Best Outstanding Contribution to Research Impact

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Following the completion of my doctorate in Mathematics, Operational Research and Applied Statistics at Salford University, I initially worked on military scheduling applications before moving into Health Research. I joined the University of Manchester's Centre for Biostatistics in 2010 and subsequently worked in Informatics (in the group formerly known as the Northwest Institute of BioHealth Informatics (NIBHI)) and then in the Division of Psychology and Mental Health. I am currently based in the Division of Pharmacy and Optometry and have worked for the last few years in the NIHR Greater Manchester Patient Safety Translational Research Centre (GM PSTRC).

Since joining the University of Manchester, my research as an applied statistician and epidemiologist has covered a wide range of areas including cardiovascular disease, diabetes, cancer, mental health, self-harm, dementia, pharmaco-epidemiology, and medication safety. My research involves the application of methods from the fields of survival analysis, causal inference, and data science.

In your own words, please describe your outstanding research whether that be an output, impact, contribution to the environment:

My research involved rapid responses to the COVID-19 pandemic using electronic healthcare datasets. We examined the impact on health service utilisation by patients with type 2 diabetes (T2D), providing support to the public health and clinical responses. We showed that there were ~60,000 missed or delayed diagnoses of T2D and ~7.4M fewer NICE-recommended healthcare checks in 2020, along with large discrepancies in mortality in the different UK nations.

The research had a significant impact locally, influencing the aims of the GM Health and Social Care Partnership (funded by NHS England Innovation). The results were replicated using National Diabetes Audit data, contributing to ~£10M being made available for national COVID recovery in diabetes. A paper from the project was selected as one of the top 10 BMJ Q&S papers in 2021 and the findings were presented at RSM and Diabetes UK meetings and formed the basis of a BMJ editorial.

What motivated you to do this?

In the early stages of the first wave of the pandemic, it became apparent that people with diabetes were disproportionately affected and, upon infection with the SARS-CoV-2 virus, were much more likely to experience serious illness. In the first few months of the emergency, almost a third of all COVID-related deaths were in people with diabetes. However, little was known about regional differences in mortality risk or how people with diabetes were, and would be, affected by 'indirect' harms caused by restricted access to primary care services. A three-phase research programme was developed to address these gaps in the evidence base. These questions are important because missed diagnoses and inadequate monitoring may cause life-changing complications in people with T2D, such as myocardial infarction and renal failure, and we wanted to assess the likely future burden on health services as they attempted to catch up.

What are you planning to do next?

The first two phases of the COVID research programme looked at the 'indirect' effects of the pandemic on people with T2D. In the final phase, we are investigating the 'direct' effect of COVID-19. This involves comparisons of people with and without diabetes, on a range of subsequent longer-term adverse outcomes, following positive PCR tests and COVID-related hospitalisations. The analytical work for this phase is now complete and a third paper, and associated dissemination activities, are currently in progress. I'm now working on a couple of projects related to personalised care and the implementation of statistical methods for risk prediction in scheduling and treatment decision models.