

Health Studies User Conference 2021

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Research paper abstracts

Parallel session 1: Health and inequalities

Adverse childhood experiences and multiple mental health outcomes through adulthood: an analysis of the 1958 British birth cohort

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Background: The evidence on the association between adverse childhood experiences (ACEs) and mental health tends to rely on cross-sectional studies or longitudinal studies with a short observation period. In this 55-year long longitudinal study, we examined the association between ACEs and a range of mental health outcomes in adulthood, including their longitudinal trajectories.

Methods: The sample comprised 8,055 participants of the 1958 National Child Development Study. ACEs were measured both prospectively and retrospectively, considered individually and cumulatively (as an ACE score). A range of mental health outcomes was studied (collected between age 16 and 55), for instance, psychological distress, life satisfaction, quality of life. Regression analysis was used to examine the association between ACEs and mental health at each age. Growth curve models were used to assess the association between ACEs and longitudinal trajectories of psychological distress.

Results: We found a dose-response association between prospectively and retrospectively reported ACEs and all studied mental health-related outcomes, after accounting for multiple covariates. Among those with 2+ (vs 0) prospective ACEs, the risk of clinically significant psychological distress was up to 2.14 times higher, and of seeing a mental health specialist up to 2.85 times higher. Overall, those with ACEs experienced greater psychological distress between age 23 and 50, with a clear dose-response relationship between the number of ACEs and trajectories of psychological distress. A prospective ACE score of 2+ (vs 0) was associated with 3.31 times higher risk of being in the “persistent high symptoms”, compared with the “stable low symptoms” subgroups of trajectories.

Conclusion: ACEs are associated, in a dose-response fashion, with a range of adult mental health outcomes including their longitudinal trajectories. This association appears to be persistent across adulthood and is not limited to only those at the high end of the distribution of distress.

Income trajectories and health outcomes in the UK: exploring the impact of stability and volatility

Lateef Akanni, University of Strathclyde

Despite the wide recognition of the connection between socioeconomic status, particularly income, and health outcome, little is known on the permanent and transitory impact of income on health. Recently, attention in the literature is gradually shifting from the static perspectives by focusing on the dynamic implications of income status on health. This study contributes to the growing literature on the income-health nexus by evaluating the dynamics of income on various self-rated health measures in the UK. We explore different indicators of income experience on self-rated health and wellbeing using data from the Understanding Society UK Household Longitudinal Study between 2009 and 2018. First, we estimate a fixed-effects ordered logit model

for different health and wellbeing measures, allowing us to control for unobserved time-invariant heterogeneity. Additionally, we evaluate the effects of income trajectories by linking longitudinal household income to cross-sectional health outcomes. Our results confirm the general evidence of positive effects of family income on health. Besides, we find that stability in income position is strongly associated with improved health and wellbeing, while volatility in income increases the odds of reporting poor health outcomes. Also, more years spent in lower income quartile reduces the odds of reporting improved self-rated health. Moreover, the magnitude of the income effect is greater after the National Living Wage (NLW) policy was introduced, highlighting the impact of the policy on improvements in public health and wellbeing in the UKs.

Erosion of representativeness in a cohort study

Maria Christodoulou and David Steinsaltz, University of Oxford, and Julia Brettschneider, University of Warwick

The National Child and Development Study (1958 British Birth Cohort) follows the lives of over 17000 people born in a single week in England, Scotland, and Wales. Since initial recruitment there have been nine sweeps gathering subsequent life-course data, and a Biomedical Sweep that has found widespread application in genetic studies. Due to its non-selective recruitment, it is frequently used as a proxy for the British population in demographic, epidemiological, and medical studies. We examine the effect of attrition on representativeness of female fertility and education length. We compare numbers and timings of fertility-related events of female cohort members with national estimates. We established that both timings and counts of maternities and terminations in the cohort diverge from the patterns of their contemporaries. For women who participated in the Biomedical Sweep, we noted positive correlations of study continuation with years spent in full time education, and with age at first birth. Women who did not participate in the Biomedical Sweep reported different fertility patterns from those who did. It is possible to use national statistics to quantify various forms of selection bias that inevitably creep into even the most meticulously sampled longitudinal study, and the misreporting that affects particular questions.

Association between sensory impairment and suicidal ideation and attempt: a cross-sectional analysis of nationally representative English household data

Maitri Khurana, UCL

Objectives Sensory impairments are associated with worse mental health and poorer quality of life, but few studies have investigated whether sensory impairment is associated with suicidal behaviour in a population sample. We investigated whether visual and hearing impairments were associated with suicidal ideation and attempt.

Design National cross-sectional study.

Setting Households in England.

Participants We analysed data for 7546 household residents in England, aged 16 and over from the 2014 Adult Psychiatric Morbidity Survey.

Exposures Sensory impairment (either visual or hearing), Dual sensory impairment (visual and hearing), visual impairment, hearing impairment.

Primary outcome Suicidal ideation and suicide attempt in the past year.

Results People with visual or hearing sensory impairments had twice the odds of past-year Suicidal ideation (OR 2.06; 95% CI 1.17 to 2.73; $p < 0.001$), and over three times the odds of reporting past-year suicide attempt (OR 3.12; 95% CI 1.57 to 6.20; $p = 0.001$) compared with people without these impairments. Similar results were found for hearing and visual impairments separately and co-occurring.

Conclusions We found evidence that individuals with sensory impairments are more likely to have thought about or attempted suicide in the past year than individuals without.

Parallel session 2: Ageing

Devising a framework through which loneliness can be measured and analysed in an ageing society

Oliver Hall, University of Leeds

Loneliness is a social phenomenon that is gaining increased recognition in the UK, especially within the context of the COVID-19 pandemic. Studies have found it to be as damaging to an individual's health as obesity and smoking (Holt-Lunstad et al, 2010). Both the British Government (Dept. for DCMS, 2018), and several charities, including The Campaign To End Loneliness (Goodman et al, 2015); Age UK (Iparraguirre, 2016); and the British Red Cross (2019), have highlighted a current lack of tools for appropriately measuring and analysing loneliness in older populations. Policies to alleviate loneliness are impeded as authorities do not know who is feeling the effects of loneliness most severely, or where they reside. Presently, loneliness measures depend on surveys that ask an individual whether they experience loneliness. These measures have many drawbacks, both conceptual and practical, whilst small sample sizes in national health surveys mean they are not directly applicable at the neighbourhood level. This project aims to create a new measure of loneliness in older populations in England. This study uses Understanding Society, in conjunction with the wider literature and stakeholder consultation, to analyse the primary covariates of loneliness in older populations. The variables identified in the survey will then be used to create model-based estimates and aggregated into a composite index that will identify neighbourhoods at highest risk of loneliness. This index will be reproducible at the small area level, so that it can be used to help coordinate local policy and benchmark the efficacy of these policies over time. It will also add to an understanding of the overall spatial distribution of loneliness amongst older populations in England, helping to coordinate policy at the macro-level.

The persistence of ethnic inequalities in health in later life: Evidence using a series of harmonised health and social surveys, 1993-2017

Sarah Stopforth and Laia Bécaries, University of Sussex, and Dharmi Kapadia and James Nazroo, University of Manchester

Ethnic inequalities in health are well-established in the early and mid-life course. Much less is known about the prevalence and persistence of ethnic inequalities in health in later life, and the interrelated accumulation of (dis)advantage over the life course. There are large data and evidence gaps present to examine ethnic inequalities in health and socio-economic circumstances for older people in the UK. Datasets tend not to have appropriate sample sizes of older respondents from minoritised ethnic groups to conduct robust analyses. This scarcity of evidence is highly problematic for health and social care policies and provisions.

In this paper, we take a novel approach to examining ethnic health inequalities over time, by harmonising six nationally-representative, health and social survey datasets with appropriate ethnic minority boost samples. We harmonise and analyse health outcomes for people aged 40 and over in the Fourth National Survey of Ethnic Minorities 1993/94, the Health Survey for England 1999, the Health Survey for England 2004, the Citizenship Survey 2007, Understanding Society wave 1 (2009/10) and wave 7 (2015/17). The central empirical finding is the clear persistence of ethnic inequalities in limiting long-term illness and self-rated health over more than two decades. We further reflect on the need for future data collection endeavours to better represent older ethnic minority people.

Social isolation and loneliness: Association with perceived age discrimination in a prospective analysis of the English Longitudinal Study of Ageing (ELSA)

Abodunrin Aminu, Nicola Torrance, Aileen Grant, and Angela Kydd, Robert Gordon University

Background: Social isolation and loneliness have been linked to poor physical and mental health. Exposure to discriminatory situations can increase the risk of social isolation and loneliness. In this study, we have examined perceived age discrimination as a potential risk factor for social isolation and loneliness among older adults aged 65+ years.

Methods: This prospective cohort study was conducted using data from Waves 5 to 9 of ELSA with 2-years intervals. Loneliness was measured using the UCLA 3-item scale (scores range from 1 – 9) and social isolation was derived from the frequency of contacts with families and friends (scores range from 0 – 5). Both outcomes were positively skewed and thus, the third quartile values; ≥ 2 and ≥ 5 were used to determine socially isolated and lonely respondents respectively. The binomial generalised estimating equation was fitted in R studio using perceived age discrimination as the main predictor and with age, gender, long-standing illness, cognition, social status as covariates. The odds ratio (OR) of the outcome is reported with a 95% confidence interval (CI).

Results: A total of 2,385 responses were included in the data analysis. 55% ($n=1312$) of the respondents were female and 38% of the respondents reported age discrimination. Perceived age discrimination (Wave 5) significantly predicted future loneliness status (Wave 6 – 9). Individuals who reported age discrimination were more likely to be lonely (OR, 1.69[1.53-1.84]) at $p < 0.05$. There was no significant relationship between perceived age discrimination and future social isolation (OR, 0.92[0.84-1.00]) at $p=0.07$.

Conclusion: The findings from this study suggest that perceived age discrimination can increase the risk of loneliness. Future studies should examine if interventions to reduce age discrimination can impact loneliness among older people.

Prevalence of and factors associated with Herpes Zoster in England: a cross-sectional analysis of the Health Survey for England

Sharon Cadogan, London School of Hygiene and Tropical Medicine

Background: Herpes zoster (commonly called shingles) is caused by the reactivation of varicella zoster virus, and results in substantial morbidity. While the risk of zoster increases significantly with age and immunosuppression, relatively little is known about other risk factors for zoster. Moreover, much evidence to date stems from electronic healthcare or administrative data. Hence, the aim of this study was to explore potential risk factors for herpes zoster using survey data from a nationally-representative sample of the general community-dwelling population in England.

Methods: Data were extracted from the 2015 Health Survey for England. The lifetime prevalence of self-reported herpes zoster was described by age, gender and other socio-demographic factors, health behaviours (physical activity levels, body mass index, smoking status and alcohol consumption) and clinical conditions, including; diabetes, respiratory, digestive and genito-urinary system and mental health disorders. Logistic regression models were then used to identify possible factors associated with shingles, and results were presented as odds ratios with 95% confidence intervals.

Results: The lifetime prevalence of shingles among the sample was 11.5% (12.6% among women, 10.3% among men), which increased with age. After adjusting for a range of covariates, increased age, female gender (odds ratio: 1.21; 95%CI: 1.03,1.43), white ethnic backgrounds (odds ratio: 2.00; 95%CI:1.40, 2.88) and digestive disorders (odds ratio: 1.51; 95%CI: 1.13, 1.51) were each associated with increased odds of having had herpes zoster.

Conclusion: Age, gender, ethnicity and digestive disorders may be risk factors for herpes zoster among a nationally representative sample of adults in England.

Parallel session 3: Ethnicity and mental health

Individuals' exposure to ambient air pollution and self-reported mental wellbeing in the general population and by ethnic subgroups in the UK: A longitudinal analysis based on the UK household longitudinal survey

Mary Abed Al Ahad, Frank Sullivan, Urška Demšar, and Hill Kulu, University of St Andrews

Although the association of air pollution with health and mortality has been described in literature, yet no study has examined how this association varies by individuals' ethnic origin. Besides, most of the literature is focused on the physical health; however very few studies have examined the impact of air pollution on mental wellbeing. This study investigates the effect of air-pollution on self-reported mental wellbeing in six main ethnic-groups and by country of birth in the UK using data for 65,063 adult 16+ individuals with 364,468 repeated responses across 9-waves/11years (2009-2019) from the "UK household longitudinal study: understanding the society" survey. We then linked this data to yearly concentrations of NO₂, SO₂, and particulate-matter (PM₁₀, PM_{2.5}) pollution using the local-authority of residence for each individual. Self-reported mental wellbeing was assessed using the general-health-questionnaire (GHQ-12) score. The association between air pollution and mental wellbeing in the whole sample and by ethnic sub-groups and country of birth (UK-born versus not) was assessed using multilevel-mixed-effects-linear models adjusting for socio-demographics and time-dummies and accounting for clustering within individual responses and local-authorities in random-intercepts. Individuals from Pakistani/Bangladeshi, Indian and mixed-ethnicity origins showed poorer mental wellbeing in comparison to British-white. Those not born in UK had better wellbeing than those born in UK. Higher concentrations of NO₂, SO₂, PM₁₀ and PM_{2.5} pollution were associated with poorer wellbeing. Poorer wellbeing was noted among Pakistani/Bangladeshi and Black/African/Caribbean ethnicities versus British-White, and among non-UK born individuals versus UK-born, with increasing concentrations of SO₂, but not with NO₂ or particulate-matter pollution. Using a longitudinal individual-level data, this study highlights the negative impact of ambient air pollution on self-reported mental wellbeing over time in the UK and supports the presence of ethnic differences in wellbeing in relation to SO₂ air pollution exposure. Our findings suggest that environmental policies to reduce air pollution emissions can eventually improve the mental wellbeing of people in the UK.

An investigation into group density associations for language and other minority group positions in Wales: A multilevel analysis of National Survey for Wales data

Sophie J. Baker, Mike Jackson, and Christopher W.N. Saville, Bangor University

Background: The excess risk of mental illness in minority populations is somewhat dependent on the immediate area in which they live; Minority group individuals residing in neighbourhoods with a low proportion of their own group are at greater risk of mental illness than minorities living in areas where their group is well represented. Most studies of this 'ethnic' or 'group' density relationship have examined ethnic minorities and migrants. There has been limited investigation into groups classified by other characteristics such as language and national identity.

Aims: To test the presence of a group density relationship for language groups in Wales, specifically, whether living in a neighbourhood where there is a lower proportion of others with the same linguistic group identity (Welsh speaker or non-Welsh speaker) is associated with poorer mental health. The secondary aim is to examine potential group density associations for national identity and ethnic minority status.

Methods: Multilevel models will be fitted to National Survey for Wales data to examine whether there are group density associations at the Lower Super Output Area [LSOA] level for language, national identity, and ethnic group after adjusting for potential confounding variables including age, sex, socioeconomic status, and area-level deprivation.

Predicted results: It is expected that group density associations will be observed for each of the

minority group positions (Language, national identity, and ethnic minority status) i.e., mental illness will be inversely related to the neighbourhood-level proportion of others belonging to the same group and these associations will persist after adjustment for confounders.

Conclusions: Language is an important antecedent of belonging to a particular social group or place. Living in a neighbourhood where there are fewer others with the same linguistic identity might reduce belongingness and access to social capital, resulting in unfavourable mental health consequences. Examining group differences in the strength of associations provides clues about the potential mechanisms driving group density relationships.

Prevalence of common mental Disorders and Treatment Receipt for People from Ethnic Minority Backgrounds in England: Results from the Adult Psychiatric Morbidity Surveys 2007 and 2014

Gargie Ahmad, Stephani L. Hatch, and Jayati Das-Munshi, King's College London, Sally McManus, City, University of London, and National Centre for Social Research, and Claudia Cooper, University College London

Background: Variations in the prevalence of common mental disorder (CMD) and mental health treatment inequalities for people from ethnic minority backgrounds in England are not well understood. These questions were analysed for the first time using the combined 2007 and 2014 Adult Psychiatric Morbidity Surveys (APMS), to yield a sufficient sample for examination by aggregated ethnic group to investigate potential explanatory factors.

Methods: Data from APMS 2007 (n=7,187) and 2014 (n=7,413) were used. A revised Clinical Interview Schedule score of 12+ assessed presence of CMD. Treatment receipt included any of the following: current antidepressant use, any counselling or therapy, or in the previous 12 months seeing a GP about mental health, or seeing a community psychiatrist, psychologist, or psychiatric nurse. Multivariable logistic regression assessed CMD prevalence and treatment receipt by ethnicity.

Results: Precise results will be presented at the event but are currently embargoed pending publication.

Conclusions: Treatment receipt was lowest among people from Black backgrounds, and lower for all ethnic minority groups compared to the White British group. Treatment inequalities seem to be widening over time in particular for people from Black backgrounds. Addressing socioeconomic inequality could reduce ethnic inequalities in mental health problems, but this does not explain pronounced treatment inequalities. Further research is needed to understand these persisting inequities.

Exploring whether there is an association between Change in Neighbourhood Ethnic Density and Individual Mental Health in the UK

Jiyeong Seo, University College London

Ethnic density hypothesis is the hypothesis that ethnic minorities will enjoy better mental health when they live in neighbourhoods with greater ethnic density. This undergraduate dissertation project looks to examine the association of neighbourhood ethnic density change on mental health and its interplay with individual ethnic status, neighbourhood deprivation and social cohesion. 23,161 cross-sectional responses were collected from wave 9 (2017-2019) of the UK Household Longitudinal Study (UKHLS) via web-interview or face-to-face interview. The UKHLS is linked to 2001-2011 Census data at Lower Layer Super Output Area (LSOAs). The Census data were used to calculate the neighbourhood conditions including ethnic density change and neighbourhood deprivation. The predictor variable of ethnic density change is calculated by taking the difference in the proportion of ethnic minority groups (14 ethnic minority groups) at Lower Layer Super Output Areas between 2001 and 2011. A multi-level Regression model was utilised to estimate the General Health Questionnaire-12 (range 0-36) with higher values indicating worse mental health.

The study found that ethnic minority groups showed better mental health with increased ethnic density. However, as ethnic minorities were more likely to be concentrated in more deprived neighbourhoods in the UK, positive impacts became insignificant once neighbourhood deprivation was controlled for. The study also found that the white ethnic groups in the UK (found to be Gypsy/Irish travellers and any other white backgrounds in additional analysis) have better mental health when ethnic density increased. This can be supportive evidence in public health or local planning encouraging ethnic diversity or density to improve mental health of ethnic minority and Irish groups. Further research needs to be conducted using longitudinal study to understand the direction of causality.

Parallel session 4: COVID-19

Well-being during the COVID-19 pandemic in the UK: a secondary data analysis

Jen Murphy, University of Manchester

Introduction: In March 2020 in response to the COVID pandemic the UK government declared a national lock down where citizens were required to stay at home. The impact of this lockdown on levels of well-being was a source of concern for citizens and mental health professionals.

Objectives: We investigated the trajectory of well-being over the course of the first wave and sought to determine whether the change in well-being is distributed equally across the population. Specifically we investigated pre-existing medical conditions and deprivation as a predictor for well-being and whether there were characteristics which protect against poorer well-being.

Methods: Using online survey responses from the COVID-19 modules of Understanding society, we linked 8,379 English cases across five waves of data collection to location based deprivation statistics. We used ordinary least squares regression to estimate the association between deprivation, pre-existing conditions and socio-demographic factors and the change in well-being scores over time, as measured by the GHQ-12 questionnaire.

Results: A decline in well-being was observed at the beginning of the first lock down period at the beginning of March 2020. This was matched with a corresponding recovery between April and July as restrictions were gradually lifted. There was no association between the decline and deprivation, nor between deprivation and recovery. The strongest predictor of well-being during the lock down, was the baseline score, with the counterintuitive finding that for those with pre-existing poor well-being, the impact of pandemic restrictions on mental health were minimal, but for those who had previously felt well, the restrictions and the impact of the pandemic on well-being were much greater.

Conclusion: These data show no evidence of a social gradient in well-being related to the pandemic. In fact, well-being was shown to be highly elastic in this period indicating a national level of resilience which cut across the usually observed health inequalities.

Tapping into the World's Largest Observational Research Network with the OHDSI Community

Sarah Seager and Christian Reich, Observational Health Data Sciences, and Informatics and Real World Solutions, IQVIA, and Kristin Kostka, The OHDSI Center at the Roux Institute, Northeastern University, and University of Oxford

Background: Routinely collected real world data (RWD) have great utility in aiding our global understanding of disease, whether it be in aiding the novel coronavirus disease (COVID-19) pandemic response [1,2] or managing chronic disease [5]. Here we present the international Observational Health Data Sciences and Informatics (OHDSI) community and its framework for standardisation and analysis of RWD. We spotlight an initiative called [3] Characterizing Health Associated Risks, and Your Baseline Disease In SARS-COV-2 (CHARYBDIS).

Methods: We conducted a descriptive cohort study using a federated network of data partners in

the United States, Europe (the Netherlands, Spain, the UK, Germany, France and Italy) and Asia (South Korea and China). The study protocol and analytical package were released on 11th June 2020 and are iteratively updated via GitHub [4].

Findings: We identified three non-mutually exclusive cohorts of 4,537,153 individuals with a clinical COVID-19 diagnosis or positive test, 886,193 hospitalized with COVID-19, and 113,627 hospitalized with COVID-19 requiring intensive services. All comorbidities, symptoms, medications, and outcomes are described by cohort in aggregate counts, and are available in an interactive website: <https://data.ohdsi.org/Covid19CharacterizationCharybdis/>.

Interpretation: CHARYBDIS findings provide benchmarks that contribute to our understanding of COVID-19 progression, management and evolution over time. This can enable timely assessment of real-world outcomes of preventative and therapeutic options as they are introduced in clinical practice. Our research community interests extend beyond a pandemic response and can be utilized to identify patterns in chronic disease management [5]. Our federated data network covers more than 23 countries with 166 databases adhering to the OMOP Common Data Model. The research we present can harmonize information across real world data feeds (administrative claims, electronic health records, hospital charge data, registries) and generate high quality, reproducible evidence while maintaining patient privacy [6].

The use of linked Census 2011, mortality and health data during the pandemic

Jonny Tinsley and Vahe Nafilyan, Office for National Statistics

During the pandemic, the Office for National Statistics (ONS) brought together health and non-health data to produce new insight and support pandemic response by decision makers such as SAGE.

Our stand-out initiative has been the creation of the Public Health Data Asset (PHDA). The PHDA is a linked dataset that includes over 40 million individuals from the 2011 Census, who linked at record-level to mortality data and electronic health records from primary care and hospitalisation data, as well as vaccination data. An anonymised version of this data is also now available for accredited researchers to access in the ONS Secure Research Service.

This presentation will cover how the relevant datasets were brought together, how the data were integrated, the strengths and weakness of the linked data, and notably what insight ONS has generated from the data so far. Those insights include the estimation of COVID-19 mortality rates by ethnic group, the epidemiology of post-COVID syndrome, and estimates of vaccination rates by socio-economic characteristics.

Inequalities in access to primary care experienced by people with multiple morbidities during the COVID-19 pandemic

Evangelos Gkousis and Jon Sussex, RAND Europe, and Catherine L Saunders, Primary Care Unit, Department of Public Health and Primary Care

General practice in England underwent a rapid transformation in 2020, as a result of the COVID-19 pandemic, with a shift from face-to-face to online or telephone appointments. It is unclear what impact this has had for people living with multiple long-term health conditions.

We explored the impact on access to primary care, NHS111 and prescription medication between April-November 2020. We accessed the six COVID-19 waves of Understanding Society, via the UK Data Service [SN8644]. The primary outcome measures were whether people had a problem for which they would normally see their GP, during the previous four weeks, whether they tried to see a GP for this problem, whether they were able to access care, and whether their appointment was in person, as opposed to online or by telephone. Secondary outcomes included ability to access NHS111 and prescription medicines. We used logistic regression to examine the association between these outcome measures and multimorbidity, and

additionally considered age, sex, ethnicity, rurality, employment, shielding, and equivalised income quintile.

People with multimorbidity were more likely to need an appointment (2 conditions OR 1.44, 3 conditions OR 1.88, 4+ conditions OR 3.80; $p < 0.05$), with no evidence of variation in ability to get an appointment and were also more likely to need to access NHS111 (2 conditions OR 1.13, 3 conditions OR 1.69, 4+ conditions OR 2.96; $p < 0.05$) and prescription medication (2 conditions OR 5.99, 3 conditions OR 11.77, 4+ conditions OR 12.77; $p < 0.05$). There was no variation in ability to access NHS111, patients with multimorbidity were more likely to be able to access prescription medication, compared to people without (2 conditions OR 3.22, 3 conditions OR 2.35, 4+ conditions OR 2.88; $p < 0.05$).

People with multimorbidity reported higher healthcare needs but we found no evidence of any impact on ability to access GP/primary care.