The prevalence of obesity in the adelescent age group in the province of Eskisehir and the cardiovascular risks according to the rural vs. urban life.

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Background

- Determining the effect of living in urban and rural areas on obesity-related health habits in adolescents is important in preventive programs.

Objectives

- Body weight was compared with other cardiovascular risk factors (CVRFs) in adolescents from the rural and urban areas.

Method

- This cross-sectional study conducted between March 2012 and February 2013 on high school students studying in the urban and rural areas of Eskisehir.
- Two-stage stratified sampling method was used to select the schools. The sample size was calculated as 3457 individuals based on a frequency of cardiovascular risk factors of 10% and a margin of error of 1%.

- One district from each of the rural and urban areas of Eskisehir was selected. The schools in the districts were stratified according to their education programs. Schools were selected from each stratum (vocational high schools, Anatolian high schools) in proportion to the number of students in schools.

- A total of 3918 students [2870 (73%) from the urban areas and 1048 (27%) from rural areas] from classes 1 to 3 of 16 schools were included to the study.

- The questionnaire included socio-demographic characteristics of the students and several cardiovascular risk factors including smoking, diet (making breakfast, sweetened beverage consumption, and fruit and vegetable consumption), physical activity, and the time spent on television or computer.

- After the completion of questionnaire, body height, weight and arterial blood pressure of the students were measured. Obesity was assessed by using the WHO criteria and the blood pressure by using CDC criteria.

- Nutrition, physical activity, and TV-computer use were evaluated by using WHO criteria of health behavior in school age children (HBSC).

Statiscally analysis

- Univariate analysis was performed by using chi-square analysis and multivariate analysis by using multiple logistic regression analysis. In multiple logistic regression model, the socio-demographic characteristics affecting the obesity (age, gender, family income level, and residence of the student) were identified.

- As a second step, the model was created after adjustment for variables at a significance level of $p < 0.10$ in univariate analysis and for socio-demographic variables affecting the obesity in order to identify the independent variables affecting the obesity both for rural and urban areas separately.

Results

- Of the total of 3918 students, 1048 were from rural and 2870 were from urban areas. Average age was 15.72 ± 0.99 years (range, 14–18 years).

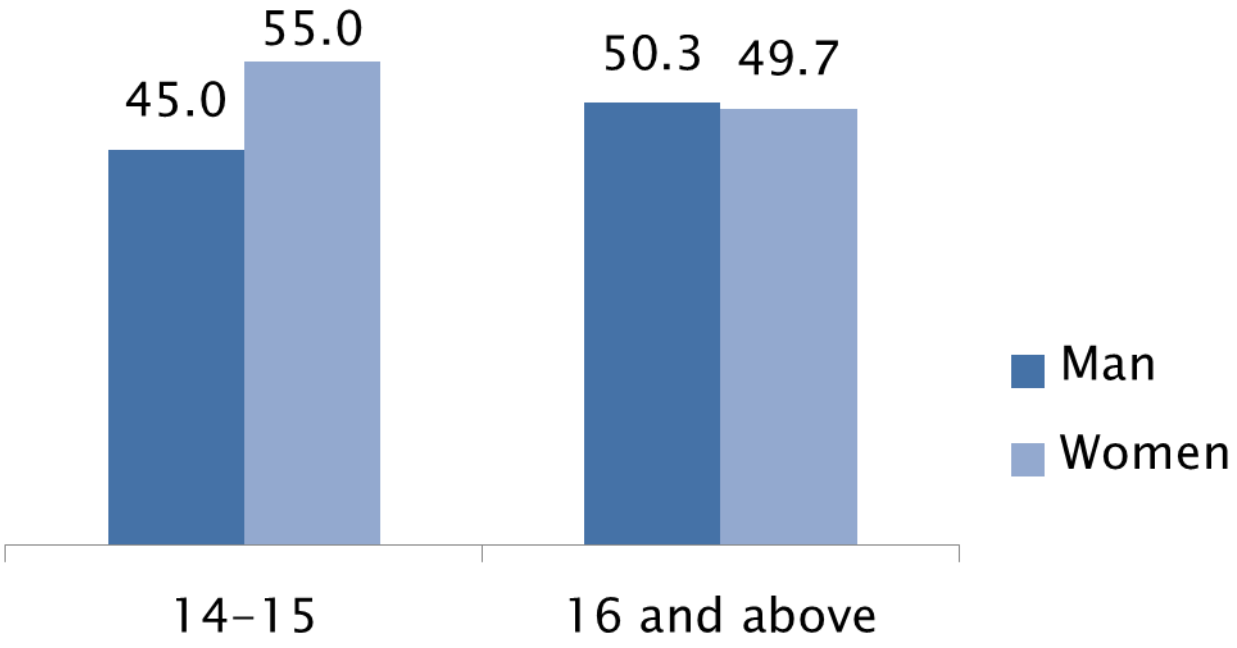

Figure 1. Comparison of students' age groups according to sex

Table 1.Comparison of students' some socio-demographic characteristics according to rural-urban areas

	Rural n (%) N:1048	Urban n (%) N:2870	Total n (%) N:3918	Statiscally analysis; p
Sex				
Male	536 (51.1)	1338(46.6)	1874(47.8)	0.012
Female	512 (48.9)	1532 (53.4)	2044(52.2)	
Age group				
14-15	395(37.7)	1435(50.0)	1830 (46.7)	<0.001
≥16	653(62.3)	1435(50.0)	2088(53.3)	
Mother education level				
Illitarete	116(11.1)	181(6.3)	297(7.6)	
8 year	789(75.6)	1605(55.9)	2394(61.2)	<0.001
>8 year	138(13.2)	1084(37.8)	1222(31.2)	
Father education level				
Illitarete	55 (5.3)	65 (2.3)	120 (3.1)	
8 year	568 (55.2)	962 (33.5)	1530(39.2)	<0.001
>8 year	406 (39.5)	1843(64.2)	2249 (57.7)	
Family income				
<500	204 (19.7)	144 (5.0)	348(8.9)	
500-1000	555 (53.7)	842 (29.3)	1397(35.8)	<0.001
>1000	275(26.6)	1884(65.6)	2159 (55.3)	
Residence				
Homestay	625(59.9)	2361 (82.3)	2986 (76.3)	
Hostel	343(32.9)	463 (16.1)	806 (20.6)	<0.001
Other	76 (7.2)	46(1.6)	122 (3.1)	

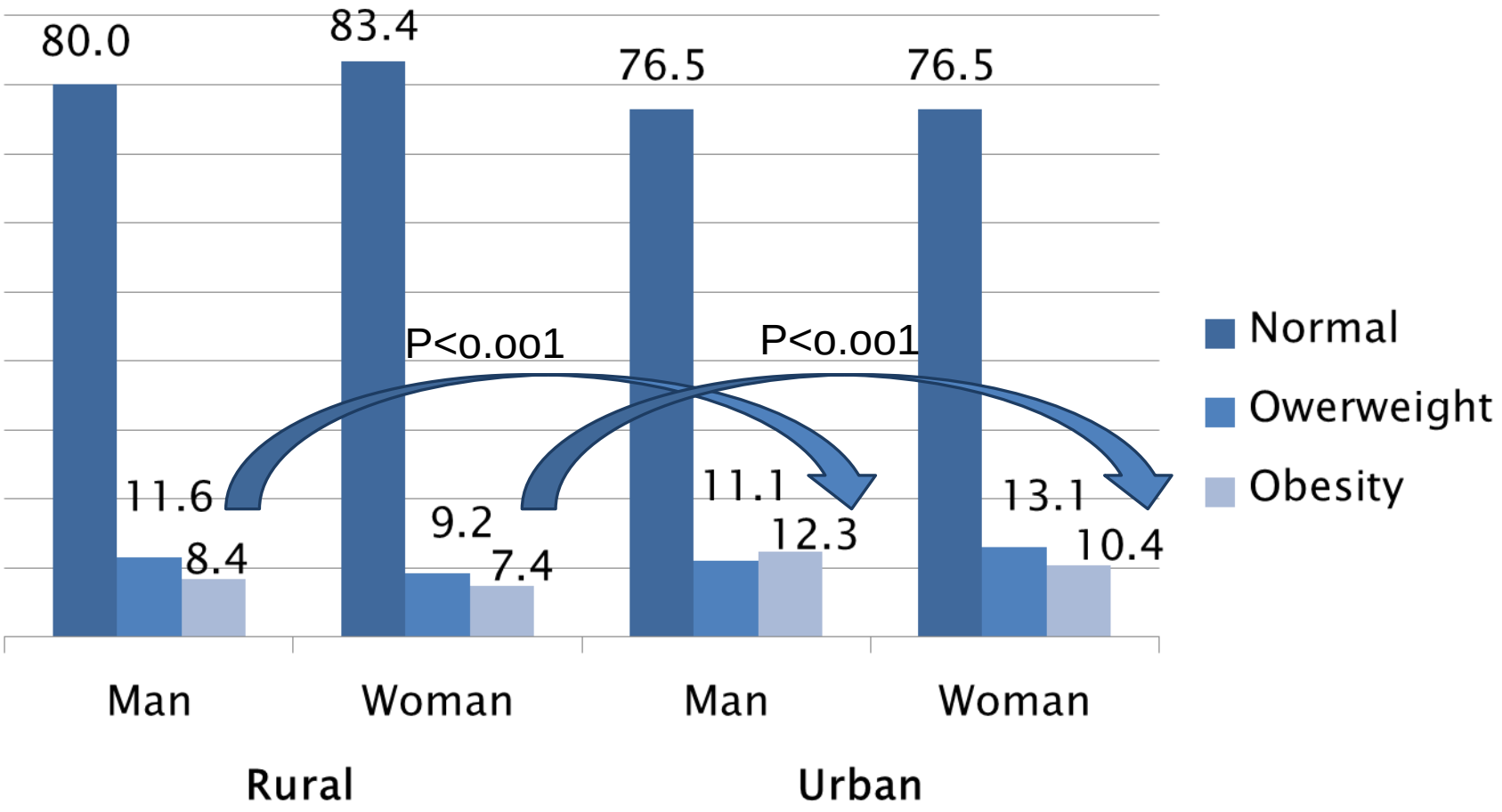

Figure 2. Comparison of students' BMI according to rural-urban areas

Table 2. Obesity-associated independent variables according to rural and urban areas by multivariate logistic regression analysis

	Rural			Urban		
	%	OR [a] (95%CI)	p	%	OR [a] (95%CI)	p
Blood pressure						
Prehypertension	12.0	7.1 (2.6-19.4)	**<0.001**	13.0	2.6 (1.8-3.8)	**<0.001**
Hypertension	20.5	72.7 (19.1-277.4)	**<0.001**	23.8	4.4 (3.2-6.0)	**<0.001**
Physical activity						
Medium	48.2	1.5 (0.8-2.9)	0.266	50.6	1.2 (0.9-1.6)	0.210
Bad	20.5	1.6 (0.7-3.9)	0.311	19.8	1.4 (0.9-1.9)	0.092
Tv-Computer use						
Medium	33.9	1.3 (0.6-2.9)	0.495	37.3	1.1 (0.8-1.6)	0.494
Bad	39.0	1.3 (0.6-2.8)	0.479	40.1	1.6 (1.1-2.2)	**0.011**
Breakfast consumption						
No	46.6	0.9 (0.5-1.7)	0.799	41.4	1.2 (0.9-1.7)	0.053
Fruit-vegetable consumption						
Yes	69.9	0.9 (0.4-1.6)	0.629	75.6	0.9 (0.7-1.2)	0.642
Sweetened beverages consumption						
Yes	56.6	0.6 (0.3-1.2)	0.136	47.8	0.6 (0.5-0.8)	**<0.001**
Cardiovasculer disease history						
Yes	54.2	1.9 (1.1-3.5)	**0.038**	48.1	1.3 (0.9-1.6)	0.062

OR [a] : Odd's ratio (Adjusted by age, gender, family income level and residence of students) CI: Confidence interval, %: The percentage of those who are obese

Conclusion

- Present study reveals that prevalence of obesity and associated CVRF is high in adolescents and they significantly vary between rural and urban areas.
- The most important problem associated with obesity is hight blood pressure levels (prehypertension-hypertension) in both rural and urban areas.
- Preventive programs against obesity should be developed with considering the differences between rural and urban areas.

Thank you for your attentions…