

Sampling strategy to select participants and their roles in a hearing - expert witness, inquiry panel, facilitator or audience;

The type of evidence presented – scientific, professional or lay;

What counts as data and how deliberation is recorded;

Quality of deliberation and whether a consensus is achieved;

Ethical issues about the public nature of deliberation.

Conclusion Deliberative methods are under-utilised as a research method in public health; however, they require attention to design issues to secure genuine deliberation on a topic. This set of design choices will support researchers in generating and testing evidence through an expert hearing.

P56

CHARACTERISTICS ASSOCIATED WITH CARDIOVASCULAR MULTIMORBIDITY IN UK WOMEN AGED 50–64 YEARS: CROSS-SECTIONAL ANALYSIS OF THE MILLION WOMEN STUDY

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Background Multimorbidity, the co-occurrence of two or more chronic conditions in one person, is more common in women than in men. It is associated with lower life expectancy, lower quality of life, and greater use of health services compared to single diseases. Research on risk factors for cardiovascular multimorbidity (CVM), that is, having multiple cardiovascular diseases (CVDs), has been limited. We aimed to identify potential risk factors for CVM in women.

Methods The Million Women Study is a cohort of 1.3 million women aged 50–64 years, recruited in England and Scotland in 1996–2001 through NHS screening centres. Participants completed an extensive health and lifestyle questionnaire. Record linkage with NHS databases provided hospital admission records. Twenty chronic CVDs were selected based on clinical importance and number of records, primarily from chapter IX of the International Classification of Diseases v10. Characteristics were compared between women with 0, 1 or 2+ CVDs recorded in self-reports and hospital admissions up to recruitment, adjusting for five age categories (referent: 56–59 years).

Results Among 1,272,020 women, 0.7% (n=8463) had CVM and 5.3% (66,805) had one CVD. The most common CVDs were ischaemic heart disease (4.7%), stroke (1.2%), atrial fibrillation (0.2%), and venous thromboembolism (0.2%); among those with CVM, 85% had ischaemic heart disease and 54% had stroke. Women with CVM were older and, after adjustment for age, were more likely to have common cardiovascular risk factors. In women with no CVDs and those with CVM, respectively: 19.2% (95%CI 19.2–19.3) and 25.1% (24.1–26.0) were current smokers; 39.4% (39.4–39.6) and 22.7% (21.8–23.7) did strenuous physical activity at least once a week; mean BMI was 26.2 (26.1–26.2) and 28.1 (28.0–28.2). Women with CVM were substantially more likely to be in the most deprived fifth and have no educational qualifications. There was little association between CVM and reproductive factors, although women who had ever breastfed were slightly less likely to have CVM. Women with no CVDs were much less likely to report treatment for diabetes, hypertension, and high cholesterol than those with CVM; 15.0% (14.9–15.1) and 43.9% (42.9–45.0), respectively, were being treated for hypertension.

Conclusion Age-adjusted prevalence of CVM in UK women was associated with behavioural and socioeconomic characteristics, and with treatment for major cardiovascular risk factors, but largely not with reproductive factors. This cross-sectional study could not assess potential for reverse causation or confounding by other factors, and future prospective analyses will contribute to better understanding of these relationships.

P57

TESTING THE IMPACT OF IAPT ON HEALTHCARE COSTS AND EMPLOYMENT: A STEP-WEDGE DESIGN

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Background According to the World Health Organization (WHO), depression is ranked as the single largest contributor to global disability. The Improving Access to Psychological Therapies (IAPT) programme is a large-scale initiative that aims to greatly increase the availability of NICE recommended psychological treatment for depression and anxiety disorders within the National Health Service in England. This study evaluates whether IAPT reduces healthcare utilization and associated health care costs and increases transition into employment.

Methods Gradual implantation of a stepped-wedge design of two cohorts covering 500 patients with depression and/or anxiety and comorbid long-term physical health conditions from three areas in Thames Valley (Berkshire, Oxfordshire and Buckinghamshire) for the period March 2017 – August 2017.

Results The wedge study findings showed a decrease in cost £345 total pp for 3 months so about £115 a month difference between the two cohorts. Results also showed a decrease by about 4.61[95% CI: -5.56, -3.66] (6.64 [95% CI: -7.67, -5.61]) [0.76 [95% CI: -1.22, -0.30]] points per person in the GAD7 (PHQ9) [WASAS]. With respect to employment, results to find a job for those who were unemployed by about 29.9% [95% CI: 1.37–52.4], the marginal effects corresponds to 6.28 percentage points [95% CI: 2.19–12.3].

Conclusion IAPT treatment was associated with a significant decline in secondary care costs and significant increase in the probability to find a job for unemployed patients.

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P58

ASSESSMENT OF CARDIOVASCULAR RISK IN A SLUM POPULATION IN KENYA: USE OF WORLD HEALTH ORGANIZATION/INTERNATIONAL SOCIETY OF HYPERTENSION (WHO/ISH) RISK PREDICTION CHARTS

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Background Although cardiovascular disease (CVD) is of growing importance in low- and middle-income countries (LMICs),

there are conflicting views regarding CVD as a major public health problem for the urban poor, including those living in slums. We examined multivariable risk prediction in a slum population and assessed the number of cardiovascular related deaths within 10 years of application of the tool.

Methods We analysed data from a cross sectional survey conducted in the Nairobi Urban Health Demographic Surveillance population (residents of two slum communities) between May 2008 and April 2009. We used the World Health Organisation/International Society of Hypertension (WHO/ISH) cardiovascular risk prediction tool to examine 10-year risk of major CVD events in a slum population. 3063 men and women aged over 40 years with complete data for variables needed for the WHO/ISH risk prediction tool were eligible for inclusion in our analysis. CVD deaths in the cohort, reported up until June 2018 in regular demographic data collection rounds, with the cause identified through verbal autopsy are also presented. Non-fatal CVD events were not captured.

Results The majority of study members (2895, 94.5%) were predicted to have 'low' risk (<10%) of a cardiovascular event over the next 10 years and just 51 (1.7%) to have 'high' CVD risk ($\geq 20\%$). 91 CVD deaths were reported for the cohort up until June 2018. Of individuals classified as low risk, 74 (2.6%) were identified as having died of CVD. Nine (7.7%) of individuals classified at 10–20% risk and eight (15.9%) classified at $>20\%$ were identified as dying of CVD.

Discussion To the best of our knowledge this is the first study to apply a multivariable risk prediction tool to a population in a slum or informal settlement. This is a low risk population profile in comparison to results from application of multivariable risk prediction tools in other LMIC populations. This indicates that CVD may be lesser issue in slums than in other areas of LMICs cities. We found evidence that the WHO/ISH tool distinguished groups at relatively lower or higher risk of CVD events. While the absolute risk in this population is over-estimated by the tool, this may be due to limitations in our study such as lack of data on non-fatal CVD events. Our findings have implications for health service planning in similar settings.

P59

HOW DO ASSOCIATIONS BETWEEN DIET QUALITY AND METABOLIC RISK VARY WITH AGE? A CROSS-SECTIONAL ANALYSIS IN A UK-REPRESENTATIVE SAMPLE

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Background Higher diet quality shows associations with decreased risk of all-cause, cardiovascular disease, and cancer mortality in adults. To understand whether these associations also apply in younger age groups, we can study proximal metabolic risk factors: abdominal obesity, insulin resistance, hypertension and dyslipidemia. In this study we investigate how associations between diet quality and metabolic risk vary with age.

Methods We use data ($n=2105$) from the UK-representative National Diet and Nutrition Survey (2008–2016), across three age groups: adolescents (age 11–18), young adults (age 19–35), older adults (age 36–60). Four-day food diaries were processed to give an energy-adjusted diet quality index, based

on the Dietary Approaches to Stop Hypertension (DASH) diet. Measures of plasma vitamin C, beta-carotene and lutein were combined to form a fruit and vegetable (F&V) biomarker score. Data on the five components of metabolic syndrome (waist circumference, blood triglycerides, blood high-density lipoprotein (HDL) cholesterol, blood pressure, fasting plasma glucose) were standardized by age, sex and ethnicity and combined to give a metabolic risk z-score. We assessed associations of (1) standardized DASH index and (2) standardized F&V biomarker score with metabolic risk z-score, across all ages, adjusted for potential confounders. We tested for interaction of the exposure with the three age groups, to understand moderation of effect estimates by age.

Results Adolescents and young adults showed lower self-reported diet quality ($p<0.001$), and lower F&V biomarker scores ($p<0.05$) compared to older adults. Across the whole analysis sample, both standardized DASH index (beta=-0.15, CI -0.22, -0.08) and standardized F&V biomarker score (beta=-0.33, CI -0.39, -0.27) were associated with metabolic risk z-score. Both DASH index and F&V biomarker score showed significant interactions with age group, with smaller associations with metabolic risk seen among adolescents and young adults compared to older adults ($p<0.05$). Associations between F&V biomarker score and metabolic risk remained significant across all age groups (adolescent: beta=-0.17, CI -0.26, -0.07, young adult: beta=-0.26, CI -0.36, -0.17, older adult beta=-0.39, CI -0.47, -0.32) while associations between DASH index and metabolic risk were attenuated below significance in adolescent and young adult groups (adolescent: beta=-0.00, CI -0.07, 0.08, young adult: beta=-0.07, CI -0.19, 0.04).

Conclusion Higher diet quality was associated with decreased metabolic risk, with stronger and more persistent associations seen using nutritional biomarkers, compared to self-reported dietary data. Across both diet measures, we find weaker cross-sectional associations between diet quality and metabolic risk in young people compared to older populations.

P60

COMPARATIVE TRENDS IN CORONARY HEART DISEASE SUBGROUP HOSPITALISATION RATES IN ENGLAND AND AUSTRALIA: A POPULATION-BASED OBSERVATIONAL STUDY, 1996–2013

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Background Population-based coronary heart disease (CHD) studies have historically focused on myocardial infarction (MI) with limited data on trends across the spectrum of CHD. We investigated trends in hospitalisation rates for acute and chronic CHD subgroups in England and Australia from 1996–2013.

Methods CHD hospitalisations for 35–84 year olds were identified using the primary diagnosis in electronic hospital records from 1996–2013 for England and Australia and from the Oxford Region and Western Australia (WA). CHD subgroups identified were acute coronary syndromes (MI and unstable angina) and chronic CHD (stable angina and 'Other CHD'). We calculated age-standardised and age-specific rates, and estimated annual changes (95% CI) from age-adjusted Poisson