

## Prevalence of overweight in adults in the Republic of Moldova

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### Abstract

**Background:** Preventing and decreasing overweight becomes a priority for public health both, worldwide and the Republic of Moldova is not an exception. The phenomenon of overweight is not deeply studied in the country so far. The latest data available are reflected in the national research on the prevalence of risk factors for non-communicable diseases in the Republic of Moldova, where it is stated that about 50% of the adult persons (18 years and over) suffer from excess weight. In this context, it was proposed to determine the prevalence of excess weight among adults over 18 years in the Republic of Moldova and to estimate the risk of overweight depending on demographic factors.

**Material and methods:** Descriptive, transvers study (cross-sectional study) based on primary data collection was carried out. 1200 adults over 18 years participated at this study. Statistical analysis of the data involved: frequency analysis, group comparisons, estimation of risk associated with excess weight OR (odds ratio) according to the geographical area, residence area, age group and gender. Data interpretation was performed on the basis of statistical significance ( $p < 0.05$ ) at the 95% confidence interval. According to the WHO, excess weight (overweight) is considered when BMI values are equal to or greater than 25.0 kg / m<sup>2</sup>.

**Results:** The results of the research reveal significant differences of excess weight depending on the age, sex and geographical areas. The highest prevalence of excess weight was observed among persons over 40 years (74.7%), women (57.9%), residents of the Center area (62.2%) and of the rural area 62.4%.

**Conclusions:** The prevalence of excess weight in the Republic of Moldova constitutes 57.6% among the adult population, with the predominance among persons over 40 years of age, women and inhabitants of the Center area and the rural area.

**Key words:** overweight, demographic factors, Moldova.

### Cite this article

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### Introduction

Overweight becomes one of the most challenging public health problems and is considered one of the most important causes of morbidity and mortality among the adults [1-3]. According to the data of the World Health Organization (WHO), more than 1.9 billion adults (over 18 years) suffer from overweight and more than 650 million – from obesity [4, 5]. According to several studies, overweight and obesity are the basic factors that induce the development of various mental and physical disorders [6, 7]. Overweight is considered the sixth risk factor, which contributes to the global burden of the diseases around the world, and obesity – the fifth risk factor for mortality worldwide [8]. The data available in the scientific literature highlight the increasing prevalence of overweight, including a financial burden on health services and on the economy as a whole [9]. In addition to the physical and mental health problems caused by this, the impairment of the productivity aspect is emphasized, and also the economic and financial ones [2].

The latest data available are reflected in the national research on *The prevalence of risk factors for non-communicable diseases in the Republic of Moldova* [10], where it is stated that about 50% of the adult persons (18 years and over) suf-

fer from excess weight. In this context, the problem of excess weight is becoming a top priority for the public health of the Republic of Moldova, and the in-depth study of the field should provide practical evidence that would guide the supplementation of existing policy documents in order to reduce this phenomenon.

In this context, it was proposed to determine the prevalence of overweight among adults over the age of 18 in the Republic of Moldova and to estimate the risk of overweight depending on demographic factors.

The results of the study will serve as practical evidence for guiding and supplementing the existing policies in order to reduce the phenomenon of excess weight in the Republic of Moldova.

### Material and methods

The present study is descriptive, cross-sectional based on primary data collection. Inclusion criteria for the study were: 1) being over 18 years of age; 2) resident of the Republic of Moldova; 3) consent to participate in the study; 4) mental ability to answer questions. The sample of the study was calculated on the basis of selective irrevocability, picked out by proportional stratification depending on

the geographical areas of the country and comprised 1200 people. The primary data were collected on the basis of the interview, structured in the questionnaire, accompanied by informed consent. In order to ensure the confidentiality of the data, the information collected was depersonalized and codified. The statistical analysis was performed using SPSS / Statistical Package for Social Sciences for Windows/ version 20. The quality of the data was ensured by: Visual Verification and validation of the data from the completed questionnaires and automated validation through the SPSS program. Geographical areas were considered: North (without Balti municipality), Center (without Chisinau municipality) and South. The body mass index (BMI) was calculated using the formula:  $BMI = G \text{ (kg)} / T^2 \text{ (m}^2\text{)}$ , where G – is body weight, T-weist. According to the international classification of BMI [5, 11, 12], the sample was grouped into two categories,  $BMI \leq 24.9 \text{ kg/m}^2$  (not overweight) and  $BMI \geq 25.0 \text{ kg/m}^2$  (overweight or obese). Statistical analysis of data involved: frequency analysis, group comparisons were made by using the “T”-independent test for continuous variables and X2-Pearson or Fisher for categorical variables. For risk estimation, the OR (odds ratio) was used. Data interpretation was based on statistical significance ( $p < 0.05$ ) at 95% confidence interval.

**Results**

Out of 1200 adults surveyed more than half ( $56.5 \pm 1.43\%$ ) were from rural areas, women constituted  $52.8 \pm 1.44\%$  and  $59.4 \pm 1.41\%$  were persons over 40 years old. The geographical distribution comprised  $33.1 \pm 1.35\%$  respondents from the North area; in  $40.3 \pm 1.42\%$  – from the Center area; in  $26.6 \pm 1.28\%$  – from the South area ( $p < 0.05$ ).

The average BMI among the studied population was  $27.3$  [95% CI: 26.9-27.5]. The average BMI value, depending on the residence area of the study population, was estimated to be equal to  $27.0$  [95% CI: 26.6-27.4] in the urban area, with the minimum and maximum values between 14.2 and 44.9 and being equal to  $27.6$  [95% CI: 27.1-28.1] in rural areas, with the minimum and maximum values between 15.2 and 46.4 ( $p > 0.05$ ).

Out of the studied population  $57.6 \pm 1.43\%$  were overweight. Most of the persons over 40 years were overweight ( $74.7\% \pm 1.67\%$ ) ( $p < 0.005$ ). The prevalence of overweight among women was –  $57.9 \pm 1.70\%$ . It was estimated that persons in the age group of adults over 40 years were 2.1 ( $p < 0.001$ ) and 1.1 ( $p < 0.05$ ) times more likely to be overweight. Regarding the dependence factor on residence area, the research showed that  $62.4 \pm 1.40\%$  of the persons in the rural area were overweight, (compared to 54.2% in the urban area), therefore, the residence factor was rated as an important factor for overweight (OR = 1.0;  $p < 0.001$ ).

The analysis of the prevalence of excess weight depending on the geographical areas revealed the prevalence of excess weight in the Center area ( $62.2 \pm 2.59\%$ ). It was estimated that the residents of the Center area are 1.3 times more likely to become overweight ( $p < 0.005$ ) (tab. 1, fig. 1).

Table 1

Estimating the risk of overweight depending on demographic factors

| Name                             | BMI $\leq 25.0 \text{ kg/m}^2$<br><i>abs. (%)</i> | OR<br>(II95%)                    | P-Value     |
|----------------------------------|---|----------------------------------|-------------|
| <b>Age group</b>                 |   |                                  |             |
| 18-39 years old                  | 35.4  | 1                                |             |
| 40 y.o. and over                 | 74.7  | 2.1 (1.9- 2.4)<br>2.1 (1.9- 2.4) | $p < 0.001$ |
| <b>Residence environment</b>     |   |                                  |             |
| Urban                            | 54.2  | 1                                |             |
| Rural                            | 62.4  | 1.1 (1.0-1.3)                    | $p < 0.01$  |
| <b>Sex</b>                       |   |                                  |             |
| Male                             | 56.8  | 1                                |             |
| Female                           | 57.9  | 1.3 (1.1-1.8)                    | $p < 0.05$  |
| <b>Geographical distribution</b> |   |                                  |             |
| Area                             |   |                                  |             |
| North                            | 59.9  | 1.2 (0.8-1.7)                    | $p > 0.05$  |
| Centre                           | 62.2  | 1.3 (1.1-1.8)                    | $p < 0.05$  |
| South                            | 55.9  | 1                                |             |
| Total per areas                  | 59.7  | 1.4 (1.1-1.8)                    | $p < 0.05$  |
| <b>TOTAL</b>                     | 57.6  |                                  |             |

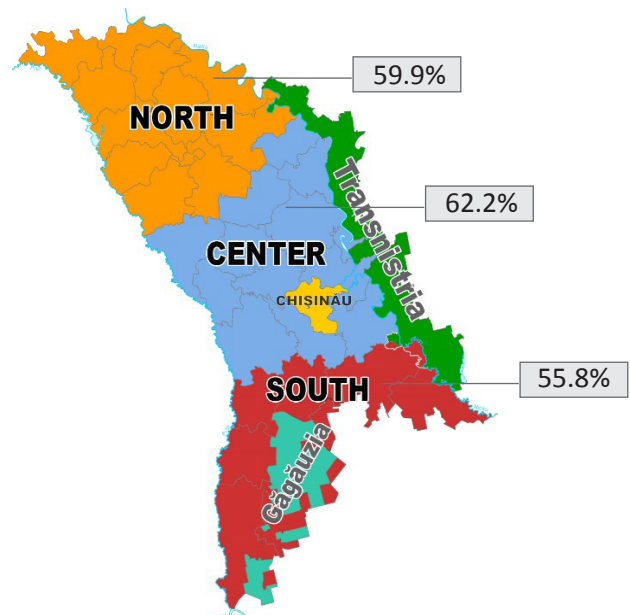


Fig. 1. Prevalence of overweight depending on geographical areas.

**Discussion**

For the first time, in the Republic of Moldova, the prevalence of excess weight was analyzed depending on the residence environment, geographical areas and demographic factors as risk factors for overweight.

This research examined the prevalence of overweight among adults in the Republic of Moldova and established a prevalence of 57.6%. At the same time, the latest data currently available in the country, reflected by the National

research, stated that about 50% of adult people are overweight or obese [10]. The average BMI values for the entire population under research, depending on the residence and sex environment were similar to those assessed by the National study. The age of over 40, rural residence, Center area and female gender were assessed as a risk factor for excess weight. This has been investigated and documented through studies in other countries as well [13-16].

The difference in the prevalence of excess weight depending on the geographical areas requires further study to assess the specific and predominant factors causing this phenomenon.

### Conclusions

1. The prevalence of excess weight among adults over the age of 18 in the Republic of Moldova constitutes 57.6%, which shows that overweight is a major public health problem.

2. Research has shown that overweight is prevalent among people over the age of 40 (74.7%), and according to sex, women are more likely to become overweight compared to men.

3. The analysis of the prevalence according to the area of residence indicates that 62.4% of the persons with excess weight come from the rural area, therefore the area of residence was considered an important factor for the excess weight.

4. The research highlighted statistical differences regarding the prevalence of excess weight depending on the geographical areas North, Center, South. Thus, according to the geographical areas of the Republic of Moldova, the results showed an overall prevalence of weight gain of 62.2% in the Center area, 59.9% – in the North area and 55.8% – in the South area.

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### Authors' contributions

AT conceptualized the project and drafted the first manuscript. OL interpreted the data and critically revised the manuscript. Both authors approved the final version of the manuscript.

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### Ethics approval and consent to participate

No approval was required for this study.

### Conflict of Interests

No competing interests were disclosed.