

Dementia could be detected via routinely collected data, new research shows

July 18 2018, by Amy Mcsweeny

Improving dementia care through increased and timely diagnosis is an NHS priority, yet around half of those living with dementia live with the condition unaware.

Now a new machine-learning model that scans routinely collected NHS data has shown promising signs of being able to predict undiagnosed dementia in primary care.

Led by the University of Plymouth, the study collected Read-encoded data from 18 consenting GP surgeries across Devon, UK, for 26,483 patients aged over 65.

The Read codes – a thesaurus of clinical terms used to summarise clinical and administrative data for UK GPs – were assessed on whether they may contribute to dementia risk, with factors included such as weight and blood pressure.

These codes were used to train a machine-learning classification model to identify patients that may have underlying dementia.

The results showed that 84 per cent of people who had dementia were detected as having the condition (sensitivity value) while 87 per cent of people without dementia had been correctly acknowledged as not having the condition (specificity value), according to the data.

These results indicate that the model can detect those with underlying

dementia with an accuracy of 84 per cent. This suggests that the machine-learning model could, in future, significantly reduce the number of those living with undiagnosed dementia – from around 50 per cent (current estimated figure) to 8 per cent.

Principal Investigator Professor Emmanuel Ifeachor, from the School of Computing Electronics and Mathematics at the University of Plymouth, said the results were promising.

"Machine learning is an application of artificial intelligence (AI) where systems automatically learn and improve from experience without being explicitly programmed," he said. "It's already being used for many applications throughout healthcare such as medical imaging, but using it for patient data has not been done in quite this way before. The methodology is promising and, if successfully developed and deployed, may help to increase [dementia diagnosis](#) in [primary care](#)."

Dr. Camille Carroll, Consultant Neurologist at University Hospitals Plymouth NHS Trust and Researcher in the Institute of Translational and Stratified Medicine at the University of Plymouth, collaborated on the research.

She said: "Dementia is a disease with so many different contributing factors, and it can be quite difficult to pinpoint or predict. There is strong epidemiological evidence that a number of cardiovascular and lifestyle factors such as hypertension; high cholesterol; diabetes; obesity; stroke; atrial fibrillation; smoking; and reduced cognitive, physical, or social activities can predict the risk of dementia in later life, but no studies have taken place that allow us to see this quickly. So having tools that can take a vast amount of data, and automatically identify patients with possible [dementia](#), to facilitate targeted screening, could potentially be very useful and help improve diagnosis rates."

More information: Emmanuel A Jammeh et al. Machine-learning based identification of undiagnosed dementia in primary care: a feasibility study, *BJGP Open* (2018). [DOI: 10.3399/bjgpopen18X101589](https://doi.org/10.3399/bjgpopen18X101589)

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