

Conclusion: The trial is challenging, both in terms of recruitment, and motivating behaviour change. The presentation will elaborate on the recruitment experience into a trial evaluating the effectiveness of interventions in ethnic minority populations.

090 UNDER-REPORTING OF TOBACCO USE AMONG BANGLADESHI WOMEN IN ENGLAND; A CROSS-SECTIONAL STUDY

M Roth, A Aitsi-Selmi, H Wardle, J Mindell. *Department of Epidemiology and Public Health, University College London, London, UK*

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Objective: To investigate the prevalence of under-reported use of tobacco among Bangladeshi women and the characteristics of this group.

Design: Cross-sectional surveys.

Setting: Private households in England.

Participants: 996 Bangladeshi women aged 16 years and above, 302 with a valid saliva sample and 694 without, in the 1999 and 2004 Health Surveys for England.

Main Outcome Measure: Prevalence of under-reported tobacco use (estimated using self-reported tobacco use and cotinine level from a saliva sample). Predictors of tobacco use status: self-reported user; cotinine-validated non-user; or under-reporting user.

Results: 15% of Bangladeshi women with a saliva sample under-reported their personal tobacco use. Under-reporting users were similar to self-reported users in terms of socio-demographic, socio-economic, and tobacco-related variables, except for being much more likely to report chewing paan (a mixture of betel leaf, lime and areca nut) without tobacco (47% vs. 9%, $p < 0.001$). Under-reporters differed significantly from cotinine-validated non-users in most respects, including age, birth country, education level, level of spoken English, language of the interview, chewing paan without tobacco, and presence of relatives in the interview. Regression analyses confirmed that under-reporters did not differ significantly from self-reported users regarding age, education level, or exposure to passive smoking. Under-reporters were generally older and less likely to be educated above O level compared with cotinine-validated non-users. Both self-reported users (odds ratio 0.11, 95% CI 0.04 to 0.30) and cotinine-validated non-users (odds ratio 0.42, 95% CI 0.20 to 0.89) were far less likely to report chewing paan without tobacco compared with under-reporters.

Conclusion: Contrary to our *a priori* hypothesis, under-reporters were not British-born, English-speaking young women likely to be concealing smoking but resembled self-reported tobacco users except for being much more likely to report chewing paan without tobacco. Further investigation is needed to discover whether the under-reporting was concealment or a lack of awareness that the paan they chewed contained tobacco.

Plenary session

091 ARE POOR MOTHERS AND THEIR INFANTS HEALTHIER IN RICHER AREAS? THE PROTECTIVE EFFECT OF AREA SOCIO-ECONOMIC DENSITY

¹C Albor, ¹K Pickett, ²RG Wilkinson, ³D Ballas. ¹*Department of Health Sciences, University of York, York, UK;* ²*Division of Epidemiology and Community Health, University of Nottingham Medical School, Nottingham, UK;* ³*Department of Geography, University of Sheffield, Sheffield, UK*

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Objective: To examine whether poor mothers and their infants have better or worse health when they live in affluent neighbourhoods.

Design: Cross-sectional analysis of 14 465 white mothers surveyed in the first wave of the Millennium Cohort Study, 3654 of these mothers were defined as poor. The socio-economic context for poor mothers was measured by lower super output area (LSOA)-level measures of income. UK-wide analyses used the LSOA decile ranks of the index of multiple deprivation (IMD) income domain. A subset England-only analysis of 7288 mothers used continuous IMD income domain scores.

Outcome Measures: Maternal self-rated health and limiting long-term illness (LLI), low birthweight (LBW), and preterm delivery. Logistic regression models were run separately for poor (<£10 400) and non-poor households. Models were adjusted for age, marital status, parity, urban status, duration at address, occupational class and educational attainment.

Results: For poor mothers, odds for LBW and LLI increased with every decile of area income, by 9% and 8% respectively ($p < 0.05$ all models). This contrasted with findings for non-poor mothers – for whom odds decreased 6% and 5% respectively (not significant for LLI). In the subset England-only analysis, for poor mothers, area income was positively associated with LLI and LBW but significant only for LLI. Self-rated health did not vary significantly across areas for poor mothers. In contrast, for non-poor mothers, poor/fair self-rated health was negatively associated with area-level income, decreasing by 11% for each area income decile ($p < 0.001$ all models and England subset). Odds of preterm delivery decreased for poor mothers by 7% per decile ($p < 0.05$), but this was not significant for England-only analyses. No models examining area income in relation to preterm delivery were significant for non-poor mothers.

Conclusion: Apart from preterm delivery, health outcomes of non-poor mothers are improved when they live in more affluent areas. This is not the case for poor mothers, who do not have better self-rated health, and who have higher risk of LBW and LLI in richer areas. These findings may support a psycho-social causal model mediated by area socio-economic density. Further work is needed to test mediating pathways such as social engagement and class discrimination.

092 SECONDHAND SMOKE EXPOSURE ASSESSED USING SERUM COTININE: ASSOCIATIONS WITH MYOCARDIAL INFARCTION, STROKE AND CARDIOVASCULAR RISK FACTORS IN ADULT MEN AND WOMEN

¹BJ Jefferis, ²GD Lowe, ²P Welsh, ³DA Lawlor, ⁴S Ebrahim, ¹SG Wannamethee, ⁵DG Cook, ⁵PH Whincup. ¹*British Regional Heart Study, Department of Primary Care and Population Health, UCL Medical School, London, UK;* ²*Division of Cardiovascular and Medical Sciences, University of Glasgow, Royal Infirmary, 10 Alexandra Parade, Glasgow, UK;* ³*MRC CAITE Centre, University of Bristol, Oakfield House, Oakfield Grove, Bristol, UK;* ⁴*Non-Communicable Diseases Epidemiology Unit, Department of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, Keppel Street, London, UK;* ⁵*Division of Community Health Sciences, St George's, University of London, Cranmer Terrace, London, UK*

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Objectives: Second-hand smoke (SHS) exposure is associated with elevated CVD risks. Previous studies have implicated altered platelet activity or endothelial dysfunction and changes in circulating levels of HDL, homocysteine and inflammatory markers. However most studies have imprecise exposure measurements and the mechanism remains uncertain. Therefore we examine associations between cotinine, a circulating biochemical marker of SHS exposure, and CVD risk factors, incident CHD and stroke in non-smoking men and women.

Methods: 4252 men and 4286 women aged 60–79 years in parallel prospective population-based studies assessed in Primary Care centres in 25 British towns in 1998–2000, with median 7.7 year follow-up for fatal and non-fatal MI ($n = 445$) and stroke ($n = 386$). Medical history, health behaviours and demographic data were reported in questionnaires and nurses recorded an ECG, made anthropometric measurements and took fasting blood samples

which were analysed for serum cotinine and CVD risk markers. Cross-sectional associations between log cotinine and CVD risk markers were investigated using linear regression; prospective associations between log cotinine and incident CVD were analysed using Cox regression.

Results: Results were similar for men and women and are reported for genders combined. Among 4749 persistent non-smokers without pre-existing CVD or diabetes, geometric mean cotinine was 0.15 ng/mL (IQR 0.05 to 0.30). Active smokers had lower blood pressure, HDL, BMI and waist circumference, higher triglycerides and consistently elevated inflammatory and haemostatic markers than non-smokers with undetectable cotinine (≤ 0.05 ng/mL). In non-smokers, higher cotinine levels were associated with higher CRP, fibrinogen, vWF and t-PA and lower albumin levels which persisted on adjustment for health behaviours, demographic factors and BMI, although not with blood pressure or lipids. A doubling in cotinine level was associated with 0.03 mg/L (95% CI 0.01 to 0.05) increase in log CRP level. However cotinine was not associated with MI: in non-smokers the HR was 1.02 (95% CI 0.94 to 1.11) per doubling in cotinine level, adjusted for socio-demographic behavioural and CVD risk factors. The adjusted HR of MI for smokers (1–9 cigarettes/day) compared to undetectable cotinine was 2.14 (95% CI 1.39 to 3.52). The adjusted HR for stroke in non-smokers was 0.91 (95% CI 0.82 to 1.00) per doubling in cotinine level and for smokers (1–9 cigarettes/day) compared to undetectable cotinine the adjusted HR of stroke was 1.03 (95% CI 0.52 to 2.04).

Conclusions: In this elderly cohort with very low SHS exposure, cotinine was positively associated with levels of endothelial, inflammatory and haemostatic factors but had little effect on risks of CHD or stroke. Findings emphasise the continued importance of reducing SHS exposure, even at very low levels.

093 COST EFFECTIVENESS OF ALTERNATIVE SCREENING STRATEGIES FOR IDENTIFYING PEOPLE AT HIGH RISK OF CARDIOVASCULAR DISEASE

K Lawson, E Fenwick, J Pell. *Department of Public Health and Health Policy, University of Glasgow, Glasgow, UK*

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Objective: There is strong policy interest across the UK in identifying people at high risk of developing premature cardiovascular disease

(CVD; $\geq 20\%$ risk over 10 years) in an effort to offer preventative interventions. In 2009, England introduced a mass screening and referral programme; while Scotland is evaluating a pilot programme which targets deprived communities. Here we examine the coverage, efficiency and cost effectiveness of alternative screening strategies.

Design/Subjects/Setting: We compared five screening strategies to detect those at high risk of premature CVD, defined as occurring in men aged 40–54 and women aged 40–64. These were: (i) mass screening of the population; (ii) screening of deprived communities; (iii) screening family members of patients with known CVD; (iv) screening only family members living in deprived communities; and (v) screening both family members and those living in deprived communities. To compare these five strategies, we simulated screening of the Scottish population using data from the Scottish Health Survey. The risk of CVD was calculated through the ASSIGN risk tool. This derives a 10-year risk score from a person's age; sex; systolic blood pressure; cigarettes smoked per day; family history; and makes an adjustment for deprivation to approximate psycho-social risk factors. Unit costs per screening session were taken directly from the Department of Health's (England) estimates published in 2008, and include both labour and laboratory costs.

Main Outcome Measures: We calculated the percentage of the population at high risk of CVD; and, for each screening strategy, the number needed to screen to detect one person at high risk; and total screening costs. Strategies were ranked in order of effectiveness, defined as the additional yield in terms of coverage of the high risk population; and cost effectiveness was calculated as the additional cost of screening associated with moving to a more effective screening strategy. Sensitivity analysis on the cost of screening was conducted.

Results: A mass screening programme would provide complete coverage, but identifying one person at high risk would require 16 people to be screened, costing £436 per case detected. A programme combining the screening of deprived communities and family members would save 60% of the total costs of mass screening, have twice the yield, and identify 84% of all high risk people in the general population.

Conclusion: Compared with targeted screening, mass screening is a low yield, inefficient, high cost option. Targeted screening could produce most of the benefit at a much lower cost.