Letters

Observation

Screening of depression in patients with diabetes mellitus

To the Editor: The link between depression and diabetes, late complications and glycaemic control is well established [1, 2, 3]. In routine care, a considerable proportion of patients with depression remains undetected and untreated [4, 5]. As diabetes requires self management, depression leads to a higher risk of diabetic late complications. The WHO (five) Well-Being Index (WB5) is a short screening instrument for the detection of depression in the general population. This instrument is also recommended in the WHO DiabCare Basic Information Sheet (BIS). WB5 was developed within the DepCare [6] project as a first-line low-mood screening instrument for depression. It is a short five-item questionnaire, whereby every answer is given a score between 0 and 5, yielding a raw score of between 0 and 25. A raw score below 13 indicates poor well-being and is considered to be an indicator of depression, which should be confirmed using the Major (ICD-10) Depression Inventory and through specific patient interviews [6]. WB5 has been evaluated in elderly patients, and showed adequate internal and external validity [7].

The Forum for Quality Systems in Diabetes Care (FQSD) is a voluntary multinational quality improvement initiative, active in Germany and Austria. More than 170 healthcare centres (GPs and hospitals) participate actively in the FQSD initiative and collect more than 20,000 BIS yearly. Quarterly, regional centres send all participating centres non-anonymised quality-of-care reports, addressing issues of structure, process and out-

come measures. Additionally, data collection and quality-of-care benchmarks can be performed online at any time. This analysis was carried out in accordance with the Declaration of Helsinki and was approved by the local ethics committee. Participating patients gave informed consent.

Since 2001 the proportion of patients with documented WB5 values, as well as the distribution of WB5 scores, has been included in quarterly quality-of-care reports. We analysed the proportion of patients with recorded WB5 scores from the beginning of 2000 to the end of the third quarter of 2003. A total of 6705 patients with Type 2 diabetes and 973 patients with Type 1 diabetes had documented WB5 scores. A significant increase in the proportion of patients with recorded WB5 values was observed. WB5 was recorded in 5%, 11%, 17% and 12% of yearly documented patients (out of 17,150, 20,859, 24,172 and 15,143 respectively; chi square test for trend, $p<0.001$).

The prevalence of WB5 scores below 13 was 30.9% (95% CI: 29.8–32%) for people with Type 2 diabetes and 23% (95% CI: 20.4–25.8%) for people with Type 1 diabetes. These estimates are comparable to the prevalence of depression in unselected, predominantly clinical populations reported by Anderson et al. [1]. Furthermore, we analysed the correlates of WB5 scores below 13. Continuous variables were tested with the Wilcoxon test and categorical variables with the chi square test. Results for categorical variables are given in figure 1. In a second step, a logistic regression on low WB5 scores was performed. All significant variables from univariate analysis were included in the initial model, and then a fast backward elimination of variables was performed. A result was considered statistically significant if the corresponding p value was less than 0.05.

More females (52.6% vs 51.4%, $p<0.046$), fewer Type 1 diabetic patients (11.1% vs 15.7%, $p<0.001$), shorter diabetes duration (8.8 ± 9.3 vs 9.6 ± 9.7 years, $p<0.001$), older age (61.3 ± 4.4 vs 59.3 ± 6.3 years, $p<0.001$), and a lower diastolic BP (80.1 ± 10.8 vs 80.6 ± 11.6 mm Hg, $p=0.011$) were found among screened patients than among those not screened. No statistically significant difference was observed for systolic BP

Fig. 1. Association between patient characteristics and low WB5 scores

or HbA_{1c}. Furthermore, lower proportions of some diabetes-related complications were found among screened patients: acute ulceration (3.6% vs 6.7%, $p<0.001$), myocardial infarction (11.3% vs 12.3%, $p=0.008$), amputation (2% vs 2.8%), neuropathy (25% vs 31.5%, $p<0.001$), and nephropathy (5.6% vs 7.6%). The prevalence of angina pectoris was higher among screened patients (12.6% vs 11%). Prevalence of retinopathy, stroke and claudication were not significantly different between the screened and non-screened patients.

In Type 2 diabetes patients, the prevalence of low WB5 scores was 26.8% (95% CI: 25.2–28.4%) in males and 34.5% (95% CI: 32.9–36.1%) in females. WB5 scores below 13 were associated with categorical variables presented in Figure 1, as well as with longer diabetes duration (65.6 ± 12.2 vs 63.9 ± 11.5 , $p<0.001$) and older age (65.6 ± 12.2 vs 63.9 ± 11.5 , $p<0.001$). With respect to biochemical parameters, patients with low WB5 scores had lower diastolic blood pressure (79.9 ± 10.6 vs 81.3 ± 10.7 mm Hg, $p<0.001$) and higher HbA_{1c} values (8.0 ± 1.9 vs 7.9 ± 1.9 , $p=0.03$). In a logistic regression model with fast backward elimination, the following variables remained in the model: stroke, odds ratio (OR) 1.42 (95% CI: 1.17–1.73), angina pectoris, OR 1.53 (95% CI: 1.31–1.78), claudication, OR 1.37 (95% CI: 1.14–1.65), neuropathy, OR 1.43 (95% CI: 1.26–1.62) and sex (males vs females), OR 0.66 (95% CI: 0.59–0.74).

In Type 1 diabetic patients, low WB5 scores were recorded in 18.8% (95% CI: 15.5–22.6%) of males and 27.2% (95% CI: 23.2–31.4%) of females. No association with age, diabetes duration, HbA_{1c} and blood pressure was observed. After a fast backward elimination was performed, low WB5 scores were associated with neuropathy, OR 2.76 (95% CI: 1.66–4.60) and the female sex, OR 0.50 (95% CI: 0.34–0.75). Both final logistic regression models showed appropriate goodness of fit.

The prevalence of depressive symptoms among diabetic patients in our population is high, but nevertheless in line with other predominantly clinical diabetic populations. Quarterly feedback in a quality management system increased the percentage of patients screened for depression. The WB5 questionnaire can be completed in less than 5 minutes, and should be more widely used for depression screening among persons with diabetes.

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