Development of a digital behavioural intervention to reduce dementia risk in ageing adults

Lead supervisor: Professor John Gallacher, Co-supervisor: Dr Ivan Koychev

Commercial partner: *Five Lives SAS*, London

This programme offers an exciting opportunity for multi-disciplinary research, working with a dedicated team of scientists, clinicians, and informaticians, to address the UK's #1 public health problem, dementia. Although more people are getting dementia than ever before, up to 40% of dementia cases are now known to be due to preventable risk factors. In the absence of effective treatments, early detection and prevention programmes to reduce risk factors, provide the most effective means of delaying onset and slowing progression.

The programme is focused on developing lifestyle interventions to reduce dementia risk; using digital technologies and statistical analysis. Specifically, it will investigate barriers that hinder lifestyle change by studying the factors mediating resistance to lifestyle change and piloting a digitally empowered prevention programme. It builds on a collaboration between the MRC funded Dementias Platform UK (DPUK), a world leading data platform (**https://www.dementiasplatform.uk/)**, funded and one of its industry partners, Five Lives (FL), which develops digital means for assessing and intervening in future dementias risk. The student will:

1. Identify barriers to behavioural change. The student will conduct analysis of DPUK cohort data to define factors driving resistance to behavioural change. FL will also provide access to Barriers to Lifestyle Change study data conducted in collaboration with Trinity College Dublin, which recruited healthy ageing adults with the aim of obtaining qualitative data on factors behind resistance to behavioural change.
2. Assess the factors driving engagement with dementia reduction programmes. The student will access data from two studies which implemented risk reduction in individuals at risk for dementia. The first is the world-leading Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGERS) study, which demonstrated cognitive benefit through in-person multi-domain interventions in ageing adults at risk for dementia. The second is an Innovate-UK funded study testing the utility of combined remote digital coach and virtual clinic approaches to dementia risk reduction in healthy ageing adults (DIDER study), le3d by Ivan Koychev in collaboration with FL. Further opportunities to study barriers to change will be available through the UK-based MetFINGER randomised control trial and eFINGER study.
3. Co-produce a remotely delivered intervention programme. The student will work closely with the head of produce and science to define   the development of a dementia risk reduction programme in collaboration with individuals at risk for dementia and healthcare professionals based on existing academic research. The programme will draw from expertise in the implementation of dementia risk digital reduction in FINGERS and adapt it for use with digital technologies through the collaboration with FL.
4. Conduct a feasibility study. The student will design and lead a study assessing the feasibility and accessibility of the multi-domain intervention. It will recruit individuals identified to be at risk for future dementia through the presence of risk factors (e.g. cardiovascular risk) or subclinical cognitive impairment. Recruitment to both groups will be facilitated through DPUK's Trial Delivery Framework (https://www.dementiasplatform.uk/research-hub/trials-delivery-framework).

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