The Development of an Evidence-Based App to Predict the Need for Enhanced Care for People with Dementia

Ms Sabina London[1,2], Dr Shanquan Chen[3], Dr Emad Sidhom[1], Dr Christoph Mueller[4] and Dr Benjamin Underwood[1]

[1]University of Cambridge, Cambridge, United Kingdom; [2]University of Connecticut School of Medicine, Farmington, USA; [3]London School of Hygiene & Tropical Medicine, London, United Kingdom and [4]King's College London, London, United Kingdom

doi: 10.1192/bjo.2025.10174

Aims: Dementia is a pressing global health challenge affecting more than 50 million people worldwide with a net impact on the global economy of 1 trillion USD. One aspect of the condition is the potential for deterioration to the point where a crisis situation occurs requiring emergency intense psychiatric support, either in the form of intense community care or admission to an inpatient facility. Such care is only needed for a minority of patients. If patients can be identified at the point of diagnosis, it raises the potential for stratified care pathways for those at highest risk with the aim of improving outcomes. Our previous work from two United Kingdom sites found that younger, male patients, and those with impaired cognition were at risk of deteriorating. In this study, we aimed to create mathematical models of risk and use the results to develop a mobile application that is ready for clinical use.
Methods: Using on our retrospective cohort study (n=253,260) we have identified several epidemiological, and behavioural factors that showed the highest association with subsequent need for enhanced care. The top 10 variables were selected using dominance analysis and systematic regression in Cambridgeshire and the models externally validated in a second data set from London. The same threshold was used for classifying patients into the high and low risk groups as in our previous retrospective study.
Results: The top predictive variables in Cambridgeshire were age (OR: 0.97, p<0.001), gender (OR: 1.74, p<0.001), marital status (OR: 1.34, p<0.05), dementia subtype (OR<0.61, p<0.05), and the following 6 Health of the Nation Outcome Score (HoNOS) subcategories: behaviour (OR: 1.43, p<0.001), hallucinations (OR: 1.20, p<0.05), cognitive (OR: 1.19, p<0.05), disability (OR: 0.79, p<0.001), other mental and behavioural problems (OR: 1.23, p<0.01) and relationships (OR: 1.26, p<0.01). The AUC was 0.74–0.79 for 1–4 years after diagnosis in Cambridgeshire with a similar AUC of 0.74 in the validation dataset in London. The resulting PREDICDEM app is a tool which can be used to stratify people in terms of risk at the point of dementia diagnosis.
Conclusion: We have used routinely collected clinical data to model risk of needing enhanced care in dementia. This data can be incorporated into models of risk prediction and into a smartphone app. This will allow stratification of patients at the time of diagnosis and facilitate trials of interventions to decrease the risk of crisis events.

Menopause and Depressive Symptoms in the UK Biobank

Dr Hira Mayet[1,2], Dr Katie Marwick[1,2], Ms Magdalena Pfaff[3] and Professor James M Stone[3,4]

[1]Division of Psychiatry, University of Edinburgh, Edinburgh, United Kingdom; [2]NHS Lothian, Edinburgh, United Kingdom; [3]Department of Clinical Neuroscience, Brighton and Sussex Medical School, University of Brighton and University of Sussex, Brighton, United Kingdom and [4]Sussex Partnership NHS Foundation Trust, Worthing, United Kingdom

doi: 10.1192/bjo.2025.10175

Aims: The UK Biobank is a large-scale prospective cohort study with data collected on over 500,000 individuals within the United Kingdom. We sought to understand whether the years around the menopause are associated with an increased likelihood of depressive symptoms, using the PHQ-2 questionnaire, which screens for depressive disorders. A score of 3 or above is suggestive of a depressive disorder. Our analysis looked at the likelihood of having significant depressive symptoms in the years before and after the final menstrual period.
Methods: Exclusion criteria included male participants, participants who had bilateral oophorectomies, those who were unsure of when their FMP was due to having a hysterectomy, those whose age at final menstrual period was under 40 or preferred not to say, and those whose reported age at final menstrual period differed by >2 years when asked on different occasions. Participants who did not give an answer to either of the two screening questions were also excluded.

The PHQ-2 enquires about depressive mood and anhedonia over the prior two weeks at baseline assessment. Possible answers were not at all, several days, more than half the days, and nearly every day. Using logistic regression, odds ratios were calculated for likelihood of having a PHQ-2 score above 3 from 9 years prior to the final menstrual period to 9 years after, compared with the year of the final menstrual period.
Results: In females undergoing natural menopause (n=143,685) those assessed who were within a year of their final menstrual period had the highest rate of depressive symptoms. 7.6% of women within a year of their final menstrual period had a PHQ-2 score of 3 or more. Depressive symptoms at all other timepoints were less frequent, ranging from 3.9% to 7.1%, with the OR compared with year of final menstrual period ranging between 0.49 to 0.93. In the 2 years either side of the final menstrual period, depressive symptoms were not significantly lower than the year of the final menstrual period, particularly at 2 years prior (6.0%, OR 0.77 (95% CI (0.58, 1.02)), one year post (6.9%, OR 0.90 (95% CI (0.78, 1.05)) and 2 years post (7.1%, OR 0.93 (95% CI (0.80, 1.08)).
Conclusion: These results suggest that the proportion of women experiencing significant depressive symptoms increases in the years around the final menstrual period. There is an increased likelihood of significant depressive symptoms in the year of the final menstrual period compared with surrounding years.