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Incidence of filled antidepressant prescriptions among people with newly diagnosed diabetes and its interaction with occupational status within the working population of Denmark 1996–2010

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ABSTRACT

Aims: People with diabetes have heightened levels of depressive symptoms, but less is known about the development of these symptoms in relation to diabetes duration. In this study, we examined the use of prescribed antidepressants in the first five years after diagnosis of diabetes among the working-age population in Denmark.

Methods: All Danish adults aged 18–54 years, diagnosed with diabetes in the study period were included. Diabetes status and purchase of prescription antidepressants were obtained from validated population registers. Data analysis focused on filled antidepressant prescriptions at ≤ 1 and ≤ 5 years from diagnosis with diabetes.

Results: 35,677 people diagnosed with diabetes were included in the study. At ≤ 1 year post-diagnosis, 2.6% had filled antidepressant prescriptions. At ≤ 5 years, this figure rose to 10.4%. Overall, both female gender and lower socioeconomic status were associated with higher incidence of filled antidepressant prescriptions. Diabetes duration modified the degree of differences between men and women and socioeconomic strata.

Conclusion: Diagnosis with diabetes immediately impacts mental wellbeing, with higher rates of filled antidepressant prescriptions in the first year after diagnosis. People of working age diagnosed with diabetes face specific challenges and addressing such challenges would enhance patient experiences. Focus on mental health in the clinical encounter with people newly diagnosed with diabetes is warranted and important.

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1. Introduction

The link between diabetes and depressive symptoms is well established [1]. The exact nature of the depressive symptoms experienced by people with diabetes (PWD) and what they signify, however, still generates controversy [2]. Often this controversy revolves around the question of whether or not PWD are more prone to clinical depression [1] and, if so, what mechanisms link the two conditions [3]. Hard evidence concerning the onset of depressive symptoms in temporal relation to a diagnosis of diabetes remains scant [4] and research conducted in this area has produced results with conflicting conclusions [5,6]. What is clear, however, is that the presence of depressive symptoms, even at levels below the threshold for clinical depression, impact on behaviours pertinent to diabetes self-management [7,8]. In this light it is important to establish evidence regarding the onset of depressive symptoms in temporal relation to a diagnosis of diabetes. In order to assess the psychological impact following a diagnosis of diabetes, we examined cases of incident diabetes in Denmark from 1996 onwards and determined what proportion filled antidepressant prescriptions within five years of a diagnosis of diabetes.

The analysis undertaken in this study is focussed on the working-age population (<60 years). The deleterious effects of diabetes on employment and ability to work are well established [9], but recent research has clearly underlined how poor mental health compounds these effects [10–12]. We believe it is important, therefore, to generate evidence which encourages the development of support in the workplace for PWD, not least when both diabetes of both types, and poor mental health are often associated with stigma and discrimination in the context of work [13–15]. Highlighting the stresses and strains to which people diagnosed with diabetes may be subject serves to underline the need for workplace support, which is proven to protect people with diabetes against premature exit from paid employment [16].

2. Methods

Using population registers we established a cohort including all Danish adults aged 18–54 years, free of diabetes and no history of antidepressant use. No history of antidepressant use was operationalised as individuals having no record of a filled antidepressant prescription in the twelve months prior to their diagnosis with diabetes. This exclusion was undertaken to ensure the likelihood that the cases of filled antidepressant prescriptions captured in our analyses were related to diagnosis with diabetes rather than reflecting a previous history of antidepressant use, which aside from being a predictor for subsequent use of antidepressants has also been associated with an increased risk of developing type 2 diabetes [17]. Diabetes status was determined by using the Danish National Diabetes Register (DNDR), a comprehensive and validated register [18,19]. We identified filled antidepressant prescriptions in the Register of Medicinal Product Statistics [20] by using all medications with the ATC- classification NO6A.

In order to follow PWD for five years after their diagnosis, inclusion of incident diabetes cases was suspended at 31 December, 2005.

2.1. Occupational status

For each individual in the cohort, we identified their highest occupational status category in the study period according to the Register-based Labour Force Statistics [21]. We adopted the International Labour Organisation hierarchical categorization of occupational status, which is built into the categorisations applied by Statistics Denmark: 1) high-skilled employment, 2) Executive management, 3) medium-skilled employment, 4) basic-skilled employment, 5) self-employed, 6) unskilled employment, and 7) unemployed.

2.2. Statistical analysis

We analysed people whom we could follow for ≥ 5 years. The results indicate the number of people with newly diagnosed diabetes who started antidepressants within five years of their diabetes diagnosis. We stratified our analyses by occupational status and gender. In both cases, these stratifications were considered important, as both occupational status (low) and gender (female) are known risk factors for use of antidepressants.

The determination of statistical significance focussed on two distinct outcomes. First, we were interested in determining whether antidepressant use was evenly distributed throughout the follow-up period e.g. $\sim 20\%$ of cases in each year for the first five years after diagnosis with diabetes. Statistical significance was determined by using two-sided Fisher's exact tests. In addition, using the highest ranked socioeconomic category in the different groups as the reference group and employing a two-sided Fisher's exact test again, we examined differences in the proportion of all cases of filled antidepressant prescriptions observed during the follow-up period, which occurred in the first year after diagnosis with diabetes. Finally, we undertook interaction analyses to compare differences in the results between men and women using chi-squared testing.

3. Results

From a potential study-population of 37,790 participants, 2113 (5.6%) individuals were excluded because they had filled a prescription for antidepressants within one year prior to their diagnosis with diabetes. This resulted in a total study population comprising 35,677 participants; 20,158 (56.5%) men and 15,519 (43.5%) women. Mean age at entry was 43.2 years. 6340 participants (17.8%) filled an antidepressant prescription during the study period. 3742 of these participants could be followed for five years after their diagnosis with diabetes (Table 1).

The distribution of cases throughout the five year follow-up period indicates that filled prescriptions were proportionally higher in the first year after diagnosis of diabetes. For both men and women the distribution of cases throughout the five

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