

# Withdrawal from bariatric treatment – an analysis under various demographic conditions

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## Abstract

Poland is high on a list of countries affected by epidemics of obesity, a problem that has especially suddenly increased in the post-transformation period.

**Materials and method.** Documentation of 115 subsequent patients diagnosed with grade 3 obesity, considered eligible for surgical treatment, was analysed since 2015. A subgroup of 68 patients was selected from this group and the included patients who decided to cancel their treatment at various stages. Their history since presentation at the obesity treatment centre, BMI with its history, age, education and place of residence were analysed, followed by a telephone survey. 42 patients were finally contacted. Special attention was placed on the analysis of patients taking into account their place of residence. Patients were divided into inhabitants of rural and urban areas.

**Results.** In the study group of 68 patients, 19 (27.9%) were inhabitants of rural areas and 49 (72.1%) of urban areas. Women accounted for 67.6%, and men for 32.4%. The mean age of patients when they presented for treatment was 43 years. On average, men presented 5 years later compared to women. The mean BMI on qualification for treatment of obesity was 47.6 kg/m<sup>2</sup>. The mean BMI max – 49.6 kg/m<sup>2</sup>. There were no differences regarding education in both populations. Despite the lack of differences regarding changes in the BMI since withdrawal from treatment, as many as 63% of patients from rural areas reached the BMI max in this time.

**Conclusions.** There were demographic differences between the degree of obesity observed among patients receiving bariatric treatment, and inhabitants of urban areas were favoured. Patients from rural areas who withdrew from bariatric treatment and were left without medical care significantly more often achieved their maximum body weight, when compared to those living in urban areas. The active participation of physicians, both specialists and general practitioners, in the life of obese patients is imperative.

## Key words

morbid obesity, general practitioner, bariatric surgery

## INTRODUCTION

The problem of obesity in developed and developing countries is observed in all age groups, irrespective of race or gender. According to the WHO estimates, this disease directly affects almost 2 billion people worldwide, and another 500 million are at direct risk. Therefore, according to the WHO, in the 21<sup>st</sup> century, obesity as a disease can be treated as a global epidemic, and as a disease in itself with many of its complications, such as metabolic syndrome, and has become a subject of interest to physicians of various specialisations. Taking into account that the number of potential patients has been constantly growing, and currently in Europe is estimated to be 30% of the population (approx. 23% in Poland), increasingly more surgeons have become interested in searching for an optimum therapeutic method for this harmful disease. There is much evidence to prove that current methods of surgical treatment of obesity are the most effective tool to fight, not only the disease itself, but also its metabolic sequelae [1].

Poland is high on a list of countries affected by an epidemic of obesity, a problem that has especially suddenly increased in the post-transformation period. It is associated with a fast lifestyle favouring bad nutrition habits and a systematic increase in society wealth, as well as general access to high-calorie food products favouring weigh gain.

Treatment of obesity is an extremely complex process and strict cooperation between various specialists is necessary; they include an internal medicine specialist (internist) endocrinologist, dietician, rehabilitation specialist, psychologist, and surgeon, as well as consultants in narrow, highly specialised fields of medicine. A system of treatment of obesity is mainly based on changes in habits, both related to diet and physical activity. Only when patients start to follow desired habits can they be offered surgical treatment that enhances and maintains the effects that have been attained so far. As treatment of obesity lasts for many years, cooperation and mutual understanding between patient and a coordinating physician is extremely important. Many failures are the effects of poor communication, lack of supervision, lack of support of motivation for treatment, and inappropriate patient monitoring because, in reality, patients require treatment until the end of their lives. It would be possible to avoid many of these elements if the health care system were improved, even only at the level of public health care centres.

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The presented study analyses a group of patients who withdrew from a scheduled bariatric procedure after starting treatment of obesity. Attention was drawn to the possible reasons for such a decision with regard to demographic parameters (place of residence – rural and urban areas) and selected socio-economic factors. Moreover, focus was placed on methods of coping with the problem of obesity in rural and urban areas.

## MATERIALS AND METHOD

The documentation of 115 subsequent patients diagnosed with grade 3 obesity and considered eligible for surgical treatment, was analysed since 2015. The group included patients who had for some time been patients of the Outpatient Clinic of Metabolic Diseases in Ciechocinek and the Department of General, Gastroenterological and Oncological Surgery, CM UMK, Toruń, both towns on the river Vistula in Kujawsko-Pomorzanie Province in northern-central Poland. In all patients who entered the therapeutic system, the first stage included nutritional education and motivation for physical activity for them to learn the desired habits and achieve initial body weight loss. When the first effects of treatment were observed, the patients underwent detailed diagnostic tests in the fields of endocrinology, psychology, cardiology and metabolic diseases, after which they were qualified for a selected method of surgical treatment after appropriate preparation. These methods mainly included gastric banding or RY-gastric bypass. However, some patients in the study group had withdrawn at some point from active participation in the therapeutic system. Therefore, 68 patients who did attend an outpatient clinic or hospital to continue specialist treatment at various stages of treatment were selected. Their history since presentation at the obesity treatment centre, BMI with its history, patient's age, education and place of residence were analysed, followed by a telephone survey that included questions about the reason for withdrawal from treatment, current clinical parameters associated with obesity that could be used to show a patient's approach to treatment that had been suggested previously. 42 patients were finally contacted. Special attention was paid to the analysis of patient groups, taking into account their place of residence and education. Patients were divided into inhabitants of rural and urban areas. As it was difficult to define a rural or urban area, a classic administration classification was used.

The results of analyses taking into account place of residence (rural or urban area) were subject to statistical analysis at the statistical significance of  $P < 0.05$ .

## RESULTS

In the study group of 68 patients who withdrew from treatment, 19 (27.9%) were inhabitants of rural areas, and 49 (72.1%) of urban areas. Women accounted for a larger proportion – 67.6% (46 patients), compared to men – 32.4% (22 patients). The mean age of patients when they presented for treatment was approximately 43 years. On average, men presented 5 years later compared to women (on average they were 5 years older). The mean body weight of patients on qualification for treatment of obesity was 137 kg; BMI – 47.6 kg/m<sup>2</sup>. Previous mean maximum body weight – 143 kg;

BMI – 49.6 kg/m<sup>2</sup>. The mean duration of obesity until a patient reported to a physician was 27 years. Table 1 presents selected epidemiological parameters, taking into account a place of residence (Tab.1).

**Table 1.** Selected parameters of the study group taking into account a place of residence

	Women (%)	Men (%)	Mean Age śr.	Mean Age M	Mean Age W	Proportion W/M
Rural	12 (17.6)	7 (10.3)	43.3	45.4	39.8	1.71
Urban	34 (50.0)	15 (22.1)	45.4	48.3	44.5	2.26
p-value	ns	ns	ns	ns	ns	ns

As can be seen, in both groups, in groups of patients from rural and urban areas, the population distribution was similar, although a significant difference was shown by the analysis of the age of men and women regarding time when they presented for treatment ( $p = 0.045152$ ). This group of patients was then analysed, taking into account individual parameters associated with obesity (Tab. 2), where  $\Delta$  BMI – difference between BMI max. and current BMI.

**Table 2.** Parameters of obesity depending on place of residence in a group of patients who withdrew from treatment

	Act-av. BMI total	Act-av. BMI Women	Act-av. BMI Men	Av. BMI MAX total	Av. $\Delta$ BMI total	Av. $\Delta$ BMI Women	Av. $\Delta$ BMI Men
Rural	49.1	49.3	48.8	50.01	0.89	0.90	0.86
Urban	47.5	46.8	48.5	49.20	0.93	1.25	1.98
p-value	.0395	.0386	ns	.0351	ns	ns	ns

Assessment of parameters presented above partially confirms many reports indicating a higher degree of obesity in rural areas. Moreover, the maximum body weight during one's lifetime was significantly higher in patients from rural areas. However, this was not observed in the group of men in the presented study. This may be a result of the low number of patients in this group.

Analysis of the difference ( $\Delta$  BMI) between current BMI and its maximum value (BMI max) during a lifetime also showed apparent discrepancies. Therefore, the difference between an absolute number values of  $\Delta$  BMI in these patients is not statistically significant when considering individual groups of inhabitants of rural and urban areas. However, analysis comparing the total number of patients who achieved BMI max. (current BMI = BMI max) after withdrawal from treatment indicates a significant difference favouring urban areas (urban/rural – 28.5%/63.1%;  $p = 0.00854$ , respectively).

Analysis of places referrals for specialist treatment demonstrated that 52 patients were referred for bariatric treatment by public health care centres at their place of residence, whereas 16 patients were referred by specialised clinics. Analysis of differences with regard to place of residence was not statistically significant (Tab. 3).

However, when only women from urban areas were taken into account, they were significantly more often referred by specialised clinics, compared to patients from rural areas ( $p$ -value = 0.0466).

A telephone survey conducted in 42 of 68 obese patients who had withdrawn from treatment, demonstrated several

**Table 3.** Distribution of referrals depending on the place of residence

	Urban	Rural
GP	36	17
spec.	13	2
p-value	ns	

**Table 4.** Reasons for withdrawal from bariatric treatment based on selected demographic factors

Reason	Women Urban/education	Women Rural/education	Men Urban/education	Men Rural/education
Family troubles	1-vocational	1-vocational	-	1-vocational
Other treatment	1-secondary	-	1-vocational 1-secondary	-
Different centre	3-higher 3 secondary	-	1-middle	-
Economic reasons	2-secondary	-	1 secondary	-
Disqualified by doctor	1-higher 1-secondary	1-secondary	3-vocational	-
To continue -	3-higher 2-secondary 2-vocational	1-higher 2-secondary 1-vocational	2-vocational	1-middle 1-vocational 1-NS

basic reasons for withdrawal from treatment that depended on their education (Tab. 4).

The data above indicate there is a large (36%) group of patients who declared willingness to continue treatment of their disease after a discussion with a physician who performed the survey. There were no significant differences depending on the place of residence or education of these patients. Only 3 patients stated an economic reason for their withdrawal. Other reasons for withdrawal seem to be relatively objective and distributed evenly with regard to education and place of residence; therefore, they are not factors to be analysed more precisely.

## DISCUSSION

The problem of obesity and its complications affects an increasingly large number of people. In the period between 1980 – 2008 alone, the mean global BMI increased by approximately 0.5 within this decade, both in men and women [2]. Unfortunately, an increase in excessive body weight is also associated with a parallel increase in the incidence of cardiovascular diseases, type 2 diabetes, arterial hypertension, dyslipidaemia, respiratory tract infections, fertility problems, and many others conditions that together account for a metabolic syndrome with a poor prognosis [3]. Such a rapid increase in the incidence rate is associated with the sudden growth of civilisation and progress of urbanisation observed in some countries, and therefore with changes in nutrition habits and reduced physical activity [4]. Such changes can also be observed in Polish society.

The problem of obesity is observed not only among adults. There are more and more reports showing the first symptoms of this harmful disease as early as in childhood, when children start to copy bad nutrition and behaviour habits from their parents. This is a common problem and its scale can be reflected by American data stating that the population

of obese children has tripled within the last 30 years, and they account for 17% of the total American population [5,6]. Epidemiological data show some demographic risk factors responsible for obesity in the US population and include low social status, living in rural areas, belonging to social (ethnic) minorities, among others [7]. It seems that similar relations can be observed in Poland where, according a report by the Central Statistical Office (Główny Urząd Statystyczny – GUS) entitled 'Health condition of the Polish population in 2014' it can be concluded that more than 62% of Polish men weigh more than they should (44% were overweight, and 18% obese), and men living in rural areas are relatively more frequently obese compared to those living in urban areas. The body weight increase in this report is observed mainly in middle-aged and older men (at the age of 50 years and above). Moreover, almost 46% of all adult women also weigh more than they should, 30% were overweight, and 16% obese. Also in this case, the problem of obesity was more frequently observed in women living in rural areas, and the greatest body weight increase was observed in the younger group of women, at the age between 15 – 39 years. In the presented study, women who withdrew from treatment were also significantly younger than men. This situation may be explained, among others, by the fact that obesity affects fertility, and this is especially well-documented in women. Such women at the reproductive age finally present in bariatric centres when they start searching for reasons for their inability to conceive [8]. In the whole population of patients studied, the highest maximum lifetime BMI was observed in patients from rural areas. Moreover, BMI declared on the survey data was significantly higher in the whole group from rural areas. This phenomenon is not observed in all Polish reports. Results obtained by Rabiasz and Jarosz [9] regarding a problem of excessive body weight among adolescents living in rural areas of Podkarpackie Province did not confirm the epidemiological significance of this phenomenon. Similar conclusions were presented by Wolnicka et al. [10].

According to the results of a GUS study, patients with an increased body weight usually had, at most, a vocational education, and had been suffering from long-term health problems. In the current study, the patients education did not affect the decisions taken.

An attempt was also made investigate whether access to public health care centres might have affected loss of motivation for treatment of obesity. As can be concluded from the report issued by the European Foundation for Development of Poland Rural Areas, the number of medical health centres is twice as low in rural areas. This disproportion translates directly into a reduced number of and access to medical consultations (twice as low, on average), a reduced number of vaccinations (by approx. 10%), and fewer adult prophylactic examinations (less by approx. 10%). This inevitably has an impact on the detectability rate of diseases, especially the so-called 'civilisation diseases' – obesity, cancer and cardiovascular diseases.

In the case of obesity, the role of a regional doctor is usually associated with referring a patient to a specialised health care centre, and moreover, they could also be expected to provide some kind of supervision over the behaviour of patients' and their families, as well as some kind of monitoring of therapy conducted in specialist centres. It may seem that the lack of awareness of the problem of obesity among GPs may be

important, as it is reflected by the very low proportion of patients who are referred by GPs to specialist treatment, and the actual number of patients who have indications for such treatment. However, as can be proved by the epidemiological studies by Major et al. [11], as many as 96.6% of GPs surveyed declared they had had knowledge on the efficacy and possibilities of surgical treatment of obesity. In the presented study, the majority of patients were referred by public health care centres. The only difference was associated with a rate of women referred by specialised clinics, a rate that was higher for women living in urban areas.

The role of a public health care centre in the management of obese patients is extremely important. However, there have been many limitations presented that make it difficult for a GP to manage the problem of obesity (time available to devote to each patient, need to manage other, basic conditions, lack of information about referral centres), but there are also limitations on the patients' side (no access to information, no motivation associated with the surrounding environment, economical possibilities, etc.) [12]. Under such difficult conditions, it is optimistic to see that as many as 90.8% of GPs would like to participate in training sessions regarding the treatment of obesity, including surgical treatment [8]. In the current study, there were no statistical differences between the rate of patients from urban or rural areas who withdrew from treatment ( $p=0.07$ ); therefore, it is difficult to see significant effects of the patients' access to primary health care with regard to their place of residence. This may be confirmed by an analysis of changes in the BMI values of patients with regard to their maximum declared weight. There were no significant differences observed with regard to absolute values in both populations. Moreover, there were also no differences with regard to gender. However, reports from other countries also present such a medical 'intervention' in the environments in which obese patients live [13], although when the number of patients declaring the highest BMI at the time of the survey was analysed, the situation was slightly different. As many as 63.1% of inhabitants of rural areas achieved their maximum body weight after withdrawal from treatment. In the group of inhabitants of urban areas, this rate was only 28.6%, a difference that was statistically significant ( $p=0.00854$ ). Such a situation may have various reasons, such as returning to old habits that are especially maintained in small populations, such as in rural areas, lack of possibility to continue conservative treatment, including physical activity in rural areas, lack of education and, finally, lack of appropriate supervision provided by public health care centres. Fortunately, in the group of patients who withdrew from treatment and who were contacted by phone, as many as 16 (23% of the whole group (36% of the surveyed group) declared their willingness to continue participation in a treatment programme. Therefore, this seems to be further confirmation of the hypothesis that it is absolutely necessary to maintain active contact with the patients, and that no differences were observed between various places of residence.

This study shows the significance of contact between a physician and an obese patient. Undoubtedly, the statistics presented strongly indicate the necessity to undertake measures to improve the contact between GP and patients, and not only from a medical point of view. When no measures are undertaken by the health care system, especially in rural areas, the consequences could be dramatic. According to the experts of the NATPOL programme, if the lifestyle is

not changed, the number of obese people will increase from 22% to 33%, i.e. from 6.5 mln to more than 9 mln by 2035 in Poland (!) [14].

## CONCLUSIONS

Here are demographic differences between the degree of obesity observed among patients receiving bariatric treatment, which favour the inhabitants of urban areas.

Patients from rural areas who withdraw from bariatric treatment and are left without medical care and significantly more often achieve their maximum body weight, compared to those living in urban areas.

Active participation of physicians, both specialists and general practitioners, in the life of obese patients is a necessity – after being contacted by a physician, as many as 36% of patients who withdrew from bariatric treatment declared their willingness to restart therapy.

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