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HEALTH-RELATED QUALITY OF LIFE IN OBESITY¹

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SUMMARY

Obesity is a multifactor, chronic metabolic disease involving an excessive build-up of adipose tissue in the body. The severity of obesity is measured with the Body Mass Index (BMI). A BMI within the range of 25-29.9 kg/m² indicates overweight, while a BMI exceeding 30 kg/m² indicates obesity. The higher the BMI, the greater the disease risk for obesity-related comorbidities. Currently more than half of adult Poles are overweight or obese. Obesity leads to considerable deterioration of every dimension of health-related quality of life. At the physical level, it increases the risk of incidence of lifestyle diseases, leading to reduced fitness and many physical limitations. At the social level, it is a source of negative stereotypes and prejudices which lead to the stigmatization, depreciation and discrimination of obese people. At the psychological level, it leads to depressed mood, low self-esteem and body image dissatisfaction, and increases the risk of several mental disorders. It is not necessary to have an ideal or even normal BMI to achieve positive health outcomes. Even a 5-10% weight loss has many positive effects on health and wellbeing.

Key words: lifestyle diseases, overweight, health and psychosocial consequences

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INTRODUCTION

Definitions of overweight and obesity

Obesity is a chronic metabolic disease which develops in interaction with genetic predispositions and environmental factors (National Institute of Health [NIH] 2000). The primary cause of obesity is an abnormal eating drive which interferes with the mechanisms responsible for the body's energy homeostasis (Tatoń et al. 2007). When the energy supply exceeds the organism's needs, it will be stored in the form of adipose tissue (NIH 2000). Obesity is diagnosed when fat content exceeds 22% of the body mass in men and 32% of the body mass in women (Tatoń et al. 2007). This excess of adipose tissue greatly increases the risk of body organ and system dysfunction and leads to general loss of health and poor quality of life (World Health Organization [WHO] 2006a; Bernas 2005). The longer obesity lasts, the more likely it is that it will have negative physical, social and psychological consequences.

Precise assessment of the percentage of body fat can only be performed using special equipment and therefore level of obesity is usually diagnosed by means of a simple anthropometric indicator, the Body Mass Index (BMI), i.e., the ratio of body weight in kilograms (kg) to squared height in metres (m²). The BMI is highly correlated with the amount of adipose tissue in the body and also predicts the risk of premature death and incidence of obesity-related comorbidities (Han et al. 2007). A BMI within the 25 to 29.9 kg/m² range is a sign of overweight and a BMI of 30 kg/m² or more is a sign of obesity. The classification of overweight and obesity according to BMI value is presented in Table 1, together with the associated health risk.

Table 1. BMI classification of overweight and obesity and associated health risk (WHO 2010; NIH 2000)

Classification	BMI (kg/ m ²)	Health risk*
Normal	18.5 – 24.9	Not increased
Overweight	≥ 25	Increased
Obesity (class I)	30.0 – 34.9	High
Obesity (class II)	35.0 – 39.9	Very high
Extreme obesity (class III)	≥ 40.0	Extremely high

*Disease risk for : type 2 diabetes, hypertension, and cardiovascular disease.

Prevalence of overweight and obesity

Overweight is one of the most serious health risks and challenges with which contemporary society must deal (Haslam et al. 2007). Epidemiological analyses have revealed that the rates of overweight and obesity are system-

atically growing in the general population (WHO 2010). At first, problematic weight gain was mainly found in high-income countries, but now obesity rates are rapidly increasing in middle-income and low-income countries as well (WHO 2006a). According to the WHO, in 2005 nearly 1.6 billion adults were overweight and 400 million were obese (WHO 2006a). That same year, more than 20 million children under five years of age were overweight. According to the WHO's alarming forecasts, 2.3 billion people will be overweight and over 700 million will be obese by 2015 (WHO 2006b, 2010).

In Europe, from 30 to 80% of adults (depending on the region) are struggling with overweight or obesity; the average BMI is 26.5 and is increasing (WHO 2006b). Studies conducted in 24 countries (excluding Poland, unfortunately) revealed higher rates of obesity in Central and Eastern European countries than in Western and Northern European countries (Rabin et al. 2007).

A Polish national study, NATPOL PLUS, conducted on a representative sample of Poles aged 18-94, diagnosed overweight in 34% of the sample and obesity in 19% of the sample (Zdrojewski et al. 2002). This means that more than half of the Polish population (53%) has an abnormally elevated BMI (≥ 25). Significantly more men than women are overweight (39% and 29% respectively), whereas the rate of obesity (19%) is the same for men and women. Interestingly, this study also revealed considerable lack of awareness of one's overweight or obesity. Only 37% of the respondents admitted to being overweight when asked outright. Therefore, prevention and health promotion needs to begin with increasing many Poles' awareness that they may well be overweight or obese (Zdrojewski et al. 2004).

Health-related quality of life and obesity

The term "health-related quality of life" (HRQOL) pertains to patients' perception of the effects of illness and its treatment on their functioning and general satisfaction with life (Schipper et al. 1996). There are three major dimensions of HRQOL (Dziurawicz-Kozłowska 2002):

- physical (motor agility and functional status, vital energy, somatic complaints);
- social (functioning in social roles, availability of support, social isolation);
- psychological (emotional state, cognitive functioning, body image).

Patients may attribute unequal weight to the various HRQOL dimension and get different levels of satisfaction from them (Garrat & Ruta 1999). Ratings of each HRQOL dimension are a source of valuable and specific information concerning the current level of quality of life in different areas of the patient's functioning (Wrześniewski 2006). Objective indicators of current state of the organism, such as the results of imaging, functional and laboratory tests, are a source of only fragmentary information about the patients subjective HRQOL. This is because HRQOL is largely a function of cognitive-affective appraisal of life as a whole and its main areas by the most interested party, i.e. the patient him/herself.

Why is it worth assessing quality of life in obese patients? First of all, HRQOL analysis gives us insight into patients' subjective feelings and perceptions related to the fact that they are obese. HRQOL assessment allows us to assess wellbeing not only in individual patients, but also in specific patient groups, e.g. patients with clinically severe obesity or patients after bariatric surgery. Secondly, HRQOL monitoring allows us to observe change in response to specific therapeutic interventions whose aim is to reduce body mass, and the dynamics of this change (Dziurowicz-Kozłowska et al. 2005). It is thus possible to assess the advantages and disadvantages of various therapeutic decisions reliably (Dziurowicz-Kozłowska 2002). Thirdly, HRQOL assessment allows us to optimize the treatment of obesity and adjust it to the patient's current physical, social and psychological requirements (Dziurowicz-Kozłowska et al. 2006). When therapy is conducted this way, it is easier to reduce body mass successfully and improve obese patients' quality of life. Fourthly, HRQOL assessment in various groups of patients, including obese patients, is apparently an effective way to overcome the limitations of the biomedical model of health and to really implement the holistic conception, according to which human beings are bio-psycho-social entities (Dołęńska-Zygmunt 2001; Dziurowicz-Kozłowska 2002).

IMPACT OF OBESITY ON HEALTH-RELATED QUALITY OF LIFE

Physical dimension

Overweight and obesity rates are increasing systematically. This dynamic is directly reflected in the increased incidence of chronic diseases for which excessive fatty tissue accumulation is a significant risk factor.

“The comorbidities of obesity affect essentially every organ system: cardiovascular (hypertension, atherosclerotic heart and peripheral vascular disease with myocardial infarction and cerebral vascular accidents, peripheral venous insufficiency); respiratory (asthma, obstructive sleep apnea and obesity hypoventilation syndrome); metabolic (type 2 diabetes, impaired glucose tolerance, dyslipidemia); musculoskeletal (back strain, disk disease, weight-bearing osteoarthritis of the hips, knees, ankles, and feet); gastrointestinal (cholelithiasis, gastroesophageal reflux disease, fatty metamorphosis of the liver [steatohepatitis], cirrhosis of the liver, hepatic carcinoma, colorectal carcinoma); urinary (stress incontinence); endocrine and reproductive (polycystic ovary syndrome, increased risk for pregnancy and foetal abnormalities, male hypogonadism, and cancer of the endometrium, breast, ovary, prostate, and pancreas; dermatologic (intertriginous dermatitis); neurologic (pseudotumor cerebri, carpal tunnel syndrome).” (Buchwald 2007: 37).

Table 2. Health risk in obese people compared with people with normal body weight (Haslam et al. 2007; Zahorska-Markiewicz 2005)

Health risk associated with obesity		
Greatly increased risk: relative risk > 3	Moderately increased risk: relative risk about 2-3	Increased risk: relative risk about 1-2
<ul style="list-style-type: none"> • type 2 diabetes • hypertension • dyslipidaemia • breathlessness • sleep apnoea • gall bladder disease 	<ul style="list-style-type: none"> • coronary heart disease • heart failure • osteoarthritis • hyperuricaemia and gout • complications of pregnancy 	<ul style="list-style-type: none"> • cancer (many cancers in men and woman) • impaired fertility • polycystic ovary syndrome • low back pain • increased risk during anaesthesia • fetal defects (arising from

The higher the BMI, the higher the risk of health complications (Pi-Sunyer 1993, 2002; Van Itallie 1985). Table 2 shows how the risk of specific diseases increases in the obese compared to persons with normal body weight.

An estimated 50% of obese adults have hypertension (Buchwald 2007). Since this disease develops gradually and almost without symptoms at first, many obese people remain undiagnosed and do not take medication to normalize their blood pressure. Meanwhile, about 75% of cases of hypertension are directly associated with overweight and obesity (NIH 2000). Obesity is believed to be the most powerful predictor of hypertension, in both men and women, irrespective of age (NIH 2000). Obese people are 10 times more likely than people with normal BMI to have cardiac arrhythmia and twice more likely to have heart failure. Obese people often report cardiovascular complaints, such as palpitation, chest pain or tightness, breathlessness, headaches and dizziness, hyperarousal or fatigue, etc.

Obesity is accompanied by dyslipidaemia, which is usually caused by an unhealthy, fatty diet. Dyslipidaemia is found in about 40-50% of obese people (NIH 2000), and involves hypercholesterolemia: that is, elevated total cholesterol level, elevated low-density lipoprotein cholesterol, reduced high-density lipoprotein cholesterol and high triglyceride-rich lipoprotein concentration (Wild & Byrne 2007). These disorders are particularly frequent in patients with central obesity. Elevated lipid concentration leads to atherosclerosis, which in turn increases the risk of cardiovascular disease.

Obesity is the primary risk factor for type 2 diabetes – 90% of patients with this disease are obese (NIH 2000). Disease onset is often preceded by impaired glucose tolerance (Pi-Sunyer 2002). Compared with healthy persons, patients with diabetes have a four times greater risk of coronary heart disease and twice as great a risk of cerebrovascular accidents (Wild & Byrne 2007; Buchwald 2007). Type 2 diabetes often manifests itself as unpleasant, nonspecific symptoms, mainly persistent fatigue without any particular reason, reluctance to undertake activity, general weakness, increased fatigue and excessive drowsiness. These symptoms have a negative effect on the

daily functioning of patients with obesity, and this leads to further deterioration of mental and physical status.

Multiple orthopaedic problems affect the functioning of obese patients even further. The higher the BMI and the older the patient, the higher the risk of postural changes. These changes cause chronic back pain and osteoarthritis in the hips, knees, ankles and feet (Shiri et al. 2010; Fabris de Souza et al. 2005). These conditions are painful, and greatly reduce motor agility and discourage obese people from engaging in physical activity. Symptoms are sometimes so severe that the patient must use a stick, walker or even wheelchair (Buchwald 2007).

About 50% of patients with severe obesity (more men than women) have sleep apnoea (NIH 2000; Pi-Sunyer 2002). Episodic nocturnal apnoea leads to drowsiness during the day, the need to take a nap, reduced work output, as well as cognitive dysfunction (attention deficit, absentmindedness) (Buchwald 2007). The risk of traffic accidents in people with apnoea is several times higher than the average for the general population (Haraldsson & Akerstedt 2001).

Obesity is also associated with other sleep disturbances: short sleep duration, insomnia, nocturnal sleep disruptions and excessive daytime drowsiness (Vgontzas et al. 2008; Dixon et al. 2006; Buxler et al. 2005). The reasons for these disturbances are both metabolic (e.g. insulin resistance) and emotional (e.g. stress, depression) (Dixon et al. 2006; Bixler et al. 2005). Whatever the reason, however, sleep disturbances definitely reduce daytime energy level and cause chronic fatigue.

Relatively recently a connection has been found between obesity and increased risk for Alzheimer's disease. Obese people often have insulin resistance syndrome, which involves elevated insulin concentration in the blood and is conducive to inflammation and elevated level of beta-amyloid, a peptide which plays an important role in Alzheimer's disease (Craft 2005). Additionally, neurone death in obese patients may be accelerated by progressive atherosclerosis, leading to poorer blood supply to the cerebral tissue and its poorer oxygenation. These mechanisms may all impair cognitive functioning in obese patients.

Research on HRQOL in obese women, conducted in both the cross-section paradigm (Coakley et al. 1998) and the longitudinal paradigm (Fine et al. 1999), found a linear relationship between increased BMI and deterioration of quality of life in such domains as physical functioning and vital energy. It also found that changes in body weight during a 4-year follow-up were accompanied by changes in quality of life. Women who put on more than 9kg (20 lbs) of weight reported significant deterioration of physical functioning, whereas women who lost weight reported improved physical functioning and increased vital energy.

Obesity not only has a negative effect on the physical dimension of health and HRQOL, it also significantly shortens average life expectancy (Field et al. 2004). This is because obesity:

- increases a proclivity toward many severe diseases
- impedes treatment and worsens the prognosis and course of many common illnesses, both acute and chronic (Tatoń et al. 2007; Torgerson & Näslund 2007).

According to estimates, obesity, especially central type, may shorten average life expectancy by 20-25% in men and 15-20% in women (Tatoń et al. 2007).

Social dimension

In Western culture slimness is one of the most important components of the current paradigm of beauty (Phelan & Wadden 2003). Acceptance and propagation of the idea that slimness is one of the main determinants of interpersonal attractiveness has negative psychosocial consequences for obese people (Głębocka 2009). The rapid increase in the rate of overweight and obesity in the general population is paralleled by a generally critical attitude toward obese people. Many obese people perceive their obesity in terms of an obstacle which greatly reduces their chances of initiating and maintaining satisfactory interpersonal relations or even rules them out altogether.

Stigmatization of obese people is reflected in widespread and deeply rooted prejudices and stereotypes concerning obesity. Obese people are viewed in pejorative terms and ascribed such characteristics as poor control of their bodies and their lives, weak willpower, poor self-discipline, and neglect of their own health, and they are held fully responsible for their unattractive looks (Łuszczynska 2007; Crandall & Biernat 1990). In one study, 3-6-year-old children were asked to say what obese people were like. They said they were lazy, stupid and dumb (Cramer & Steinwert 1998). This shows that anti-fat attitudes develop very early. In another study of both children and adults, both groups agreed that they would prefer to be seriously injured (even to lose a hand or have a macerated face) than to be fat (Maddox et al. 1968). This shows how intense negative feelings obesity can evoke.

Interestingly, even obese people themselves have anti-obesity prejudices. Rand and MacGregor (1990) studied 47 obese patients who had managed to lose weight successfully thanks to bariatric surgery. They almost unanimously declared that they would rather be deaf, blind, have an amputated leg, cardiac disease or diabetes than be fat. They would all rather be slim and poor than fat and very rich. In another study these same researchers decided to identify the difficulties in social functioning experienced by 57 severely obese persons (Rand & MacGregor 1991). Over 80% of the participants said that people were gossiping about them behind their backs and were negatively disposed toward them because of their obesity; 67% said that their obesity had a negative effect on their chances of finding a job; 66% felt uncomfortable in situations involving social exposition; 45% said that health service staff treated them disrespectfully because they were fat. In a similar study of 447 members of the National Association to Advance Fat Acceptance, 99%

of the respondents admitted that they had experienced verbal abuse, criticism or derision from family and friends; 75% said that they had been harassed at work because of their obesity; 50% said that their direct superiors had been the authors of spiteful comments; 50% said that they had been refused employment because they were fat and 33% had heard unpleasant epithets from medical personnel (Phelan & Wadden 2003).

Do medical health workers really share these negative stereotypes concerning obesity? In a study by Maddox and Liederman (1969), 77 physicians rated their obese patients as failures, unpleasant, unintelligent, dishonest and overindulgent. In a study of 107 nurses, 24% admitted that they felt disgusted when nursing fat patients and 12% would rather not touch them at all (Bagely et al. 1989). Mental health care specialists are not immune to prejudice against obese persons, either. They attributed more and more serious symptoms of psychopathology to obese patients than to patients with normal body mass; they also tended to formulate less positive treatment prognoses than for non-obese patients (Hassel et al. 2001). These findings are extremely disturbing because they confirm the presence of stigmatising tendencies towards obese patients in the medical community. There is a real risk that these negative attitudes among health professionals toward obese patients may have a bad effect on the quality of the medical services rendered to these patients (Puhl et al. 2005).

Another social consequence of obesity is discrimination at work. Given the choice between an obese candidate and a slim candidate with the same qualifications and experience, employers prefer to employ the slim candidate (Puhl et al. 2003). Roe and Eickwort (1976) found that 16% of employers in their study refused to hire obese women under any circumstances and a further 44% would only employ them if they had no alternative. Why is this so? Largely for the reasons already mentioned, i.e. the negative associations with obesity: sluggishness, laziness, poor discipline and ineffectiveness. There may be a grain of truth in some employers' fears – obese people fall ill more often, and this leads to absenteeism and lower productivity (Buchwald 2007; Puhl et al. 2005).

Obese people are the objects of implicit discrimination oftener than persons with normal body weight (Łuszczynska 2007). This discrimination is expressed, sometimes almost imperceptibly, yet meaningfully, in such non-verbal and verbal behaviours as ostentatious refusal to greet them or offer help, deliberate avoidance of eye contact, signalling lack of interest and attention, and generally unpleasant treatment. These and other unfriendly behaviours (derision, cutting remarks, tactless comments) towards obese people often lead them to deliberately decide to withdraw from active participation in social life for fear of experiencing repeated rejection (Owczarek 2007). This leads to even greater loneliness and increasing social alienation (Dziurawicz-Kozłowska et al. 2005, 2006).

Unfortunately, the following opinion presented by Varsh Vaidya (2006a: 78) continues to apply to the social dimension of HRQOL in obese people: “The increased prevalence of obesity has done nothing to reduce the stigma associated with it.”

Psychological dimension

In light of the data which demonstrate that obesity definitely has a negative effect on social functioning, we also expect it to have a negative effect on psychological wellbeing. We know from epidemiological studies that obese people are more likely than people with normal weight to have affective disorders, such as depression or bipolar disorder. Obese individuals' risk of such disorders compared with individuals with normal body weight is higher by 19% and 15% respectively (McIntyre et al. 2006, cited by Łuszczynska 2007). Men are at greater risk than women.

More thorough analyses have shown that more psychological distress is diagnosed in those obese individuals who seek professional help to combat their obesity. The most frequent diagnoses in this group are:

- affective disorders (depression, dysthymia);
- eating disorders (binge eating);
- anxiety disorders (social phobia) (Vaidya 2006a; Phelan & Waden 2003).

The greater prevalence of psychological problems in patients applying to obesity treatment clinics can be explained in terms of their greater psychological discomfort, a factor which motivates people to seek professional support.

Many obese patients identify general body image dissatisfaction as the main source of their negative emotions. The term “body image” applies to perception of one's body size, physical appearance and/or one's attitude toward that appearance (Głębocka 2009). Body image has two components: body percept, i.e. the adequacy of one's rating of one's body size, and body concept, i.e. level of satisfaction with one's body (Slade et al. 1990). Distorted body percept and high dissatisfaction with one's body size lead to negative body image. Obese people, especially women, tend to overrate their body size and are therefore less satisfied with it than are individuals with normal body weight (Głębocka 2009). High risk groups, i.e., groups which are particularly prone to develop negative body images, include binge eaters, women struggling with overweight in adolescence, individuals who have been obese since early stages of development, and obese individuals with emotional disorders (Sarwer et al. 1998). Negative body image is associated with strongly internalized environmental criticism, and tends to persist despite the lack of constant disapproval. This is why psychological interventions aimed at improving body image may be particularly helpful for obese individuals whose main concerns are related to appearance.

One obese group which experiences particularly intense psychological discomfort is the group with binge eating disorder (BED). One of the typical features of this group is the recurrence of eating binges (at least two a week

for six months), whose cause is emotional. During these binges the individual consumes huge quantities of food very rapidly even though he/she is not hungry (Vaidya 2006b). These eating episodes are accompanied by a sense of loss of control over one's eating behaviour and intense guilt. Patients with BED do not induce vomiting or purge to compensate for their eating binges. Compared with obese patients without BED, obese patients with BED have higher body mass and more mental problems (depression, poor self-esteem, body dissatisfaction) (Phelan & Wadden 2003). Obesity usually has earlier onset in these individuals, and so they diet for most of their lives. Patients with BED are more likely to resign from behavioural weight-loss programs and put on weight again more quickly after therapy. BED is the most frequent eating disorder among obese patients (it is estimated that about 20% of obese patients seeking professional help have BED), but not the only one (Phelan & Wadden 2003). Other eating disorders in obese patients include bulimia and night eating syndrome (NES), the latter diagnosed with increasing frequency.

An individual's mental wellbeing depends on various factors: genetic predispositions, environmental influences, life experiences, personality traits. An additional factor in obese people is overweight, which affects practically every aspect of their lives. Comorbidities, the physical restrictions typical for obesity and the consequences of stigmatization all have powerful effects on the quality of psychological functioning of obese individuals. Unfortunately these effects are far from positive.

FINAL REMARKS

Obesity is a serious bio-psycho-social problem which leads to considerable deterioration of every aspect of health-related quality of life.

At the physical level, obesity increases the likelihood of various unpleasant somatic symptoms and increased incidence of lifestyle diseases. The health consequences of obesity have a negative effect on general body fitness, level of vital energy and daily functioning.

At the social level, obese people are often confronted with negative stereotypes and prejudices concerning obesity and therefore experience social depreciation and discrimination. They also have problems with initiating and maintaining satisfactory interpersonal relations, both personal and professional. All this leads obese people to avoid situations involving social exposition. In some cases, the tendency to isolate may lead to complete social alienation.

At the psychological level, obesity is associated with labile or reduced self-esteem and self-acceptance and also with excessive preoccupation with one's appearance and negative body image. Obese people are also at greater risk for psychopathological symptoms than people with normal body mass. The most frequently diagnosed mental disorders in obese people are mood disorders, eating disorders and anxiety disorders.

Realistic expectations and goals are very important in efforts to reduce overweight and obesity. It is not necessary to have ideal BMI or even to approximate the ideal (Grochmal-Bach & Pachalska et al. 2009). Loss of weight by just 5-10% has a positive effect on health and quality of life. It is worth bearing this in mind oneself and reminding one's patients about this truth.

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