for longer than two hours each day. It was discovered that the patients with normal weight participated more frequently in regular physical activity. 59.6% of the households of overweight adolescents were obese.

Practical Implication: It will spread awareness among community about obesity prevalence in young adults and the risk factors associated with them, controlling methods and things to prevent.

Conclusion: Comparatively it was concluded that Pakistan has lower frequency of adolescent obesity than several developed countries. The usage of computer, mobile, television, physical exercise, and family dynamics are all significant risk factors for obesity.

Keywords: Adolescent, Obesity, Body mass indices, Risk factors, Anthropometric

INTRODUCTION

According to statistical reports, childhood overweight and obesity affect children, adolescents, and adults, and they are linked to the early onset of illnesses that are not contagious^{1, 2}. According to current research by different researchers, the number of obese individuals in all over the world have increased more than third time since 1980 now about 1.8 billion adults worldwide which is 655 million have overweight and obesity.^{3, 4} These rising tendencies were seen in both high-income (HIC) and low- and middle-income countries in similar ways.⁵ For illustration, a prevalence research on obesity among school-aged children in Pakistan, a middle-income nation, found that among children and adolescents, the prevalence of obesity grew from 9.8% in 2000 to 16.2% in 2021.²

In low- and middle-income countries, obesity and the risk factors that go along with it are anticipated to continue to affect an increasing number of people⁶. In school-aged children, there is an association between overweight and obesity, which has been associated with a higher risk of obesity in the future⁷. An important public health concern that could have negative effects on children's health as well as place a socioeconomic burden on governments and families is childhood overweight and obesity⁸. The findings of BMI, waist circumference, and waist-to-hip ratio use for indirect measures of obesity⁹. It is crucial to create appropriate protocols and measurements for a conclusive and accurate diagnosis of overweight or obesity while risk factors are recognized and addressed¹⁰. A lower mean BMI does not always rule out the presence of obesity.¹¹

The majority of adults require 150 minutes or more of aerobic exercise every week. Adults are also advised to engage in two or more days per week of muscle-strengthening exercises for

the large muscle groups, as these exercises have additional health advantages¹². Every day, children should engage in 60 minutes of aerobic exercise¹³. Your risk of being overweight and obese may increase as a result of several poor eating habits¹⁴. According to research, having a high BMI is associated with having poor sleep, either not receiving enough sleep or experiencing low-quality sleep.¹⁵ Hormones that regulate hunger urges can be impacted by sleeping less than 7 hours per night on a regular basis¹⁶. In other words, sleeping poorly increases our risk of overeating or failing to notice when we are full from our bodies.¹⁷ For further details on the negative impacts of sleep deprivation on health, visit Sleep deprivation and deficiency.¹⁸

Rationale of Study: This is a cross-sectional anthropometric study in local population to assess the prevalence of overweight, obesity, and risk factors among young adults.

MATERIALS AND METHODS

Study design: Present cross-sectional anthropometric study in local population was conducted in 25 high schools of Lahore, Islamabad and Karachi from January 2022 to November 2022 for the assessment of prevalence of overweight, obesity, and risk factors among young adults.

Sample size: In present study 1000 young adults (500 girls and 500 boys) of age 15-17 years were selected and used population-based stratified cluster sampling method.

Groups: In this study total male and female young individuals were divided in to two different groups. In Group-A 250 male and 250 female subjects were placed regarding their BMI i.e. 16-18 Kg/m² while in Group-B 250 male and 250 female individuals with BMI 20-30 Kg/m² were included.

Sample Collection Method: In this study anthropometric technique population-based stratified cluster sampling method were used for raw data collection. In order to gather information about the study group's sociodemographic traits, Internet use, TV watching, physical activity, and family history of obesity, a standardized questionnaire was administered.

Exclusion and inclusion criteria: The same person measured the students' height and body weight. A handheld electronic scale was used to measure the subject's weight while they were unshod and wearing light clothing. With the subject's shoes removed, feet together, and head in the horizontal plane, height was measured using an audiometer.

All adolescents received a uniform questionnaire. The questionnaire asked about gender, age, physical activity, computer use, TV viewing, parents' weights, and any history of obesity in the family. Regular physical exercise was outlined as physical activity that was done at least three days a week and lasted at least an hour each time.

Biochemical analysis: The Statistical Package for the Social Sciences SPSS version 2020 was used to examine the data. Using the analysis of variance (ANOVA) test, continuous variables with a normal distribution were reported as mean standard deviation (SD) and compared.

RESULTS

The individuals of Group-A were not so much fatty their BMI was near to normal but was on edge of obesity shown in Table-1. Computer timings, mobile timings, TV watching time, physical exercise and family history of overweight subjects were measured in both group. In Group-B young male and female individuals were with high BMI shown in Table-1. The findings of present study showed that the BMI was higher in those how were using computer in 2 hours per day (18.1±0.03) (27.1±0.04), (18.1±0.03)(28.1±0.04) as compared those how were using 1 hour per day (16.2±0.02) (25.2±0.01), (16.1±0.02)(24.2±0.01) in both male and female young individuals shown in Table-2.

Table 1: The distribution of obesity regarding gender and age (15-17) years

Variables	Group-A	BMI	Group-B	BMI
Units	n=500 (%)	Kg/m ²	n=500 (%)	Kg/m ²
Boy	250.1 ± 0.1	16.2±0.2	250.1 ± 0.1	26.2±0.3
Girl	250.0 ± 0.0	17.3±0.4	250.0 ± 0.2	27.3±0.1

(P ≤0.05)

Table 2: Examine the connections between obesity, internet use, TV viewing, physical Exercise, and obesity in the family in young male (n=250).

Variables	Group-A	BMI Group-A	Group-B	BMI Group-B
Units	(mean ± SD)	Kg/m ²	(mean ±SD)	Kg/m ²
Computer Timings	-	-	-	-
1-H/D	150.0 ± 0.01	16.2±0.02	140.0 ± 0.1	25.2±0.01
2-H/D	100.1 ± 0.03	18.1±0.03	110.1 ± 0.2	27.1±0.04
Mobile Timings	-	-	-	-
1-H/D	190.3 ± 0.1	16.2±0.2	180.1 ± 0.01	26.2±0.02
2-H/D	60.1 ± 0.03	18.1±0.03	70.01 ± 0.01	24.1±0.03
TV-Watching	-	-	-	-
1-H/D	75.03 ± 0.01	15.8 ±0.2	105.03 ± 0.01	25.8 ±0.02
2-H/D	175.1 ± 0.03	17.1±0.3	145.1 ± 0.01	29.1±0.01
Physical Exercise	-	-	-	-
Regular	130.03 ± 0.01	16.2±0.2	10.03 ± 0.05	28.2±0.01
Irregular	60.01 ± 0.03	18.1±0.3	240.01 ± 0.01	27.1±0.03
No any Exercise	60.03 ± 0.01	16.2±0.2	160.03 ± 0.01	29.2±0.04
Family history of overweight	60.01 ± 0.01	18.1±0.3	90.01 ± 0.01	29.1±0.01

(P ≤0.05)

The use of mobile has same findings that BMI is directly proportional to the time of usage and sitting. The results showed significant (P ≤0.05) changes in BMI of individuals were using 1 hour and 2 hour (18.1±0.03) (26.2±0.02) respectively. The pattern of increased BMI was seen in those individuals how irregular were or without any physical activates (60.01 ± 0.03) (240.01 ± 0.01), (160.03 ± 0.01) (220.03 ± 0.01) continually. It was noted that family

history of obesity is so significant in both groups (90.01 ± 0.01) (40.01 ± 0.01) respectively showed in table-2.

Table 2: Examine the connections between obesity, internet use, TV viewing, physical Exercise, and obesity in the family in young female (n=250).

Variables	Group-A	BM Group-A	Group-B	BMI Group-B
Units	Kg (mean ± SD)	Kg/m ²	Kg (mean ±SD)	Kg/m ²
Computer Timings	-	-	-	-
1-H/D	100.0 ± 0.01	16.1±0.02	100.0 ± 0.01	24.2±0.01
2-H/D	150.1 ± 0.01	18.1±0.03	150.1 ± 0.01	28.1±0.04
Mobile Timings	-	-	-	-
1-H/D	100.3 ± 0.1	16.2±0.02	100.3 ± 0.1	24.2±0.02
2-H/D	150.21 ± 0.01	18.1±0.03	150.21 ± 0.01	29.1±0.03
TV-Watching	-	-	-	-
1-H/D	152.03 ± 0.02	15.8 ±0.02	152.03 ± 0.02	25.8 ±0.02
2-H/D	108.1 ± 0.01	17.1±0.03	108.1 ± 0.01	27.1±0.01
Physical Exercise	-	-	-	-
Regular	30.03 ± 0.01	16.2±0.02	30.03 ± 0.01	26.2±0.01
Irregular	220.01 ± 0.03	18.1±0.03	220.01 ± 0.03	28.1±0.03
No any Exercise	220.03 ± 0.01	16.2±0.02	220.03 ± 0.01	27.2±0.04
Family history of overweight	40.01 ± 0.01	18.1±0.03	40.01 ± 0.01	28.1±0.01

(P ≤0.05)

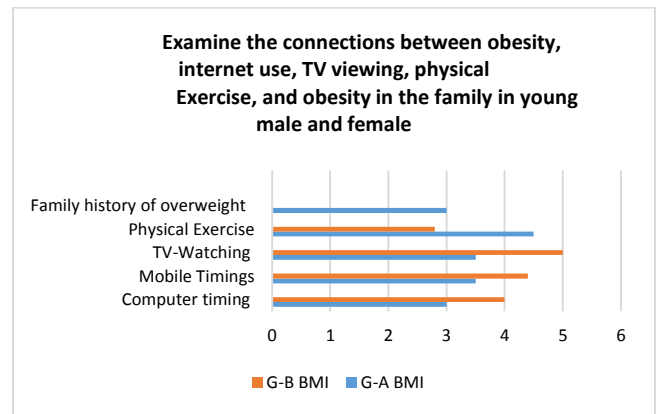


Fig-1: Examine the connections between obesity, internet use, TV viewing, physical Exercise, and obesity in the family in young male and female

DISCUSSION

In this study, it was shown that there were overweight and obese children in various Pakistani communities. According to a survey carried out in Punjab, Sind, and Islamabad in 2020–2022, 30.6% of the population was classified as overweight or obese¹. Due to its effects on children's and adolescents' physical and mental health, obesity has the potential to be devastating. It is closely related to many harmful health conditions¹⁹. Childhood obesity-related metabolic problems significantly raise the risks of type 2 diabetes, hypertension, chronic inflammation, and cardiovascular illnesses⁵. Overweight and obesity have many risk factors, but they also have genetic, biological, social, and environmental factors that influence weight growth via mediators of energy intake and energy expenditure. The survey that was used in the study was modified from one that was done in Morocco earlier⁴.

A 50-student pilot study that looked at its validity revealed that it was acceptable and understood⁷. The questionnaire gathered data on socioeconomic and demographic factors, eating patterns, exercise routines, and sedentary time¹⁴. Sedentary lifestyles and obesity are closely associated.⁸ 20.9% of the teenagers in this study admitted to using computers for more than two hours every day⁹. Similar to other studies that have been published, boys used computers more often than girls¹³. Children who were overweight or obese used computers more frequently. In this study, nearly half of the teenagers (52.4%) admitted to viewing two or more hours of TV each day. Reduced physical activity is a

significant obesity risk factor (22, 23)¹⁰. In our survey, more than 50% of the adolescents reported not engaging in any physical activity, whereas 30% said they engaged in a regular activity. More regular activity was reported by boys than by girls¹¹.

It has been demonstrated that having obese parents is a significant predictor of childhood obesity¹⁵. A study showed the correlations between parental and child BMI⁶. In this study, obesity in dads was linked to a four-fold rise in the risk of obesity at age 18 in both sons and daughters, and a separate eight-fold increase in risk for daughters if mothers were obese¹⁷. The BMI of the children had stronger correlations with maternal BMI than with father BMI. The study's study population had the highest rate of maternal obesity.¹² This might be because women in our society have a bigger say in how well their kids eat^{2,3}. In current study Despite the fact that there was a substantial correlation, the prevalence of overweight and obesity climbed further as more time was spent each day watching television, using computers, and using mobile devices.¹⁹ However, there was a statistically significant ($P \leq 0.05$) correlation between the amount of time spent using a computer and the prevalence of overweight and obesity, with the prevalence being higher in adolescents who spent more than 2 hours per day using a computer than in those who used one for less than an hour per day.¹⁸ There was also a significant ($P \leq 0.05$) correlation between regular exercise and risk for overweight or obesity¹⁶.

CONCLUSION

Comparatively it was concluded that Pakistan has lower frequency of adolescent obesity than several developed countries. The usage of computer, mobile, television, physical exercise, and family dynamics are all significant risk factors for obesity.

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