

# Course of and predictors of depression in type 2 diabetes

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## Aims

Comorbidity of depression and diabetes is a relevant matter for clinical diabetology. The rate of depressive disorders is twofold higher in diabetic patients than in non-diabetic people. Approximate every third diabetic patient is affected by depressive symptoms or a clinical affective disorder. Furthermore, it is known that depressed diabetic patients have more problems in the self-management of diabetes, a poorer glycaemic control, a higher risk for diabetic complications and are causing higher health-care costs than non-depressed diabetic patients. Besides our knowledge about the prevalence and consequences of depression in diabetes, less is known about the course of depressive symptoms in diabetic patients. Knowledge about the predictors modifying the course of depressive symptoms in type 2 diabetic patients is required to undertake preventive steps to improve depressive symptoms and avoid deterioration of mood status to a clinical depressive disorder (see figure 1).

In a prospective study, we examined the course of depressive symptoms and its possible predictors in type 2 diabetic patients. In a subsequent analysis we also investigated if there were different antidepressive effects of different treatment programmes.

## Methods

191 type 2 diabetic patients took part in a prospective trial to evaluate the efficacy of three different treatment programmes in a 15-month follow up. The three programmes were a "traditional" knowledge-oriented treatment programmes /group A), a self-management oriented group treatment programme (group B) and a more individualised self-management oriented approach consisting of single and group lessons (group C). At the beginning and the end of this follow up 177 patients (drop out 7.9%) completed a depression questionnaire, the Zerssen Depression Scale (see table 1). There was no selective drop out with regard to depression nor with regard to other sample characteristics. Patients who scored higher than 10 (1 SD > mean) in the depression scale were considered to be depressed.

## Results

At baseline, 54 patients (30.5%) reached an elevated depression score. From these patients 28 (15.8%) improved to an asymptomatic level, whereas 26 patients (14.7%) remained depressed at follow-up. Incidence of depression was 5.1%, (9 patients; see figure 2). In an exploratory logistic regression analysis female gender, occurrence of late complications and amount of weight loss differentiated significantly were significant risk factors for staying depressed vs. remaining non-depressed. A smaller decrease in HbA1c showed a tendency towards significance (see figure 3). In a second logistic regression only the occurrence of complications and female gender predicted significantly chronification vs. recovery. (see figure 4). Diabetes education concepts which are oriented towards increased self-management showed a more beneficial effect on depressive symptoms (Mantel Haenszel Test  $\chi^2=37.1$  P<.001) than a more knowledge oriented concept (see figure 5).

## Discussion & Conclusions

After participation in diabetes education, a remarkable reduction of depressive symptoms was observed. Presence of late complications, higher weight reduction without improvement of HbA1c and female gender seems to be associated with persistent depression. Also late complications seem to hamper recovery, thus coping with late complications should be specifically addressed. Diabetes education may be a powerful tool to prevent depression in diabetes. Diabetes education focussing on selfmanagement may contribute to an improvement in self-efficacy, more perceived control over the disease and a reduction of feelings of helplessness. Depressive symptoms are changing over time, thus repeated assessment of depression seems to be indicated. Little is known about spontaneous fluctuation of depressive symptoms, thus the magnitude of the antidepressive effect of diabetes education has to be interpreted with caution.

Table 1: sample characteristics (mean  $\pm$ SD)

	all n = 177	group A n = 59	group B n = 54	group C n = 64	P
age (yrs)	55.7 $\pm$ 6.3	55.2 $\pm$ 5.6	56.6 $\pm$ 6.7	55.4 $\pm$ 6.5	.43
% female	49.7	52.2	44.4	48.4	.69
BMI kg/m <sup>2</sup>	32,2 $\pm$ 3.7	32.0 $\pm$ 3.6	31.7 $\pm$ 3.3	32.6 $\pm$ 4.2	.35
HbA1c (%)	7.8 $\pm$ 1.6	7.6 $\pm$ 1.5	8.1 $\pm$ 1.8	7.8 $\pm$ 1.6	.26
Duration (yrs.)	6.7 $\pm$ 6.2	6.2 $\pm$ 5.6	6.4 $\pm$ 6.1	7.2 $\pm$ 6.5	.45
Depression (Score)	8.9 $\pm$ 6.3	8.3 $\pm$ 5.8	8.4 $\pm$ 6.0	9.3 $\pm$ 7.1	.50

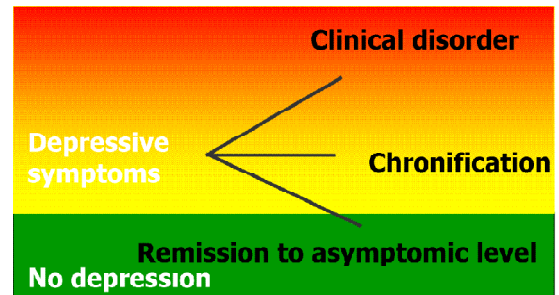


figure 1: Possible courses of depressive symptoms

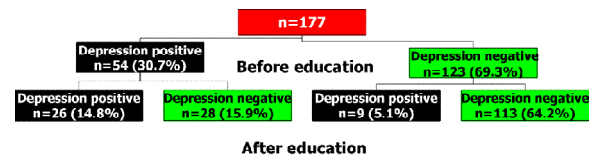


figure 2: Effect of diabetes education on depressive symptoms

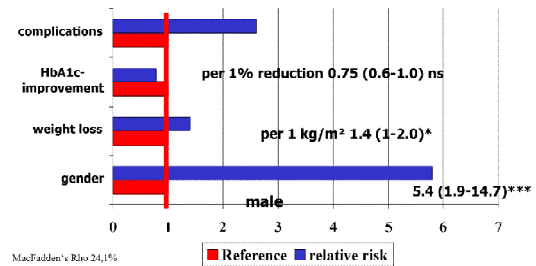


figure 3: Predictors of persistent depression

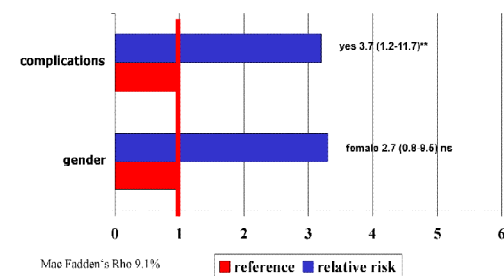


figure 4: Predictors of non-recovery

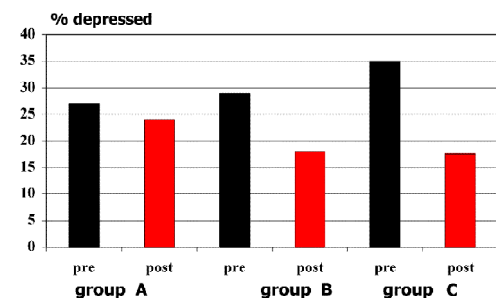


figure 5: Specific diabetes education and course of depression (Mantel Haenszel P<.001)