

# The aspects linked to obesity in teenagers' population in Tirana, Albania

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## Abstract

Surveillance records have shown a high prevalence of overweight and obesity not merely in developed states but also in developing ones. Our aim was to define the risk of being overweight and obese among teenagers in different districts of Albania. It is a cross-sectional study performed on a countrywide representative sample of the teenage population in Albania aged 13-20 years from a stratified register based on a population registration. The study protocol considered the invitation to accomplish a standard questionnaire that enclosed demographic and socio-economic data and health compartments. The prevalence of overweight in females was 2.2% (24/1078), while in males, it was 7.3% (51/702). We observed that most overweight males compared to females were  $p < 0.02$ . We noted a weak positive association but statistically significant among BMI and age of the participants in the study. Recognizing paths is indispensable for proposing programs in teenagers' health promotion and progressive health. In our view, the low levels of overweight and obesity and the enormous percentage of average weight in the youngster population were devoted to promoting healthy lifestyles among teenagers. Another thrilling outcome of our study was that 22% of the respondents, typically girls, revealed underweight issues. It is a serious matter. As a result, we should apply policies to challenge this issue in Albania shortly.

**Keywords:** Teenagers, Albania, Overweight, Obesity.

## Introduction

Several studies suggest that obesity after three years of age relates to an elevated risk of obesity in adults, morbidity and mortality, CVD, and some sorts of cancer (1-3). There are frequent reports in the literature about childhood obesity and its

detrimental consequences on health from diverse parts of the world (4). Throughout a phase of their life that is notable by crucial psychological and physiological alterations, teenagers often appeal to harmful lifestyles (5) and barely ever select food with the best nourishing importance (6-7). Surveillance records have shown a high prevalence of overweight and obesity not merely in developed states but also in developing ones (8). The occurrence of overweight and obesity has risen in Albania too, a country which has experienced fast growth and changes in nourishing traditions.

Obesity appraisal in childhood and adolescence would suggest the hope for avoiding obesity and assessment of disease, which would correlate to many illnesses in maturity. The current study intended to define the risk of being overweight and obese among teenagers in different districts of Albania.

### **Methodology**

It is a cross-sectional study performed on a countrywide representative sample of the teenage population in Albania aged 13-20 years from a stratified register based on a population registration accessible at the time of the study design. Our study was led from January to December 2019, and the sample comprised 1765 participants.

The study protocol considered the invitation to accomplish a standard questionnaire that enclosed demographic and socio-economic data (age, sex, place of residence, economic level) and health compartments (cigarette smoking, alcohol intake, physical activity at school and through leisure time, and nutritional habits such as food preferences) and anthropometric dimensions comprising height, weight and the calculation of BMI. Involvement was deliberate, and we provided written, informed agreement from the teenage students. We achieved measurements of body weight and height by school medical doctors and students of the Faculty of Technical Medical Sciences in Albania, who trained to accomplish this task. We estimated height and weight using a "Seca" Stadiometer (UNICEF) with beam stability and a sensitivity of 0.1 cm and 0.1 kg accordingly. Height was estimated barefoot. The Student set straight with heels, buttocks, and back, pressing the vertical limb of the instruments and extending upwards to the fullest extent with arms hanging on the side.

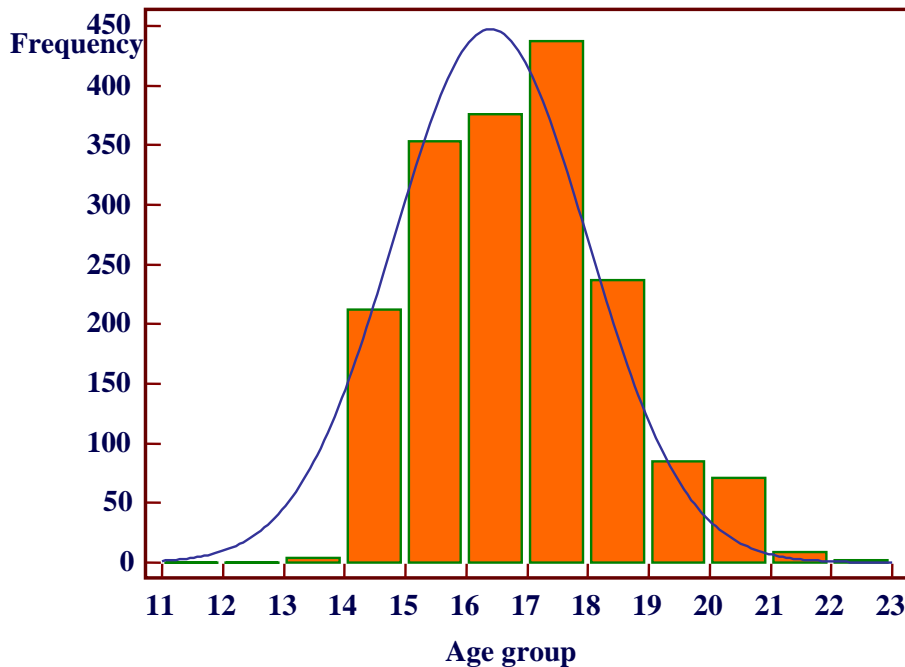
Participants in the study were separated into categories concerning their relative body weight status using WHO (WHO, 2010) standards (underweight BMI < 18,5 kg/m<sup>2</sup>, standard: BMI= 18,5-24,9 kg/m<sup>2</sup>, overweight: BMI = 25,0-29,9 kg/m<sup>2</sup>, obese: BMI ≥ 30,0kg/m<sup>2</sup>)

We based the evaluation of the occurrence of overweight and obesity on the cut-off points of the International Obesity Task Force (IOTF) criteria (6). In addition to the 2018 WHO reference, we computed prevalence data applying the globally used 2000 Center for Disease Control (CDC) standard for comparison. The nutritional history was measured by asking the students what meals they have regularly, if they took their food twice a week, what cereals, vegetables, and fruits they had last week, etc.

The physical activity was assessed by asking the students about the recurrence of being physically active for a total of 60 minutes in a day and the mean of the outdoor games (dancing, football, volleyball, basketball). We assessed the inactive lifestyle by asking about the extent of watching television and spending time on computers and the internet. We valued the psychological awareness of weight by questions linked to the self-perception of weight, dieting, and the actions taken about the subject's weight. We held the statistical analysis with SPSS 23.0 software for Windows. For each study, we calculated the mean and standard deviations for each gender. We compared mean values by applying the Student's t-test. Using the  $\chi^2$  test, we defined overweight and obesity based on BMI, and we noted the expected numbers in each category. Pearson's correlation analysis was applied to discover the relationships among obesity and age groups. We determined to apply a conservative statistical significance of  $P = 0.01$  to decrease the Type 1 error.

## Results

The histogram (Figure 1) relates to normal distribution. We noticed a domination of the group aged 14-16. The median of the respondents in the study is 16 years old.



**Figure 1. Histogram of the age of the respondents in the study**

76 (4.34%) students were severely underweight considering the classification BMI scale, 63 (78.57%) were females, and 15 (20.2%) were males, with a statistically significant change between them,  $p < 0.02$ .

352 (19%) of the participants were underweight, 253 (71.5%) of which were females and 98 (28.1%) males, with a statistically significant change between them,  $p < 0.01$ .

It is noted a predominance of the average weight with 1259 (18%) of the participants, with a statistically significant change with the other categories of weight ( $\chi^2 = 66.8$   $p < 0.01$ ). 732 (58.0%) students were females, and 524 (41.7%) were males, where  $p < 0.01$ .

77 (4.3% 95%CI 3.4 -5.3) adolescents were overweight, where 24 (32.6%) were females and 50 (66.8%) males, with a statistically significant difference between them,  $p < 0.01$ .

The prevalence of overweight in females was 2.2% (24/1078), while in males, it was 7.3% (51/702).

We observed that most overweight males compared to females were  $p < 0.02$  (Table 1).

**Table 1. Categorization of the students prior to BMI scale and gender**

BMI scale	Females	Males	Total
Severe underweight	63	15	78 (4.2%)
Underweight	254	98	354 (19.0%)
Normal	734	527	1259 (70.6%)
Overweight	24	51	77 (4.3%)
Obese Grade I	0	2	2 (0.1%)
Obese Grade II	0	1	1 (0.08%)
Obese Grade III	0	1	1 (0.8%)
<b>Total</b>	<b>1075</b>	<b>695</b>	<b>1765</b>

We noted a weak positive association but statistically significant among BMI and age of the participants in the study. As the age of students rises, the level of BMI grows too ( $r = 0.17$   $p < 0.02$ ) (Table 2)

**Table 2. Association of BMI with Age**

Sample size	1765
The Pearson coefficient of correlation $r$	0.1835
Significance level	$P < 0.0001$
95% Confidence	Interval 0.1378 - 0.2274

We observed that 4.3% (9/210) of the respondents with high economic levels, 4.4% (65/1493) of the participants with medium economic levels, and 3.6% (2/78) of them with low economic levels were overweight. A vital significant difference between the economic level and overweight ( $\chi^2= 3.2, p = 0.2$ ) (Table 3)

**Table 3. Categorization of the students concerning BMI scale and the economic level**

BMI scale	Economic level			Total
	High	Medium	Low	
Severely undernourished	11	63	5	79 ( 4.4%)
Undernourished	50	295	12	357 (20.0%)
Common weight	138	1059	58	1257(69.6%)
Overweight		64		77 (4.3%)
Obese Grade I	0	2	0	2 (0.1%)
Obese Grade II	0	2	1	2 (0.9%)
Obese Grade III	0	2	0	1(0.8%)
<b>Total</b>	<b>208</b>	<b>1487</b>	<b>81</b>	<b>1765</b>

We observed a weak positive association but a statistically significant between BMI and smoking of the teenagers. BMI values rose in the participants that are regular smokers and ex-smokers ( $r = 0.125, p < 0.02$ )(Table.4)

**Table 4 Correlation of BMI with smoking**

Sample size	1765
The coefficient of correlation of the ranks of Spearman ( <b>rho</b> )	0.127
Level of significance	P<0.0001
95% Interval of Confidence for R	0.083 - 0.1

The central part of students with average weight, 1011 or 80% (1011/1264), have a proper insight of their weight with a statistically significant change with the other categories of perception ( $\chi^2= 2906.1, p < 0.01$ ). 43 (54.4%) of the respondents have a proper insight ( $\chi^2= 60.8, p < 0.02$ ) (Table 5)

**Table 5 Consideration of BMI grade and the psychological insight of the weight from the subjects**

BMI scale	Psychological weight perception					Total
	"nearly in the proper weight."	"slightly overweight"	" slightly underweight"	"considerably overweight"	"considerably underweight"	
Severely underweight	52	1	21	0	5	79 (4.4%)
Underweight	269	7	73	2	6	357 (20.0%)
Normal	1011	160	80	9	4	1264 (70.8%)
Overweight	30	43	4	2	0	79 (4.4%)
Obese G. I	1	2	0	0	0	3 (0.2%)
Obese G. II	1	0	0	1	0	2 (0.1%)
Obese G.III	2	0	0	0	0	2 (0.1%)

## Discussion

Regardless of economic, social, and cultural differences between them, being overweight and obese has turned into a prevalent issue for all unusually distant states.

Concerning the data obtained from a preceding study held in Tirana, the capital of Albania, in 2018, about body weight models, it was found that the prevalence of obesity in men was 21% and 32% in females, LES (9-10).

Prior to our study, we observed that there was a considerable alteration in the levels of overweight and obesity in 2018, which were very high in the adult population. However, the teenagers were deficient (4.2%). The increase in the levels of occurrence of overweight and obesity after the socialist regime till the year 2018 was

devoted to the economic and cultural differences after the socialist regime and the establishment of democracy in Albania that has adhered to a free market economy as well as in the media impact and the dietary changes predominantly a rising fast food accessibility. People in big cities such as Tirana have experienced evident progress in their lifestyle and have turned out to appeal to a more consumptive standard of living, which may lead to the rising prevalence of overweight and obesity. Based on the records of other countries in evolution (11-12), it has been probable that the increased growth and the renovation of lifestyle (nutritional changes, rising inactivity, smoking) have contributed to this change.

Nowadays, regarding our study, the levels of overweight and obesity-related teenagers in Albania (4.2%; 0.2%) are between the lowest in Europe, in correlation to the data from IOTF international cut-off points for global tendency in obesity. We may link our records with the data from Latvia, Estonia, and Turkey.

There has been an extensive variety of prevalence of overweight and obesity globally, varying from India, where 0.7% of the population is obese, to French Polynesia, where almost 43% of the population is obese (13-16). In states like China and Thailand (17), the incidence of overweight and obesity is more often observed in boys than in girls, while in the United Arab Emirates, there are more girls detected as overweight and obese (18). It is similar in Albania, where the prevalence of overweight and obesity is more remarkable in boys than in girls.

Concerning the data obtained from IOFT cut-off points for Albania in 2008, the occurrence of obesity for males was 8.2%, and for females, it was 9.4% (19). So, there was a significant change in the prevalence of overweight between teenagers and the adult population in Albania. The high obesity prevalence observed, along with the current reduction in physical activity, nutritional changes, and rise in smoking prevalence, has guided substantial increases in several non-transmissible illnesses in Albania in the future decades. Health promotion policies are required to inhibit additional weight achievement in the Albanian adult population. One of the strengths of our study would be the anonymity and the fact that it is based on a vast, countrywide representative sample. Between the restrictions would be the cross-section nature of the survey, avoiding any assumptions linked to causality, and the non-enclosure of teenagers who have dropped out of school and who might be more susceptible. As an outcome, we need additional research to study the teenagers who did not attend school.

## **Conclusions**

An argument linked to the low levels of teenagers overweight and obesity in Albania would be the Mediterranean regimen with fruits and vegetables, the meals taken at home or more healthy foods, the rise of physical activity, gym, aerobics, the affinity of boys and girls to pay attention about their appearance, impacted by the media and TV that endorse the slim and elegant individuals as an approach to be successful in life. The current rise in the social burden on males setting an unlikely body ideal

comprising a low body fat and a high muscularity image could lead to a substantial increase in anarchic eating (20-21). Distinctive female issues generally reflect body and weight apprehensions. Consequently, social pressure has a superior impact on girls.

A remarkable finding in our study was that a high proportion of teenagers, nearly 72.5%, were of average weight. Recognizing paths is indispensable for proposing programs in teenagers' health promotion and progressive health. In our view, the low levels of overweight and obesity and the enormous percentage of average weight in the youngster population were devoted to promoting healthy lifestyles among teenagers.

Another thrilling outcome of our study was that 22% of the respondents, typically girls, revealed underweight issues. It is a serious matter. As a result, we should apply policies to challenge this issue in Albania shortly.

## References

- [1] Branka F, Nikogosian H, Lobstein T, eds. The challenge of obesity in the WHO European Region and the Strategies for Response. Copenhagen: WHO 2018.
- [2] Body weight patterns in a country in transition: a population-based survey in Tirana City, Albania Laidon Shapo1,\* , Joceline Pomerleau1, Martin McKee1, Richard Coker1 and Agron Ylli 2 1European Centre on Health of Societies in Transition, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK: 2Endocrinology Department, University Hospital Centre 'Mother Theresa', Dibra Street, 370 Tirana, Albania
- [3] Cooke LJ, Wardle J. Age and gender differences in children's food preferences. *Br J Nutr.* 2005;93:741–746. doi: 10.1079/BJN20051389
- [4] Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ.* 2000;320:1–6.
- [5] International Association for the Study of Obesity. London-January 2012
- [6] Malik M, Bakir A (2007). Prevalence of overweight and obesity among children in the United Arab Emirates. *Obes Rev* 8(1):15–20.
- [7] McCabe MP, Ricciardelli LA. A longitudinal study of pubertal timing and extreme body change behaviors among adolescent boys and girls. *Adolescence* 2004;39:145–166.
- [8] Mohammadpour-Ahranjani B, Rashidi A, Karandish M, Eshraghian MR, Kalantari N. Prevalence of overweight and obesity in adolescent Tehrani students, 2000–2001: an epidemic health problem. *Public Health Nutr.* 2004;7:645–648.
- [9] Nguyen DM, El-Serag HB. The big burden of obesity. *Gastrointest Endosc.* 2009;70:752–757. Germany.
- [10] Pomerleau J, McKee M, Robertson A, Vaask S, Kadziauskiene K, Abaravicius A, et al. Physical inactivity in the Baltic countries. *Preventive Medicine* 2000; 31: 665–672.



- [11] Popkin BM. The nutrition transition and obesity in the developing world. *J Nutr.* 2001;131:871S–873S.
- [12] Powers et al., 1997; Freedman et al., 1999; World Health Organization, 2000).
- [13] Pudule I, Grinberga D, Kadziauskiene K, Abaravicius A, Vaask S, Robertson A, et al. Patterns of smoking in the Baltic Republics. *Journal of Epidemiology and Community Health* 1999; 53: 277.
- [14] Reilly JJ, Armstrong J, Dorosty AR, Emmett PM, Ness A, Rogers I, Steer C, Sherriff A. Early life risk factors for obesity in childhood: cohort study. *Bmj.* 2005;330:1357. doi: 10.1136/bmj.38470.670903.E0.
- [15] Storey KE, Forbes LE, Fraser SN, Spence JC, Plotnikoff RC, Raine KD, Hanning RM, McCargar LJ. Diet quality, nutrition, and physical activity among adolescents: the Web-SPAN (Web-Survey of Physical Activity and Nutrition) project. *Public Health Nutr.* 2009;12:2009–2017. doi: 10.1017/S1368980009990292.
- [16] Wang Y, Wang JQ (2002). A comparison of international references for assessing child and adolescent overweight and obesity in different populations. *Am J Clin Nutr* 56:973– 982
- [17] World Health Organization (2004) World Health Assembly resolution WHA57.17 On a global strategy on diet physical activity and health. Geneva: WHO.
- [18] World Health Organ Technical Report Series. Obesity: Preventing and managing the global epidemic. Report of a WHO consultation. *World Health Organ Tech Rep Ser.* 2000;894:1–253.
- [19] World Health Organization (WHO). Obesity. Preventing and managing the Global Epidemic. Geneva: WHO, 1997.
- [20] Yang RJ, Wang EK, Hsieh YS, Chen MY. Irregular breakfast eating and health status among adolescents in Taiwan. *BMC Public Health.* 2006;6:295. doi: 10.1186/1471-2458-6-295.
- [21] Zhou H, Yamauchi T, Natsuhara K, Yan Z, Lin H, Ichimaru N, et al., Kim SW, Ishii M, Ohtsuka R (2006) Overweight in urban schoolchildren assessed by body mass index and body fat mass in Dalian, China. *J Physiol Anthropol* 25(1):41–48

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