

Streszczenie w języku angielskim

Obesity is a chronic disease involving excessive accumulation of adipose tissue in the body. Long-term treatment of obesity should be individually tailored to the patient's needs and should combine diet therapy with increased physical activity as well as psychotherapy, pharmacotherapy and, if medically indicated, with bariatric surgery. Telemedicine is a form of providing medical services using the achievements of computer science and telecommunications to monitor patients at a distance. An example of the use of telemedicine in the dietary care of patient with obesity may be obtaining dietary advice by phone, e-mail or in the form of videoconferences, as well as the use of mobile applications that facilitate the control of the results achieved.

The aim of this study was to compare the effectiveness of dietary care with the use of telemedicine versus conventional dietary care in weight reduction, improvement of the clinical condition of the patients, modification of their eating behavior, physical activity and quality of life assessment. Additionally, it was planned to learn about the advantages and disadvantages of both methods.

The annual study included 80 patients with previously diagnosed obesity, who were randomly divided into two equal groups (n = 40 patients). Patients from the G1 group participated in the weight reduction program with stationary visits with dietitian, and people from the G2 group - in the weight reduction program with telephone or e-mail consultations with dietitian. In both groups, control measurements were performed at stationary visits - the initial visit, the visit after 6 months and 12 months of dietary intervention. During the control visits

Dietary interview, physical activity questionnaire and quality of life assessment were carried out and anthropometric measurements with body composition analysis and blood pressure measurements were made during the control visits. Subsequently, the patients were referred for blood tests (blood concentrations of glucose, insulin, creatinine, total cholesterol, HDL-cholesterol, triglycerides, uric acid, AST, ALT) and asked to complete 3-day food diaries. The effects of dietary care for patients with obesity using telemedicine were compared with the effects of conventional dietary care by analysis using the statistical program Statistica 13.3. by StatSoft. The results were statistically significant when p-value <0.05.

Based on the conducted research, it was observed that the resignation from participation in the study before the 6-month of intervention was significantly greater in the group which was consulted with dietitian on stationary visits – G1 group, both among women

G1 vs G2 ($p < 0.01$) and among men G1 vs G2 ($p < 0,01$). However the significant differences between G1 and G2 in resignation from the participation of the study were not found in annual follow-up, neither among women G1 vs G2 ($p = 0.10$), nor among men G1 vs G2 ($p = 1.00$).

After 6 months of the program, the women from G1 reduced their body weight by 2.1 kg (which was 2% of the initial body weight) ($p = 0.06$), decreased of waist circumference by 4.5 cm ($p = 0.03$) and hip circumference by 1.4 cm ($p = 0.96$). After 6 months, women form G2 reduced their body weight by 3.0 kg (which was 3% of the initial body weight) ($p < 0.01$) and their waist circumference by 1.1 cm ($p = 0.50$) and they increased their hip circumference by 0.3 cm ($p = 0.81$). However, the statistically significant differences between the examined women from the G1 and G2 groups were not observed. After 6 months, men from the G1 group reduced their body weight by 4.5 kg (4% of the initial body weight) ($p = 0.07$), waist circumference by 3.0 cm ($p = 0.04$) and hip circumference by 2.1 cm ($p = 0.22$), while men from the G2 group reduced their body weight by 8.2 kg (7% of the initial body weight) ($p < 0.01$), the waist circumference by 4.9 cm ($p = 0.02$) and hip circumference by 4.6 cm ($p = 0.02$). However, the statistically significant differences between the studied men from G1 and G2 groups were not observed. It was found that after 6 months of intervention body weight was reduced by 27.3% of women with G1 and 29.4% of women with G2 ($p = 0.73$), 40.0% of men with G1 and 77.8% of men with G2 ($p = 0.20$), while after 12 months - 28.6% of women with G1 and 50.0% of women with G2 ($p = 0.95$). However the analysis showed that after 12 months in the G1 group, the average body weight decreased by 2.5 kg (3% of the initial body weight) ($p = 0.45$), waist circumference by 7.2 cm ($p = 0,13$) and hip circumference by 3.5 cm ($p = 0.45$), while in the G2 group the women reduced their body weight by 3.7 kg (4% of the initial body weight) ($p = 0.11$), waist circumference by 1.4 cm ($p = 0.75$) and hip circumference by 0.1 cm ($p = 0.75$).

After 6 months, the adipose tissue reduction was observed in 63.6% of women with G1 and 82.4% of women with G2 ($p = 0.29$), 60.0% of men with G1 and 100% of men with G2 ($p = 0.06$). After 12 months, the content of adipose tissue decreased in 71.4% of women with G1 and 70.0% of women with G2 ($p = 0.95$).

Among the examined blood parameters between groups G1 and G2 statistically significant difference was observed only in the change of blood triglyceride concentration in men - after 6 months triglyceride concentration was reduced in 80.0% of G1 patients and 20.0% of G2 patients ($p = 0, 05$).

The positive modifications of the diet were observed in both groups – in G1 and G2 groups patients decreased the energy value of the diet, increased dietary fiber consumption, increased fluid intake, decreased dietary cholesterol and saturated fatty acids and increased supply of vitamins (especially folate and vitamin C), increased supply of calcium, magnesium and iodine and reducing the sodium intake in the daily food ration.

In the G1 and G2 groups, regardless of sex, the significant increase in the level of psychological activity was not noticed. However, the positive changes in the self-esteem of the patients in both groups were observed (the statistically significant differences between the G1 and G2 groups were not noticed).

To conclude, it should be stated that diet therapy in patients with obesity (concerning nutritional advice and lifestyle modifications) using the conventional (stationary) method and the telemedicine method brought similar effects (in weight reduction, improvement in the clinical condition of the patients and modification of eating behavior, physical activity and quality of life), which means that the use of telemedicine could be an effective alternative to stationary dietary consultations.

Among the advantages of diet therapy with the use of telemedicine there were the possibility of patient contact with a dietitian (regardless of their current location), choosing a dietitian from another city or country, as well as saving time and travel costs to the dietitian's office. On the other hand, the advantages of stationary dietary counseling include the possibility of personal visits with dietitian and objective control measurements. However, among the observed disadvantages of the telemedicine method there were the need to have mobile devices and the ability to use them, reducing personal contact with a dietitian and taking control measurements by patients, which is associated with a higher risk of error. On the other hand, among the disadvantages of the conventional method there were the higher cost of reaching a dietitian and the need to allocate more time to travel and visit.