

Project Details	
Project Code	MRC22NMHBr Joinson
Title	Menopause and depression: relationships and potential mechanisms
Research Theme	Neuroscience & Mental Health
Summary	This project will apply cutting-edge causal inference methods to existing data from longitudinal population-based cohorts to advance understanding of the relationships and potential mechanisms linking menopause to an increased risk of depression. There is also an opportunity to analyse existing qualitative data exploring women's experiences of the menopausal transition to add further understanding of the impacts on mental health.
Description	<p>Despite the increasing media coverage concerning the impacts of the menopause on women's mental health, this remains an under-researched area. Menopause affects quality of life, work, and relationships and is also a period of increased risk of depression. Depressive symptoms during menopause are often attributed to hormonal changes, but life stressors that coincide with the menopausal transition could also have a depressogenic effect. Earlier research, based mainly on cross-sectional data, has found that a later age at menopause and a longer reproductive period are associated with a lower risk of depression. This may reflect a greater lifetime exposure to oestrogen, which is thought to have an antidepressant effect in women. Limitations of previous studies include inadequate adjustment for confounders; lack of control for premenopausal depression, and failure to account for other factors affecting lifetime oestrogen exposure (e.g. oral contraceptives, breastfeeding, number of pregnancies) or hormone replacement therapy. Very few studies have sought to uncover the biopsychosocial mechanisms that might explain increased levels of depression during the menopausal transition. This PhD project provides offers an exciting opportunity to advance understanding of women's mental health during menopause by applying cutting edge causal inference methods. The project will be based primarily on existing data from the Avon Longitudinal Study of Parents and Children (ALSPAC) Mothers' Cohort. ALSPAC provides unique data including repeated assessments of depression from the prenatal period to the present day; detailed information about women's menstrual cycles (including age at menarche); repeated assessments of reproductive hormone levels, and a wide range of confounders and mediators from biological and psychosocial domains. There is also potential to use other well-characterised prospective cohorts with data on menopause and mental health to allow comparison (e.g. UK Biobank, The British Women's Heart & Health Study, National Survey of Health and Development). Listed below are the research questions and some of the possible methods that could be employed in the project, but there is considerable scope for the PhD student to tailor the project to their own interests:</p> <p>(i) Is an early timing of menopause and shorter reproductive period associated with an increased risk of depression? Mendelian randomisation analysis could be used to improve causal inference using a genetic instrument for age at menopause and oestrogen levels. (ii) Are women who experience depressive episodes in the premenopausal period at greater risk of depression during menopause? (iii) Are</p>

	<p>episodes of depression that occur primarily during periods of hormonal change (e.g. pregnancy, postpartum) more strongly associated with depression during the menopause? (iv) Are longitudinal changes in reproductive hormones through the menopausal transition associated with changes in the risk of depression? (v) What biopsychosocial mechanisms underlie the relationship between menopause and depression (e.g. sleep problems, changes in weight and physical activity, marital discord, sexual problems, anxiety). Causal mediation methods based on counterfactual theory provide a powerful set of novel and innovative techniques for understanding causal pathways, and could provide new insights into translational targets for interventions. (vi) How do women's experiences and perspectives of the menopausal transition affect their mental health? Existing qualitative data is available from in-depth interviews with 48 ALSPAC mothers on biological and social processes of menopause, aging, and changes in family structures in midlife. A mixed methods approach combining rich qualitative data with analysis of data from cohort studies has the potential to provide a unique understanding of how women's experiences of the menopausal transition influence their mental health.</p>
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