UK COVID-19 Inquiry: Module 2 - Professor Nishi Chaturvedi - Reference: M2/SAGE/01/NC

1. Overview of qualifications, career history, professional expertise and major publications.

Qualifications

Medicine	MBBS	London University	1985
Medicine	MRCP	Royal College of Physicians	1988
Public Health	MFPHM	Faculty of Public Health	1992
Epidemiology	MSc	London University	1993
Medicine	MD	London University	1994
Certificate of Completion of Specialist Training		GMC	1996

Career history

I am a professor of clinical epidemiology. I obtained my first degree in medicine at London University in 1985, and then went on to specialist training in general medicine, public health and epidemiology. I was appointed to a chair in the National Heart & Lung Institute at Imperial College London in 2000, and then to the Institute of Cardiovascular Sciences at UCL in 2014. My research career includes leadership of international observational cohort studies and clinical trials in understanding and mitigating the complications of diabetes. I lead the Southall and Brent Revisited (SABRE) tri-ethnic cohort, designed to study ethnic differences in risks and consequences of cardiometabolic disease. I was appointed director of the MRC Unit for Lifelong Health & Ageing at UCL in 2017. In 2020, I was asked to lead the Lifelong Health & Wellbeing Covid-19 National Core Study (https://www.ucl.ac.uk/covid-19-longitudinal-health-wellbeing/covid-19-longitudinal-health-and-wellbeing). The National Core Studies were established by the GCSA to bring together COVID-19 research in key domains, synthesise and report findings as requested, and identify research gaps and ways of addressing these.

Selected publications – out of ~300, including those related to COVID-19.

Thompson EJ, Williams DM, Walker AJ, Mitchell RE, Niedzwiedz CL, Yang TC, Huggins CF, Kwong ASF, Silverwood RJ, Di Gessa G, Bowyer RCE, Northstone K, Hou B, Green MJ, Dodgeon B, Doores KJ, Duncan EL, Williams FMK; OpenSAFELY Collaborative, Steptoe A, Porteous DJ, McEachan RRC, Tomlinson L, Goldacre B, Patalay P, Ploubidis GB, Katikireddi SV, Tilling K, Rentsch CT, Timpson NJ, **Chaturvedi N**, Steves CJ. Long COVID burden and risk factors in 10 UK longitudinal studies and electronic health records. *Nat Commun*. 2022 Jun 28;13(1):3528. doi: 10.1038/s41467-022-30836-0.

Routen A, O'Mahoney L, Ayoubkhani D, Banerjee A, Brightling C, Calvert M, **Chaturvedi N, Diamond I, Eggo R, Elliott P, Evans RA, Haroon S, Herret E, O'Hara ME, Shafran R, Stanborough J, Stephenson T, Sterne J, Ward H, Khunti K. Understanding and tracking the impact of long COVID in the United Kingdom. *Nat Med. 2022* Jan;28(1):11-15. doi: 10.1038/s41591-021-01591-4.PMID: 34811549

Wielgoszewska B, Maddock J, Green MJ, Di Gessa G, Parsons S, Griffith GJ, Croft J, Stevenson AJ, Booth C, Silverwood RJ, Bann D, Patalay P, Hughes AD, **Chaturvedi N**, Howe LD, Fitzsimons E, Katikireddi SV, Ploubidis GB. The UK Coronavirus Job Retention Scheme and diet, physical activity, and sleep during the COVID-19 pandemic: evidence from eight longitudinal population surveys. *BMC Med. 2022* Apr 6;20(1):147. doi: 10.1186/s12916-022-02343-y. PMID: 35387639

Khanolkar AR, **Chaturvedi N**, Kuan V, Davis D, Hughes A, Richards M, Bann D, Patalay P. Socioeconomic inequalities in prevalence and development of multimorbidity across adulthood: A longitudinal analysis of the MRC 1946 National Survey of Health and Development in the UK. *PLoS Med*. 2021 Sep 14;18(9):e1003775. doi: 10.1371/journal.pmed.1003775. eCollection 2021 Sep.PMID: 34520470

Garfield V, Farmaki AE, Fatemifar G, Eastwood SV, Mathur R, Rentsch CT, Denaxas S, Bhaskaran K, Smeeth L, **Chaturvedi N**. The Relationship Between Glycaemia, Cognitive Function, Structural Brain Outcomes and Dementia: A Mendelian Randomisation Study in the UK Biobank. *Diabetes.* 2021 Feb 25:db200895. doi: 10.2337/db20-0895.

Eastwood SV, Mathur R, Sattar N, Smeeth L, Bhaskaran K*, **Chaturvedi N*** (joint senior author). Ethnic differences in guideline-indicated statin initiation for people with type 2 diabetes in UK primary care: a retrospective cohort study using the Clinical Practice Research Datalink, 2006-2019. *Plos Med* 2021 2021 Jun 29;18(6):e1003672. doi: 10.1371/journal.pmed.1003672. eCollection 2021 Jun.

Petrie JR, **Chaturvedi N**, Ford I, Brouwers MCGJ, Greenlaw N, Tillin T, Hramiak I, Hughes AD, Jenkins AJ, Klein BEK, Klein R, Ooi TC, Rossing P, Stehouwer CDA, Sattar N, Colhoun HM; REMOVAL Study Group. Cardiovascular and metabolic effects of metformin in patients with type 1 diabetes (REMOVAL): a double-blind, randomised, placebo-controlled trial. Lancet Diabetes Endocrinol. 2017 Jun 9. pii: S2213-8587(17)30194-8. doi: 10.1016/S2213-8587(17)30194-8.

Tillin T, Hughes AD, Mayet J, Whincup P, Sattar N, Forouhi NG, McKeigue PM, **Chaturvedi N**. The relationship between metabolic risk factors and incident cardiovascular disease in Europeans, South Asians and African Caribbeans. SABRE (Southall and Brent revisited) - a prospective population based study. *J Am Coll Cardiol*. 2013: 61; 1777-86.

Tillin T, Hughes AD, Godsland IF, Whincup P, Forouhi NG, Welsh P, Sattar N, McKeigue PM, **Chaturvedi N**. Insulin resistance and truncal obesity as important determinants of the greater incidence of diabetes in Indian Asians and African Caribbeans compared with Europeans: The Southall and Brent Revisited (SABRE) cohort. *Diabetes Care* 2013; 36: 383-93

Chaturvedi N, Klein R, Porta M, Orchard T, Fuller J, Parving HH, Bilous R, Sjoelie AK. Effect of candesartan on prevention (DIRECT-Prevent 1) and progression (DIRECT-Protect 1) of retinopathy in type 1 diabetes: two randomised, placebo-controlled trials. *The Lancet* 2008; 372: 1394-1402.

Sjoelie AK, Porta M, Klein R, Orchard T, Fuller J, Parving HH, Bilous R, **Chaturvedi N**. Effect of candesartan on progression and regression of retinopathy in type 2 diabetes (DIRECT-Protect 2): a randomised placebo-controlled trial. *The Lancet* 2008; 372; 1385-93.

2. A list of the groups (i.e. SAGE and/or any of its sub-groups) in which you have been a participant, and the relevant time periods.

Intermittment attendee of SAGE meetings 2021 (see details below)

3. An overview of your involvement with those groups between January 2020 and February 2022, including: a. When and how you came to be a participant; b. The number of meetings you attended, and your contributions to those meetings; c. Your role in providing research, information and advice.

In my capacity as lead of the Longitudinal Health & Wellbeing COVID-19 National Core Study, I participated in two SAGE meetings:

SAGE 82: 25 Feb 2021

SAGE 94: 22 July 2021

At the first meeting (25th Feb 2021), the ISARIC group presented their findings on post COVID syndromes in patients hospitalised with COVID-19. I was charged to summarise the epidemiological evidence on post COVID syndromes across the spectrum of COVID-19 disease in the UK (ie both community and hospitalised cases), in children, and the impact that this has had on the workforce.

With colleagues in the Longitudinal Health & Wellbeing COVID-19 National Core Study, leads of flagship long COVID studies, (including our own CONVALESCENCE study https://www.ucl.ac.uk/covid-19-longitudinal-health-wellbeing/convalescence-long-covid-study

and contributors to the national long COVID consortium (publication indicated with ** in publications list), I led the preparation of a report on the state of evidence on post COVID-19 syndromes.

This report was discussed at the 2nd SAGE meeting I attended, on 22nd July 2021 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052577/S1345_SAGE_94_Minutes__1_.pdf

We reported that:

Post COVID syndromes were markedly under-captured in primary care records

'Long COVID' (ie persistent symptoms post COVID-19 infection), affected between 2-37% of all cases (depending on how disease was defined, and in which population it was studied).

Risks were greater in women, those hospitalised, those who were overweight or obese, those with a history of asthma, and those with a prior history of adverse physical or mental health.

Fatigue was the most frequent symptom. There was no consistent evidence for distinct patterns of symptom clusters.

Around 2% of children reported persistent symptoms after 8 weeks of infection.

Vaccination appeared to reduce the risk of post-COVID syndromes.

4. A summary of any documents to which you contributed for the purpose of advising SAGE and/or its related subgroups on the Covid-19 pandemic. Please include links to those documents where possible.

Included in response to question 3.

5. A summary of any articles you have written, interviews and/or evidence you have given regarding the work of the above-mentioned groups and/or the UK's response to the Covid-19 pandemic. Please include links to those documents where possible.

Restricted to the report written and discussed at SAGE 94.

Some of the findings reported to SAGE are published
https://pubmed.ncbi.nlm.nih.gov/35764621/

6. Your views as to whether the work of the above-mentioned groups in responding to the Covid-19 pandemic (or the UK's response more generally) succeeded in its aims. This may include, but is not limited to, your views on: a. The composition of the groups and/or their diversity of expertise; b. The way in which the groups were commissioned to work on the relevant issues; c. The resources and support that were available; d. The advice given and/or recommendations that were made; e. The extent to which the groups worked effectively together; f. The extent to which applicable structures and policies were utilised and/or complied with and their effectiveness.

My association with SAGE was limited to the two instances above, focussing on the distinct topic of the epidemiology of long COVID. My invitation to SAGE stemmed from the GCSA commissioned remit of our National Core Study. The resource supplied to the COVID-19 National Core Studies, and related long COVID study was sufficient to address the questions posed by SAGE, the only limitation being the scope of research findings available to synthesise. We did not provide recommendations to SAGE. In my view, the process worked well, and the group writing the report, stemming from the long COVID research group had already been established making report preparation substantially easier.

7. Your views as to any lessons that can be learned from the UK's response to the Covid-19 pandemic, in particular relating to the work of the above-mentioned groups. Please describe any changes that have already been made, and set out any recommendations for further changes that you think the Inquiry should consider making.

The UK could have been better prepared to make optimal use of its health data assets. An established centralised repository of linked national electronic health records ready for interrogation, and, in parallel, a unified resource of major, representative population cohorts, would have made the work of our Longitudinal Health & Wellbeing National Core Study faster, with more scope to address urgent questions. Establishment of a national electronic health record platform (ie OpenSAFELY, and the BHF CVD-COVID-UK TRE), and a centralised resource for population cohorts (the Longitudinal Linkage Collaboration), had to occur as the pandemic unfolded.

While these platforms are now established, supported by our Longitudinal Health & Wellbeing National Core Study, their continuation is under threat with no certainty of future funds, and the legacy of data scientists skilled in these analyses insecure.

8. A brief description of documentation relating to these matters that you hold (including soft copy material held electronically). Please retain all such material. I am not asking for you to provide us with this material at this stage, but I may request that you do so in due course.

I have the long COVID report as submitted to SAGE. The key findings are reported in the minutes and summarised in response to question 3.