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## **The Enigma of Depression in Diabetes**

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It is now widely accepted that people with diabetes are more likely to experience symptoms of depression compared with people without this chronic disease [1,2]. When diagnostic criteria are used (DSM-IV, ICD-10), the prevalence of depressive disorders in diabetes has been estimated at around 10%, which is twice as common as in the general population. When self-report questionnaires are used the prevalence has been found to be even higher at 26%, suggesting that there are high rates of sub-threshold clinically significant psychological distress in diabetes populations [1].

However, recent findings indicate that the relationship between diabetes and depression is somewhat of an enigma. For example, compared to the general population, the prevalence of depression does not seem greater in people who have undiagnosed diabetes [3]. Although the reasons for this discrepancy are currently unknown, it is possible that people who are unaware of having diabetes have fewer diabetes complications than those who have been formally diagnosed (diabetes complications are a risk factor for the development of depression,[4]. Alternatively, people unaware of having diabetes are also not cognizant of the full burden of caring for the condition. Further research is clearly needed.

The enigma of depression in diabetes becomes greater considering the fact that the incidence (number of new cases) of depression is not significantly higher than in the general population [5]. While good news for the majority of diabetes patients, it does confirm earlier observations for people with diabetes who have a history of

depression, that the mood disorder is likely to last longer and/or recur more often in those who have diabetes [6]. A final piece of the enigma is that there is now firm evidence that depression increases the chances of developing diabetes with a recent meta-analysis [5] estimating the odds at 1.60 (1.37–1.88).

Whatever the nature of the relationship between the two conditions, depression in diabetes is associated with poorer self-care [7], impaired glycaemic control [8], an increased risk of developing diabetes-related complications, especially cardiovascular complications [9], increased mortality [10] and higher health care expenditure [11]. Although no UK data are available, studies in other countries have shown total health care expenditure for individuals with diabetes and diagnosed with depression was 4.5 times higher than that for individuals without depression [12]. To put this into perspective, the lifetime cost of health care for patients with diabetes has been calculated to be more than double that for an equivalent non-diabetic population [13].

Given these adversities, it is not surprising that clinical guidelines (including the UK General Practice Quality and Outcomes Framework) now recommend that all patients with diabetes undergo regular screening for . Following an international symposium on depression and diabetes at the European Association for the Study of Diabetes (EASD) annual congress, and under the auspices of the Association for the Improvement of Mental Health Programme, a group of individuals from diverse global professional organizations (e.g. World Organisation of Family Doctors, World Psychiatric Association, International Council of Nurses, Psychosocial Aspects of Diabetes Study Group), came together to commit to working to improve outcomes for patients with co-morbid diabetes and depression. At this meeting the Dialogue on Diabetes and Depression was formed, and a diverse group of specialists and

stakeholders agreed to work together in order to understand the current state of knowledge about diabetes and depression, and to set the agenda for future research and care in this field. To date, eight working groups have been formed and are currently bringing together evidence on the epidemiology, pathogenesis and treatment of co-morbid diabetes and depression.

Notwithstanding these international collaborative efforts, there are already some data indicating the efficacy of particular methods of identifying individuals with diabetes and depression. Case-finding instruments, such as the Center for Epidemiologic Studies Depression scale (CES-D, [14]) have proven to be effective in screening for depression in primary care settings [15], and also to be suitable for use in people with diabetes [16].

Whilst routine administration of depression self-report questionnaires with feedback to physicians may not lead directly to increased intervention provision, the inclusion of a formal diagnosis along with provision of treatment support (e.g., knowledge and resources) may substantially increase the number of patients being treated for depression [17]. Whether treatment is sought and prescribed following feedback of depressive symptoms or diagnosis of major depressive disorder, depends on interactions between health-care provider, patient and context variables. General practitioners are more likely to refer for treatment or initiate treatment when depressive symptomatology is severe [18], or when psychological problems and major stressors are suspected (e.g., marital disruption, unemployment).

Goals for treating depressed diabetes patients are two-fold: (1) remission or improvement of depressive symptoms; and (2) improvement of the often poor glycaemic control, which is generally considered as fundamental to the management of diabetes, in order to prevent or delay long-term complications. Treatment of depression may

have a positive effect on levels of motivation to manage activities of daily living, to take physical exercise and to adhere to dietary management and medication regimes. However, there are only a handful of randomised controlled trials on the treatment of depression in people with diabetes and these are small-scale studies. Results so far seem to suggest that cognitive behaviour therapy and anti-depressant medication are as effective in people with major depressive disorder (MDD) and diabetes as in those with MDD without diabetes, with, in some instances, additional beneficial effects on glycaemic control [19]. However, with over 10% of the diabetes population being depressed, a stepped treatment approach seems necessary to cope with the number of depressed people with diabetes.

#### Acknowledgments

The Dialogue on Diabetes and Depression (DDD) is an international collaborative effort addressing problems related to the co-morbidity of diabetes and depression. It aims to review the evidence and experience relevant to co-morbidity of diabetes and depression in order to define gaps in knowledge and formulate strategies for priority research and action in this field. The initiative is directed by the participating organizations including the American Association of Clinical Endocrinologists, the American Diabetes Association, the Asociacion Latinoamericana de Diabetes, the Chinese Diabetes Association, Diabetes UK, the European Association for the Study of Diabetes / Psychosocial Aspects of Diabetes, the Global Alliance of Mental Illness Advocacy Network (GAMIAN) – Europe, the International Council of Nurses, the International Society for Affective Disorders, the International Society of Behavioural Medicine, World Federation for Mental Health, the World Organization of Family Doctors (Wonca), and the World Psychiatric Association as well as the Joslin Diabetes Center, the Lilly Research Laboratories, the Lundbeck Institute, and the Trimbos Instituut. It is expected that the participating organizations and institutions will also undertake research and educational activities identified by the reviews of knowledge that the DDD initiative has undertaken.

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