Promoting multilevel primary prevention of depression and diabetes during midlife may protect against dementia

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ABSTRACT FROM: Katon W, Pedersen HS, Ribe AR, *et al*. Effect of depression and diabetes mellitus on the risk for dementia: a national population-based cohort study. *JAMA Psychiatry* 2015;72:612–9.

WHAT IS ALREADY KNOWN ON THIS TOPIC

Three of the 15 major contributors to disease burden in older people are diabetes, major depressive disorder and dementia.[1] Diabetes and depression occur before the onset of risk factors for all-cause dementia, Alzheimer disease and vascular dementia.[2] Moreover, depression and diabetes have also been shown to have a bidirectional risk effect. While diabetes may increase the risk of depression, the association in the depression-to-diabetes direction is stronger,[3] showing that depression frequently occurs before diabetes. The aim of Katon *et al*'s paper is to study the risk for all-cause dementia among persons with diabetes mellitus (DM), depression or both compared with people who had neither illness.

METHODS OF THE STUDY

Katon *et al* conducted a population-based cohort of 2.4 million Danish citizens who were aged 50 years or older on 1 January 2007 and were free of dementia. Participants were followed up through 31 December 2013. The cohort included 477 133 with depression, 223 174 with DM and 95 691 with comorbid depression and DM. Individuals with schizophrenia, schizoaffective disorders or bipolar disorders were excluded at the date of diagnosis. During the study period, 59 663 patients with dementia were subsequently identified. Patients were identified on the basis of the Danish Psychiatric Central Register, the Danish National Prescription Registry and the National Diabetes Register using validated algorithms described elsewhere (eAppendix of the supplement of the paper by Katon *et al*).

The primary independent variables of their analysis were the presence of depression, DM, or comorbid depression and DM. For their statistical analysis, the authors used Cox proportional hazards regression models adjusted for sociodemographic characteristics, DM complications and other chronic diseases associated with the risk of dementia (ischaemic heart disease, cerebrovascular disease, traumatic brain injury, chronic pulmonary disease, etc).

Of all the participants followed up, 19.4% were diagnosed with depression at a mean age of 58.5 (SD 13.5) years, 9.1% were diagnosed with diabetes at a mean age of 63.1 (SD 12) years and 3.9% had comorbid depression and diabetes. During the follow-up, 2.4% adults developed dementia. Of these, 10.8% had diabetes, 26.4% had depression and 6.7% had both.

WHAT THIS PAPER ADDS

- The study found that the combined effect of depression and DM is more than additive, that is, the interaction between these two factors further increases the risk of developing dementia.
- By using a large population-based study, Katon *et al* show that depression by itself represents the highest relative risk factor for all-cause dementia.
- The risk for developing all-cause dementia for people with DM and depression was 20% (HR 1.20, 95% CI 1.17 to 1.23) and 83% (HR 1.83, 95% CI 1.80 to 1.87) greater, respectively, compared with those without DM or depression. In addition, comorbid depression and DM increase the risk of developing dementia by 117% (HR 2.17, 95% CI 2.10 to 2.24).
- The most interesting result is that the coexistence of DM and depression in individuals younger than 65 years explains a quarter of all cases of dementia. This finding shows that at earlier stages in life interventions are possible to reduce the later occurrence of dementia.

LIMITATIONS

- Register-based data are collected for administrative purposes. The problem with using these types of data sets is that the researchers often have to supplement the classified diagnoses with their own definitions.
- Defining age of onset and classification of prevalence and incidence rates are difficult to obtain from registered data because those data sets do not have as their objective the identification of when dementia began. These data sets only include the age at which dementia is reported, making the start and follow-up difficult to differentiate.

WHAT NEXT IN RESEARCH

Future research should address the effect that cumulative unfavourable conditions across the life course have on mental health. The accumulation of stressful events, either social or environmental in nature, can permanently alter the biological mechanisms that increase the risk of depression and can be linked through common pathways to diabetes and subsequent dementia.[4]

DO THESE RESULTS CHANGE YOUR PRACTICES AND WHY?

Yes. Midlife should be considered a time of transition where health status can significantly impact the experience of ageing into later life. The high rates of dementia cases attributable to the coexistence of diabetes and depression in midlife call attention to the need for primary intervention. For example, glucose control, promotion of healthy behaviour (eg, exercising, not smoking, balancing one's diet, obtaining preventive exams) and identification and treatment of subthreshold mood disorder at midlife can reduce the incidence of major depression at later stages in life.

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