Depression, antidepressants and risk of dementia

Section 1 – Project Details:

Maximum 800 words, using the following headings

Rationale:

Dementia is a serious progressive condition with major consequences for affected individuals and their families and carers. The estimated prevalence in the UK among people aged over 65 is 7.1% for 2015, with estimated NHS costs of £4.3 billion, and social care costs of £10.3 billion. With an aging population these will increase, placing an ever heavier burden on families and carers as well as the state.

Depression is established as one of the early prodromal symptoms of dementia, but there is some evidence that depression may also be an independent risk factor for dementia. This association may represent a causal effect of depression or could be due to shared risk factors or genetic characteristics, or incomplete allowance for the prodromal period in some studies. Most older people diagnosed with depression in primary care receive antidepressant treatment. There is some indication that certain antidepressants with anticholinergic properties might increase the risk of dementia, but there is little evidence as to whether treating depression with other antidepressants such as selective serotonin reuptake inhibitors (SSRIs) can reduce or remove the increased risk of dementia associated with depression.

Research is needed to examine the patterns of depression and use of antidepressants and their associations with dementia over a prolonged period of time. Given the projected increase in dementia incidence in the coming decades, understanding whether treatment for depression reduces or further increases dementia risk is of great importance.

Aims and methodology:

The primary aim of the project will be to assess whether there is an association between antidepressant use and dementia risk, examining effects of type of antidepressant, dose and duration of use and timing of exposure relative to a diagnosis of dementia.

The project will also assess whether there is an association between depression and subsequent risk of dementia focusing on depression diagnoses made at least 10 years prior to a diagnosis of dementia, to remove the influence of depression occurring during the prodromal stages of dementia.

The project will use data from a large primary care database (QResearch) to identify a cohort of individuals aged 55 and over without a diagnosis of dementia at baseline. QResearch is an extremely large consolidated database derived from the pseudonymised health records of over 24 million patients, which currently come from approximately 1300 general practices across the UK. It has been used for a wide range of health research studies, including studies of drug safety. Details of diagnoses of depression and prescriptions for antidepressants among cohort members during follow-up will be extracted. Cox regression models will be used to estimate hazard ratios for depression and antidepressant use in different windows prior to a diagnosis of dementia. Different statistical approaches including propensity score analyses will be used to account for confounding variables. The analyses will assess associations for different antidepressant classes, including SSRIs, tricyclic antidepressants and other antidepressants and also for individual antidepressant drugs. Subgroup analyses will assess associations separately according to diagnoses of Alzheimer’s and vascular dementia.
Additional analyses will examine trends over time in diagnosis rates of dementia according to age, sex, ethnic and deprivation groups.

**Benefits and suitability as a PhD project:**

This project will provide a PhD student with the opportunity to develop skills in complex statistical analysis and pharmacoepidemiology. The student will also gain expertise in working with primary care databases which are used in a growing number of clinical fields and for methodological research, so equipping them with many valuable skills and expertise for a future research career.

**Key References:**


**Section 2 – Training Provision:**

Maximum of 250 words. *Please detail the training provision that will be made available to the student.*

The student will be able to access the wide range of training and development courses provided by the Graduate School and Faculty of Medicine and Health Sciences. Further training requirements will be reviewed with the student. Additional training will include participation in MPH modules such as ‘Advanced Statistical Methods’ and ‘Data organisation and management in epidemiology (DOME): A practical course in Stata’. Supervisors will provide specific training in using QResearch data and analysing prescription data. The student will also be able to undertake external courses including courses on survival analysis and online training in Stata programming as required.

The student will have the opportunity to become part of the research group in the Centre for Dementia, which includes meetings and monthly seminars.