

## CHRONIC DISEASE

**P2-1 EFFECT OF INDOOR AIR POLLUTION FROM BIOMASS AND SOLID FUEL COMBUSTION ON PREVALENCE OF ASTHMA AMONG ADULT MEN AND WOMEN IN INDIA**

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Increasing asthma incidence, prevalence and morbidity over recent decades presents a significant challenge to public health in developing countries. A number of studies have suggested that ambient air pollution can trigger asthma attacks. In this study we examined the effect of cooking smoke on reported prevalence of asthma among adult men and women in India. Analysis is based on 99 574 women and 56 742 men age 20–49 years included in India's third National Family Health Survey conducted in 2005–2006. Effects of exposure to cooking smoke, determined by type of fuel used for cooking on the prevalence of asthma were estimated using multivariate logistic regression after controlling for age, marital status, education, religion, caste/tribe, house type, place of cooking, persons per room, living standard of the household, urban/rural residence and geographic region. Women living in households using biomass and solid fuels have a significantly higher prevalence of asthma (OR 1.26; 95% CI 1.06 to 1.49) even after controlling for the effects of a number of confounding factors. Interestingly, this effect was not found among men (OR 0.98; 95% CI 0.77 to 1.24). However, tobacco smoking was associated with a higher asthma prevalence both among women (OR 1.72; 95% CI 1.34 to 2.21) and men (OR 1.35; 95% CI 1.49 to 2.25). The findings have important program and policy implications for India, where large proportions of the population rely on polluting biomass and solid fuels for cooking and space heating. More epidemiological research with better measures of smoke exposure and clinical measures of asthma is needed to validate the findings.

**P2-2 HIGHER FISH INTAKE IS ASSOCIATED WITH THE RISK OF TYPE 2 DIABETES IN ADULT INDIAN POPULATION**

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**Introduction** Diet is a key component of a healthy lifestyle for preventing type 2 diabetes. Despite a high prevalence of type 2 diabetes in Indians, the impact of diet has not been fully explored. This study aimed to investigate the association between fish intake and the risk of type 2 diabetes among adult men and women in India. **Methods** Analysis is based on a population based cross sectional study of 99 574 women and 61 361 men aged 20–49 years included in India's third National Family Health Survey, 2005–2006. Effects of fish intake, determined by frequency of consumption (daily, weekly and occasionally/never), on the reported prevalence of diabetes were estimated using multivariate logistic regression after adjusting for frequency of consumption of milk/curd, eggs/chicken/meat, BMI status, tobacco smoking, watching television, age, education, living standard of the household, residence and geographic regions.

**Results** After adjustment for other dietary and lifestyle risk factors and socioeconomic and demographic characteristics, risk of diabetes was 1.3 times higher among both men (OR: 1.30; 95% CI 1.09 to 1.56;  $p=0.003$ ) and women (OR: 1.27; 95% CI 1.06 to 1.52;  $p=0.009$ ) who consume fish daily as compared to those who consume them occasionally or never. Weekly fish intake also contribute to a higher risk of diabetes both among men (OR: 1.52; 95% CI 1.20 to 1.93;  $p=0.001$ ) and women (OR: 1.54; 95% CI 1.24

to 1.92;  $p<0.001$ ) even after controlling for the effects of potentially confounding factors.

**Conclusion** Daily or weekly fish intake is associated with higher risk of diabetes among Indians, warranting further investigation. More epidemiological research with better measures of fish intake and clinical measures of diabetes is needed to validate the findings.

**P2-3 A CROSS-NATIONAL COMPARATIVE STUDY OF DIABETES PREVALENCE BETWEEN ENGLISH AND DUTCH SOUTH ASIAN INDIAN AND AFRICAN ORIGIN POPULATIONS**

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**Background** Ethnic minority groups in western European countries tend to have higher levels of type 2 diabetes mellitus (DM) than the majority populations for reasons that are poorly understood. Investigating differences between countries could enable an investigation of the importance of national context in determining these inequalities. We determined whether the lower prevalence of DM in England vs the Netherlands is also observed in South-Asian-Indian and African-Caribbean populations. Additionally, we assessed the contribution of health behaviour, body sizes and socio-economic position to any observed differences between countries.

**Methods** Secondary analyses of population-based standardised individual level data of 3386 participants. Differences in prevalence ratios (PR) of DM were estimated using regression models.

**Results** Indian and African-Caribbean populations had higher prevalence rates of diabetes than Whites in both countries. In cross-country comparisons, similar to Whites, English-Indians had a lower prevalence of diabetes than Dutch-Indians; the difference in women remained after adjustments for other covariates (PR=0.35, 95% CI 0.22 to 0.55). English-African women also had a lower prevalence of diabetes than Dutch-Africans (PR=0.43, 95% CI 0.20 to 0.89). For African men the difference was small ( $p=0.249$ ).

**Conclusion** These findings suggest that the increasing prevalence of diabetes following migration may be modified by the context in which ethnic minority groups live.

**P2-4 DIETARY INTAKE OF CARBOHYDRATES AND RISK OF TYPE 2 DIABETES: A SYSTEMATIC REVIEW AND META-ANALYSIS**

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**Introduction** Epidemiologic evidence on the role of dietary intake of carbohydrates in development of type-2-diabetes is inconclusive.

**Methods** We conducted a systematic review of studies reporting the association between dietary intake of carbohydrate and its subtypes (starch, sucrose, glucose, fructose, lactose, and maltose) and risk of incident diabetes. We searched MEDLINE (1966 to October 2010) and hand searched bibliographies of retrieved articles. Studies were included if they had a prospective design, adult population, assessed dietary intake at baseline, and recruited participants free of diabetes

at entry. Risk estimates (RR, HR, OR) from models with the highest degree of multivariate adjustment in each study were transformed to a standardised top-vs-bottom fifth estimate according to the population's baseline distribution of each nutrient's values. We used the  $I^2$  statistic to measure heterogeneity between studies and calculated pooled risk estimates for incident diabetes with random-effects meta-analysis.

**Results** Ten prospective cohort studies with data on 420 840 participants and 11 517 incident diabetes events were included. Highest to lowest fifth of intake of sucrose was associated with a 15% lower risk of diabetes (RR: 0.85, 95% CI 0.75 to 0.97). Other carbohydrate subtypes were not significantly associated with diabetes risk.

**Conclusion** All studies reported risk estimates adjusted for total energy intake and thus model an iso-energetic diet. Lower risk of diabetes associated with higher intake of sucrose is most likely to reflect the effect of substitution of sucrose for other nutrients rather than net increased intake of sucrose itself. Nutrient substitution patterns require further investigation.

## P2-5 VARIABILITY IN THE CONTROL OF CHRONIC PATIENTS IN PRIMARY CARE ACCORDING TO THE ELECTRONIC CLINICAL RECORD

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**Introduction** This study aims to describe the variability in Primary Care to comply with the good practice requirements (GPR) for the management of the following chronic conditions: Hypertension, hypercholesterolaemia, diabetes, alcohol abuse, COPD, depression, dementia, anxiety, asthma and obesity.

**Methods** The electronic clinical records of all general practitioners (1685; 2 147 754 professionals) of Osakidetza/Basque Health Service were examined. The rate of compliance of each of the GPR considered by the Health Plan of Basque Autonomous Community of Spain, standardised by age and sex, was calculated, as well as the variability statistics: extremal quotient (EQ<sub>5-95</sub>), coefficient of variation (CV<sub>5-95</sub>) and systematic component of variation (SCV<sub>5-95</sub>).

**Results** The electronic records show that more than half of the patients are correctly controlled in nine out of the 44 GPR studied. On the contrary, in 16 GPR the compliance rate is lower than 25% of the diagnosed patients. The smallest variability inter-centres is observed in the management of hypertension, hypercholesterolaemia, obesity and diabetes, all with SCV<sub>5-95</sub> < 0.10. Disparity is moderate in COPD and alcohol abuse (0.10 < SCV<sub>5-95</sub> < 0.20), high in depression, anxiety, dementia and asthma in adults (0.20 < SCV<sub>5-95</sub> < 0.50) and very high in asthma in children (SCV<sub>5-95</sub> ≥ 0.50).

**Conclusion** Control of patients diagnosed with chronic processes, especially those with a shorter tradition in Primary Care is insufficient.

## P2-6 INFLUENCE OF THE NEIGHBOURHOOD ENVIRONMENT ON WAIST SIZE OVER TIME AMONG IMMIGRANTS TO THE USA: THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS

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**Introduction** Greater time in the USA has been associated with a higher risk of obesity among immigrants. Few studies have examined this pattern longitudinally or considered measures of the neighbourhood environment in evaluating weight-related change among immigrants the longer they live in the USA.

**Methods** Using prospective data from 883 Hispanic and 688 Chinese foreign-born subjects aged 45–84 in the Multi-ethnic Study of Atherosclerosis, we used linear mixed models to examine whether neighbourhood environments characterised by greater healthy food availability and greater walkability are associated with baseline waist circumference (WC) and with change in WC over a median follow-up of 5 years.

**Results** Neighbourhoods were characterised using survey items; higher scores represented better environments. Adjusting for age, sex, education, income, years lived in the US at baseline, and neighbourhood poverty, among Hispanics, only greater healthy food availability was associated with lower mean baseline WC (mean difference per SD higher neighbourhood score = −0.98 cm, p = 0.028). There was no association between neighbourhood context and WC change over time. Among Chinese, greater walkability was associated with lower mean baseline WC ( $\beta$  = −1.06 cm, p = 0.007) and with smaller increases in WC over time (mean difference in annual change per SD higher walkability = −0.12 cm, p = 0.003). Associations with walkability also differed for long-term vs more recent immigrants among Chinese. (p heterogeneity = 0.001) (effect modification by baseline length of US residence)

**Conclusion** Where immigrants reside may have implications for the health patterns that emerge with greater time in the USA.

## P2-7 MORTALITY AND CARDIOVASCULAR EVENTS IN PATIENTS UNDER TREATMENT WITH CLOPIDOGREL AND OMEPRAZOLE

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**Introduction** In 2009, it was announced that clopidogrel should not be taken with proton pump inhibitors. Omeprazole possibly reduces antiplatelet effect of clopidogrel. We compared mortality and cardiovascular rates between patients that had been treated with clopidogrel alone and those with both clopidogrel and omeprazole.

**Methods** A retrospective dynamic cohort study using secondary data of a health information system from a Health Maintenance Organization in Buenos Aires was analysed. Patients older than 17 years with purchase record of clopidogrel were followed for all-cause mortality and cardiovascular events (CE) from 1 January 2004 to 31 December 2008. Rates and 95% CIs are expressed per 1000 persons-year. Cox regression was used to obtain adjusted HRs for the risk of all-cause mortality and CE in groups exposed and unexposed concomitant to omeprazole at baseline.

**Results** Mean follow-up 13 months, 2518 patients received clopidogrel from whom 17.31% also received omeprazole. Exposed and unexposed to omeprazole were similar in sex (male 60%), age (mean 68) and comorbidities. The CE rate was 32.4 (95% CI 27.3 to 38.4) and 26.1 (95% CI 24.1 to 28.4) for each group respectively (RR 1.23 (p = 0.026) and adjusted RR 1.15 (p = 0.137)). The all-cause mortality rate was 2.5 (95% CI 1.4 to 4.5) and 1.23 (95% CI 0.8 to 1.7) for each group respectively (RR 2.06 (p = 0.034) and adjusted RR 1.76 (p = 0.109)).