

Body Mass Index: knowledge, practice and health evaluation

Cornelia, Rada*

„Francisc I. Rainer” Anthropological Institute, Bucharest, Romanian Academy, Romania,
corneliarada@yahoo.com

*Corresponding Author: Cornelia Rada, „Francisc I. Rainer” Anthropological Institute, Blv.
Eroii Sanitari no. 8, Sector 5, Bucharest, corneliarada@yahoo.com, 021.317.50.72; 0728824852

ABSTRACT

Introduction: The health related expenses whether direct or indirect for the overweight individuals, the decrease of the quality of personal and social life of the obese individuals make this subject a public health one. Specialized physicians, nutritionists, fitness trainers, psychologists, anthropologists etc. agree that both the explanations and the interventions are multidisciplinary and also include a series of factors.

Objective: The determining of the socio-demographical characteristics of the population that holds a high risk for overweight and obesity together with the evaluation of certain knowledge and beliefs related to Body Mass Index (BMI), state of health and physical activity. To examine the association between perceived overweight status and weight control, discrepancies between perceived and measured weight status.

Method: This article is based on project „Identitary values of the contemporary Romanian family in the framework of the globalization. An anthropological approach”, financially supported by European Social Fund (ESF) Contract POSDRU/89/1.5/S/59758/2011-2013. The sample by 862 subjects, not representative for the entire country, was random selected, aged 18-74 years, distributed relatively equal by environment, gender and age group. We have used an omnibus questionnaire of 96 items focusing on family functioning: economical, educational, cohesion-solidarity and sexual-reproductive. The subjects have also been measured and weighted. In this article we shall make reference to 4 items on BMI, physical activities, state of health. Statistical analysis (Pearson Chi-Square test) have been performed using the statistical programs SPSS.

Result: The prevalence of overweight and obesity in the sample in Romania is higher in the rural area, for the male individuals of over 35 years of age ($p \leq 0.001$). 52.4% (N=452) have stated they do not know what is the right weight according to their height. The others had a more accurate evaluation of the weight they should have ($p = 0.000$); The least accurate evaluations of the ideal weight have been done by the subjects in the rural area (30.8% vs. 69.2%; $p = 0.009$). The personal weight control is smaller in the rural area among the male subjects ($p = 0.000$). The numerical level of people that regards themselves as being „active” and „very active” is larger in the rural area ($p = 0.000$).

Over half the subjects perceive their state of health as least good, most of them being in the rural area, of female gender and of an age of > 35 years. Overweight and obese men are not aware of their state of health being under the optimal level ($p \leq 0.008$).

The body weight control did not correlate with the normal BMI, with the correct estimation regarding the ideal weight but the concern for the weight control has raised according to the educational level ($p=0.000$). The extent to which the subjects consider themselves as „active” and „very active” is higher in the rural area ($p=0.000$).

Conclusion: The target of the educational programmes in Romania should cover especially the population with the following characteristics: originated in the rural area, male gender, over 35. Taking into consideration that in Romania most of the population up to 35 years of age is married and have children, we consider these parents need educational interventions in order not to pass the same unhealthy attitudinal and behavioural patterns related to diet and physical practice to their children.

Keywords: Body Mass Index, overweight, obesity, socio-economic factors, quality of life, public health

Introduction

Research shows that being obese lowers one's life expectancy.¹ Many scientific research studies suggest that weight loss reduces chronic diseases and improves the life span of people who are overweight. The goal of weight loss should be to improve health.^{2,3}

Obesity was associated with lack of enjoyment of sexual activity, lack of sexual desire, difficulties with sexual performance, and avoidance of sexual encounters.⁴ Is clear that a sedentary lifestyle is currently considered one of the five major risk factors for cardiovascular disease.⁵

Obesity is associated with a lower quality of life. Obese patients have significantly more problems with mobility and pain (back, hip, knee s.o) disease such as health asthma, diabetes or osteoarthritis.⁶

There is more and more evidence that being overweight or obese could increase the risk of many types of cancer: breast cancer in women after menopause, bowel cancer womb cancer, liver cancer s.o.⁷⁻⁹

Many Eastern European countries having a transition economy from a centralised one to a market economy one have different levels of social and economical development. Diet going worldwide also brought not only positive aspects. Studies on the prevalence of obesity and overweight in these countries have obtained different results. Some indicated that children of less educated parents are more susceptible of being overweight and obese while others indicate the prevalence is higher at children from wealthy families.^{10,11}

Within this context we proposed bringing a plus of knowledge regarding the population in Romania that holds a high risk for overweight and obesity.

Objectives

The scope of the present study is the determining of the socio-demographical characteristics of the population that has a high risk for overweight and obesity and also the evaluation of certain knowledge and beliefs related to BMI, state of health and physical activities. To examine the association between perceived overweight status and weight control, discrepancies between perceived and measured weight status.

Methods

This article is based on project „Identitary values of the contemporary Romanian family in the framework of the globalization. An anthropological approach”, financially supported by European Social Fund (ESF), Sectoral Operational Programme for Human Resources Development (SOPHRD), 2007-2013, within the project “Turning to account the Cultural Identities in the global processes” Contract POSDRU/89/1.5/S/59758/2011-2013. The research has taken place in the urban area in Bucharest, Craiova, Satu Mare, the villages Cioroiași, Stolnici and villages in the Satu Mare County. si apartine. We took into consideration that these statistical units from Romania have certain socio-demographical and cultural characteristics such as: the age of the locality, the number of inhabitants, the access to the car-train-aerial transportation.

The sample by 862 subjects, not representative for the entire country, was random selected, aged 18-74 years, distributed on strata relatively equal considering the environment, gender and age segment (table 1).

We have used an omnibus questionnaire of 96 items focusing on the theme of family functioning: economical, educational, cohesion-solidarity and sexual-reproductive. The subjects have also been weight and measured. In the present study we shall refer to 4 items. 1. Do you consider your state of health is good, satisfactory, not very good. 2. Do you personally check your weight: almost not at all, from time to time, often. 3. Do you know what weight you should have according to your height (no, yes, how much... ?) 4. Taking into account the types of activity you perform along a week, do you consider yourself sedentary, active, very active.

Statistical analysis (Pearson Chi-Square test) have been performed using the statistical programs SPSS.

Results

The average height and weight in the sample was designated for the male gender and it was of 1.76 m and 78.79 kilograms (average BMI of 25.5) and for the female of 1.65 m and 65.55 kilograms (average BMI of 24.2).

Almost half the subjects are underweight, overweight and obese. The density of normal BMI is higher among the subjects in the urban area (Pearson Chi-Square = 16.122; p=0.001). They belong to the female gender (Pearson Chi-Square =27.400; p=0.000) and have an age of <=35 years (Pearson Chi-Square =58.431; p=0.000) (table 2)

52.4% (N=452) have stated they don't know what weight they should have reported to their height. The other 47.6% (N=410) of the subjects evaluated which ideal weight they should have; The BMI categories constituted based on the measuring of height and weight considered ideal by the respondent. Table 3 indicates subjects evaluated to a larger extent the ideal weight they should have. (Pearson Chi-Square=158.812; p=0.000).

The subjects from the urban area had a correct evaluation of their ideal weight compared to those in the rural area (69.2% vs 30.8%; Pearson Chi-Square=6.899; p=.009)

The extent of the subjects to which they control their weight „from time to time” and „often” is larger among the subjects in the urban area (Pearson Chi-Square; p=24.858; p=0.000), female gender (Pearson Chi-Square =20.812; p=0.000) (table 4).

The control of weight did not correlate with the normal BMI, with the correct estimation regarding the ideal weight but the preoccupation for the weight control raised according to the educational level (Pearson Chi-Square=53.016. p=0.000).

The number of subjects that consider themselves „active” and „very active” is larger in the rural area (Pearson Chi-Square=32.976; p=0.000) (table 5)

More than half of the subjects consider they have a “satisfactory” or “not too good” state of health. The extent to which subjects consider their health as a good one is larger in the urban area (Pearson Chi-Square =36.619; p=0.000), gender male (Pearson Chi-Square =9.711; p=0.008) and of <=35 yrs (Pearson Chi-Square =40.506; p=0.000) (table 6)

The distribution of the perception on the state of health differs according to the real BMI classification (Pearson Chi-Square =20.283; p=0.002) in the way that the perception of a good health is larger among those having a normal BMI. The underweight, the overweight and the obese have a less good awareness of the health condition. We stress on the fact them more than ¼ of the obese women consider their health is good (Table 7).

Conclusion

Together with other studies, the present study also indicates the large extent to which overweight and obesity in the Romanian sample exist in the rural area, for male subjects of more than 35.¹² After 35 the overweight ratio is double and obesity is triple.

Other studies also indicate men of the same age have a less good attitude regarding a healthy diet. This is explained as women from the psychological perspective have the tendency to respond to the expectancies regarding their body image.¹³

Sedentary lifestyle coupled with decreased metabolic rate after 35 years old. One should also consider the decreasing of interest for one's looks after marriage and growing old. It is necessary to explain constantly the necessity of changing one's lifestyle; more physical practice, consumption of less calories.

One of the most serious problems identified by World Health Organisation (WHO) is obesity due to overfeeding while being sedentary.^{14,15} To curb the childhood-obesity epidemic, health experts

have long urged parents to make healthy changes to their family's lifestyle — such as eating nutritiously, reducing TV time, exercising and getting a good night's sleep.¹⁶ Physical activity reduces risks of cardiovascular disease and diabetes beyond that produced by weight reduction alone.¹⁷

The fact that over ½ of the subjects do not know what weight they should have is alarming. The incorrect evaluation of one's weight together with lower frequency of weight control indicate that population that holds a higher risk for obesity is still from the rural area and of male gender. Therefore, the lack of knowledge and preventive behaviour by monitoring weight lead to overweight and obesity at almost ½ of the subjects. More than this, it is alarming that part of them that correctly estimate their ideal weight and control it do not have the correct weight.

Our present study indicated that other studies as the instructive level would not correlate with a normal BMI or with a correct estimation of the ideal weight but only with the preoccupation for weight controlling. Weight control was not positively associated with the perception of weight excess as in other studies.¹⁸

Although the level of obesity is high, less than ¼ evaluated themselves as sedentary and, among them, those in the rural area evaluated themselves as the least sedentary. This aspect would require further studies for clarifications. Considering that we talk about individuals in the rural area, usually poor and with a lower level of education, there may be a confusion regarding what is physical activity, a possible cause may be the consumption of bread and pasta.

The awareness of the overweight and of the obese that they have not a good health that they know what weight they should have indicate how important prophylaxis is. Without really noticing one can gain weight and can leave the excess behind with great difficulty.

International Obesity Task Force estimate that approximately 1.7 billion humans suffer of health issues due to gaining extra-weight. It is alarming the fact that the annual degree of raising the prevalence of obesity among children is constantly raising. If the present conditions of food and physical practice remain the same, it is possible that the number of individuals per annum that die due to overweight and obesity to be double in the next 20 years. In Europe the direct and indirect expenses for health issues (medical leaves, early retirements) for the obese individuals reach 18%.¹⁹

This is why the epidemiological and behavioural studies, the supervision, the instruction, and the education for promoting health are constantly required for preventing and controlling chronic diseases.

There are never enough money to cover the entire population in research and education for a healthy lifestyle. Therefore in generating health related programmes it is necessary to know those particular groups that hold a high risk for overweight and obesity so that education to focus mainly on these vulnerable segments. The present studies indicate that the target of educational programmes in Romania should also include especially the population having the following characteristics: rural area, male gender, over 35 years of age. Considering that in Romania the majority of the population up to 35 years of age is married and also have children we consider necessary these parents to be educated in order not to pass the same unhealthy attitudinal and behavioural patterns related to food and psychical practice to their children.

Conflict of Interest: None declared

References

1. Lewis CE, McTigue KM, Burke LE, Poirier P, Eckel RH, Howard BV et al . Mortality, Health Outcomes, and Body Mass Index in the Overweight Range A Science Advisory From the American Heart Association. *Circulation*. 2009; 119: 3263-3271.
2. <http://www.cnpp.usda.gov/publications/nutritioninsights/insight16.pdf>. Accessed on September 2011.
3. Atreya A, Kamath A, Varma M, Nair S, Behavioural Risk Factors and Health Promotional Activities in Adults at Risk of Cardiovascular Disease in a South Indian Tertiary Care Teaching Hospital. *IJCRRIMPH*. 2010; 2(8): 280-290.
4. Ronette LK, Binks M, Crosby RD, Truls S, Gress RE, Adams TD. Obesity and sexual quality of life. *Revue North American Association for the Study of Obesity*. 2006; 14 (3): 472-479.
5. Giannuzzi P, Mezzania A, Sanerb H, Björnstad H, Fiorettid P, Mendese M, Cohen-Solalf A, Dugmoreg L, Hambrecht R, Hellemans I, McGeej H, Perkk J, Vanheesl L, Veressm G. Physical activity for primary and secondary prevention. Position paper of the Working Group on Cardiac Rehabilitation and Exercise Physiology of the European Society of Cardiology. *European Journal of Cardiovascular Prevention & Rehabilitation*. 2003; 10 (9): 319-327.
6. Sach TH , Barton GR , Doherty M , Muir KR , Jenkinson C, Avery AJ. The relationship between body mass index and health-related quality of life: comparing the EQ-5D, EuroQol VAS and SF-6D. *International Journal of Obesity*. 2007; 31: 189–196.
7. Body weight and cancer: the evidence. <http://info.cancerresearchuk.org/healthyliving/obesityandweight/howdoweknow/> Accessed on August 2011.
8. Renehan, A.G., et al., Body-mass index and incidence of cancer: a systematic review and meta-analysis of prospective observational studies. *Lancet*. 2008; 371: 569-578.
9. Reeves, G.K., et al., Cancer incidence and mortality in relation to body mass index in the Million Women Study: cohort study. *BMJ*. 2007; 335(7630):1134.
10. Patel R, Lawlor DA, Kramer MS, Smith GD, Bogdanovich N, Matush L, Martin RM. Socio-economic position and adiposity among children and their parents in the Republic of Belarus. *European Journal of Public Health*. 2010; 21(2): 158–165.
11. Roskam AJ, Kunst AE, Van Oyen H, et al. Comparative appraisal of educational inequalities in overweight and obesity among adults in 19 European countries. *Int J Epidemiol*. 2010; 39: 392–404.
12. Rada C, Prejbeanu I, Albu A, Manolescu S. Correlation between Body Mass Index and Sexual Dynamics. *International Journal of Collaborative Research on Internal Medicine & Public Health*. 2011; 3 (2):144-157.
13. Wardle J, Bindra R, Fairclough B, Westcombe A. Culture and body image: Body perception and weight concern in young Asian and Caucasian British women. *Journal of Community & Applied Social Psychology*. 2006; 3 (3): 173-181.
14. Ulijaszek SJ, Koziel S, Nutrition transition and dietary energy availability in Eastern Europe after the collapse of communism; *Economics and Human Biology*. 2007; 5: 359-369.
15. WHO, 2006, Global Strategy on Diet, Physical Activity and Health: Obesity and Overweight, <http://www.who.int/dietphysicalactivity/publications/facts/obesity/en> Accessed on September 2011.

16. Anderson SE, Whitaker RC. Household Routines and Obesity in US Preschool-Aged Children. *Pediatrics*. 2010; 125 (3):420 -428.
17. Physical activity for a healthy weight,
http://www.cdc.gov/healthyweight/physical_activity/index.html Accessed on September 2011.
18. Yaemsiri S, Slining MM, Agarwal SK. Perceived weight status, overweight diagnosis, and weight control among US adults: the NHANES 2003–2008 Study. *International Journal of Obesity*. 2011; 35: 1063-1070.
19. Platform on Diet, Physical Activity and Health, International Obesity Task Force in collaboration with the European Association for the Study of Obesity, http://ec.europa.eu/health/ph_determinants/life_style/nutrition/documents/iotf_en.pdf Accessed on September 2011.

Table 1: The basic structure of the sample according to environment, gender, groups of age

Gender			Residential area		Total
			Urban	Rural	
Male	Age group of over 35	<=35 yrs	44.7	36.0	41.1
		>35 yrs	55.3	64.0	58.9
	Total		100	100	100
Female	Age group	<=35 yrs	48.3	45.0	46.9
		>35 yrs	51.7	55.0	53.1
	Total		100	100	100

Table 2: The distribution of the classification according to the BMI on residential areas, gender, age groups

Classification according to the real BMI	N	%	Residential area		Gender		Age group	
			Urban	Rural	Male	Female	<=35 yrs	>35 yrs
Underweight <18.5)	41	4.8	58.5	41.5	14.6	85.4	80.5	19.5
Normal (18.5-24.9)	443	51.4	62.5	37.5	48.3	51.7	51.2	48.8
Overweight (25-29.9)	269	31.2	54.3	45.7	57.2	42.8	34.2	65.8
Obese (>=30)	109	12.6	42.2	57.8	54.1	45.9	24.8	75.2
Total	862	100	57.2	42.8	50.2	49.8	44.0	56.0

Table 3: The distribution of the classification of a real BMI according to the evaluated BMI

The classification according to the real BMI (based on measuring the height and weight)	The classification according to the BMI based on the real height and the weight considered by the respondent as ideal				
	Underweight		Normal	Overweight	Obese
	(<18.5)		(18.5-24.9)	(25-29.9)	(>=30)
Underweight (<18.5)	36.8		63.2		
Normal (18.5-24.9)	1.6		95.1	3.3	
Overweight (25-29.9)			77.5	22.5	
Obese (>=30)			60.9	37.7	1.4
Total	2.4		82.0	15.4	0.2

Table 4: The distribution of personal weight control according to the environment and gender

Personal control of	N	%	Residential area	Gender
---------------------	---	---	------------------	--------

weight	Urban		Urban		Male	Female
Almost at all	247	28.7	44.1	55.9	59.5	40.5
From time to time	493	57.2	63.3	36.7	49.5	50.5
Often	122	14.2	59.0	41.0	34.4	65.6
Total	862	100	57.2	42.8	50.2	49.8

Table 5: The distribution of the perception of the weekly activity according to residential area

Taking into account the types of N activities you develop along a week how do you consider yourself?	%	Residential area			Total
		Urban	Rural		
A sedentary person	106	12.3	17.8	4.9	12.3
An active person	642	74.5	70.0	80.5	74.5
An extremely active person	114	13.2	12.2	14.6	13.2
Total	862	100.0	100	100	100

Table 6: The distribution of perception on the state of health according to the residential area, gender and age groups

Do you consider your state of health is?	N	%	Residential area		Gender		Age group	
			Urban	Urban	Male	Female	<=35 yrs	>35 yrs
Good	403	46.8	49.1	43.6	51.3	42.2	57.5	38.3
Satisfactory	311	36.1	40.4	30.4	34.9	37.3	32.7	38.7
Not too good	148	17.2	10.5	26.0	13.9	20.5	9.8	23.0
Total	862	100	100	100	100	100	100	100

Table 7: The distribution of the real BMI classification according to the perception of the state of health

Classification according to the real BMI	The perception of the state of health		
	Good	Satisfactory, not too good	Total
Underweight (<18.5)	43.9	56.1	100
Normal (18.5-24.9)	52.8	47.2	100
Overweight (25-29.9)	41.6	58.4	100
Obese (>=30)	35.8	64.2	100
Total	46.8	36.1	100