

Marcin Obrębski

Assessment of relationships of eating attitudes and the clinical condition and the course of treatment in people with type 2 diabetes.

Summary

Introduction. A successful treatment of diabetes requires the patient's involvement and adherence to numerous recommendations, as well as making changes in eating attitudes. This poses a great challenge and burden to many patients and proved to be a source of further stress. The research indicates that psychological factors are important in the course of the disease. The diabetes treatment guidelines recommend that patients be regularly monitored for the severity of various psychological factors, especially at times of any treatment changes. These factors include eating disorders. A higher incidence of eating disorders in both clinical and subclinical forms is recognized in both patients with type 1 diabetes and patients with type 2 diabetes. The majority of studies have focused on the prevalence of eating disorders in patients with type 1 diabetes. There are no studies on eating disorders in patients with type 2 diabetes, and the majority of existing ones focus on binge-eating. There is also a lack of longitudinal studies in this group of patients. The link between type 2 diabetes and eating disorders is believed to be two-way. Restrictive eating attitudes in people with type 2 diabetes, caused by the need to follow medical recommendations, may lead to the development of abnormal eating attitudes. On the other hand, the occurrence of binge-eating often precedes and is a risk factor for the development of type 2 diabetes. The available data indicate a worse course of complications in the co-occurrence of type 2 diabetes and abnormal eating attitudes, as well as a link between these attitudes and the severity of negative emotional states in people suffering from type 2 diabetes.

Objectives. When the treatment was intensified by the introduction of the administration of insulin or its analogues, the first objective of this study was to assess the differences in clinical condition between persons with and without eating disorders and to evaluate the relationship between the abnormal attitudes and the clinical condition of persons with type 2 diabetes in a cross-sectional study. The second aim of this study was to evaluate

prospectively the differences between the group with and without abnormal eating attitudes at the start of the study in terms of clinical condition in the subsequent stages of the study and to assess the relationship between the abnormal eating attitudes at the start of the study and the clinical condition in the subsequent stages of the study (second evaluation after 0.5 year; third evaluation after 1 year, counting as of the first evaluation). The third objective was to assess the relationship between the abnormal eating attitudes and the frequency of bypassing the recommended insulin doses and the relationship between the abnormal eating attitudes and the frequency of skipping the recommended insulin doses. Additional objectives were also set for the analysis of changes in the measured variables and the relationship between these changes.

Material and methodology. The study is of a cross-sectional and prospective nature. Three evaluations were performed; the first one within one month of the inclusion of the administration of insulin or its analogues, the second one after 6 months, and the third one after the following 6 months (one year after the first evaluation). Sixty-eight persons aged from 38 to 71 years ($M=61.1$; $SD=8.2$) were qualified for the study, 45.6% of these were men ($N=31$) and 54.4% ($N=36$) were women. The time that passed from the diagnosis of type 2 diabetes was from 2 to 30 years ($M=10.4$; $SD=6.3$); the mean HbA1c was 9.15%. Abnormal eating attitudes were evaluated with the EAT-26 Eating Attitudes Test and the Questionnaire for the Screening of Binge-Eating Episodes [Polish: *Kwestionariusz do Przesiewowego Badania Występowania Napadów Żarłocznego Jedzenia*]; the clinical status was examined with the Short Self-Rating Depression and Anxiety Scale [Polish: *Krótką Skala Samooceny Depresji i Lęku*, referred to as KSSDL for abbreviation], the PAID Problem Areas in Diabetes Questionnaire, a HbA1c-level measurement, and the number of late complications of diabetes.

Results. Abnormal eating attitudes were found in 18.5% of the subjects, and screening binge-eating traits were found in 42.6% of the subjects. Persons with abnormal eating attitudes differed statistically significantly from persons without such attitudes in the HbA1c level ($M=10.45\%$ vs. $M=8.93\%$; $p=0.014$), the intensity of eating problems ($M=5.25$ vs. $M=3.3$; $p=0.018$), the intensity of support problems ($M=2.92$ vs. $M=1.23$; $p=0.039$), and age ($M=56.1$ vs. $M=62.3$, $p=0.43$). The intensity of depressive symptoms differed significantly in individuals found with binge-eating disorder ($M=11.66$ vs. $M=9.46$; $p=0.037$).

In the cross-sectional study, the severity of eating disorders evaluated with EAT correlated positively with the KSSDL anxiety scale ($r=0.273$; $p=0.028$), the PAID emotional problems scale ($r=0.373$; $p=0.002$), the PAID eating problems scale ($r=0.361$; $p=0.003$), the

overall PAID score ($r=0.362$; $p=0.003$), and correlated negatively with the age of respondents ($r=-0.261$; $p=0.037$). The EAT bulimia scale correlated positively with the KSSDL depression scale ($r=0.258$; $p=0.038$), the KSSDL anxiety scale ($r=0.41$; $p=0.001$), the overall KSSDL score ($r=0.374$; $p=0.002$), the PAID emotional problems severity ($r=0.474$; $p<0.000$), the PAID eating problems intensity ($r=0.446$; $p<0.000$), the PAID support problems intensity ($r=0.366$; $p=0.003$), and the overall PAID score ($r=0.472$; $p<0.000$). The EAT weight loss scale correlated positively with the KSSDL anxiety scale ($r=0.275$; $p=0.027$), the overall PAID score ($r=0.268$; $p=0.031$), the PAID emotional problems severity ($r=0.352$; $p=0.004$), the PAID eating problems severity ($r=0.335$; $p=0.006$), the overall PAID score ($r=0.334$; $p=0.006$), and correlated negatively with the age of respondents ($r=-0.278$; $p=0.026$).

The intensity of binge-eating evaluated with the screening tool correlated positively in the cross-sectional study with the KSSDL depression scale ($r=0.345$; $p=0.004$), the KSSDL anxiety scale ($r=0.38$; $p=0.001$), the overall KSSDL score ($r=0.415$; $p<0.00$), the PAID emotional problems scale ($r=0.402$; $p=0.001$), the PAID treatment problems scale ($r=0.362$; $p=0.002$), the PAID eating problems scale ($r=0.332$; $p=0.006$), the PAID support problems scale ($r=0.308$; $p=0.011$), and the overall PAID score ($r=0.408$; $p=0.001$).

Individuals with and without abnormal eating attitudes found at the time of the study hardly differed significantly in terms of their clinical condition in subsequent evaluations (after 0.5 and 1 year). Individuals with a binge-eating disorder found in the first evaluation compared to those without a binge-eating disorder had only a significantly higher intensity of depressive and drug symptoms in the third evaluation ($M=25.06$ vs. $M=14.25$; $p=0.033$). The severity of the abnormal eating attitudes at the beginning of the study correlated positively with the severity of depressive and anxiety symptoms and the severity of the problem areas in diabetes during the second and third evaluations.

The intensity of the EAT questionnaire control scale correlated inversely proportionally with the declared frequency of skipping insulin doses ($r=-0.386$; $p=0.035$).

During the course of the study, the intensity of the bulimia trait evaluated with the EAT bulimia scale ($F(2;60)=4.696$; $p=0.013$) changed significantly. The average increased from $M=1.09$ at the first evaluation to $M=2.11$ at the third evaluation. The level of HbA1c ($F(2;60)=16.407$; $p<0.01$) decreased significantly from the mean value of $M=9.15$ at the first evaluation to $M=7.74$ at the second evaluation. The number of complications ($F(2;70)=8.448$;

$p=0.01$) increased from an average of $M=0.6$ at the first evaluation to $M=0.89$ at the third evaluation.

During the course of the study, the change in eating attitudes as evaluated with the overall EAT score correlated positively with the change in HbA1c ($r=0.378$; $p=0.036$), the change in the KSSDL depression scale ($r=0.394$; $p=0.023$), and the overall KSSDL score ($r=0.4$, $p=0.021$). The change in the intensity of bulimia traits evaluated with the EAT bulimia scale correlated positively with the change in the KSSDL depression scale ($r=0.367$; $p=0.036$), the PAID treatment problems score ($r=0.498$; $p=0.003$), and the overall PAID score ($r=0.353$; $p=0.044$). The change in the EAT control scale correlated positively with the change in the KSSDL depression scale ($r=0.437$; $p=0.011$).

Conclusions. The subjects with abnormal eating attitudes and a binge-eating disorder found differed in some aspects of their clinical condition from those who did not have such attitudes; inter alia, their HbA1c level was higher. The increase in abnormal eating attitudes and binge-eating correlated positively with the severity of depressive and anxiety symptoms and the severity of problem areas in diabetes in the cross-sectional and prospective study. After the intensification of the treatment, through the inclusion of the administration of insulin or its analogues, the level of HbA1c decreased over 12 months. At the same time, the number of complications increased, and the characteristics of bulimia intensified. In this study, more variables evaluating the clinical condition of patients were related to bulimia traits and binge-eating than to weight loss or control traits. The dimension of the change in the intensity of abnormal eating attitudes correlated positively with the dimension of changes in HbA1c levels during the course of the study. The obtained results indicate that a further study of abnormal eating attitudes in patients with type 2 diabetes, especially in the prospective perspective, is needed. Furthermore, these indicate that a regular screening diagnosis for the presence of eating disorders is needed in patients with type 2 diabetes as eating disorders frequently occur in this group and are associated with the clinical condition of the persons concerned.