TITLE OF THE PROJECT: Depression and cardiovascular diseases

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SUMMARY

Background

Major depression is one of the leading causes of disability worldwide and is associated with an increased risk of cardiovascular (CV) mortality. The underlying mechanisms of this association remained poorly understood. Positive studies may have overlooked some potential confounding or mediating factors, such as hazardous health behaviors (e.g. at-risk dietary patterns, smoking, alcohol misuse, or poor medical treatment adherence), poor social support, reduced quality of care and inflammation. On the other hand, negative studies may have overlooked the role of moderating factors such as gender or socio-economic status (SES).

Objectives

A cross-sectional approach will examine the moderating effect of age, gender and SES in the association between depressive symptoms and CV risk factors (i.e. dyslipidemia, obesity, at-risk diet, tobacco and alcohol consumption, lack of physical activity, diabetes and hypertension), including resting heart rate and inflammation. A longitudinal approach will examine: 1) the moderating effect of age, gender and SES in the association between depressive symptoms and several CV outcomes: incident hypertension, coronary heart disease and stroke, deaths from coronary heart disease or stroke, global cardiovascular mortality; 2) the mediating role of selected behavioral and biological factors in these associations: at-risk diet, resting heart rate, C-reactive protein, interleukin-6, tumor necrosis factor-alpha and neutrophil/lymphocyte ratio. In addition, outputs from the other projects of the DEDALE Research Consortium will be used to examine the potential confounding or mediating role of genetic risk factors of depression (project Depression and genetic liability), brain functioning (project Depression and brain biomarkers) and substance use disorders (project Depression and addiction), respectively.

Methods

Depressive states will be measured at baseline and every three years by the CESD scale. CV risk factors will be collected through questionnaire and biometric and biological data. Based on a qualitative food frequency questionnaire, a principal component analysis (PCA) will identify dietary patterns at baseline. Regarding inflammation, the following measures will be collected: C-reactive protein, interleukin-6, tumor necrosis factor-alpha, neutrophil/lymphocyte ratio. Incident coronary heart disease and stroke will be carefully validated by an external committee. Deaths from coronary heart disease or stroke and global cardiovascular mortality will be collected from the CépiDC. Incident hypertension will be inferred from questionnaires and SNIIRAM data. Associations between depressive symptoms and CV risk factors will be examined among all included participants with general linear model or binary logistic regression for continuous or binary variables. Associations between depressive symptoms and CV outcomes will be examined among participants aged 35 or more with cox regressions. Should a significant interaction be found between depressive symptoms and age, gender or SES as regards a specific CV risk factor or outcome, post hoc subgroup analyses will be performed to describe this interaction in details. The hypothesis of a potential confounding or mediating role of any factor will tested with a bootstrap-based “causal” mediation analysis.

Perspectives

A better understanding of the potential mediating, confounding or moderating factors of the association between depressive symptoms and cardiovascular diseases is warranted to inform targeted preventive interventions.

Note: this project is part of the research consortium 'DEDALE - Déterminants et évolution des états dépressifs : approche longitudinale en épidémiologie intégrative'