

**Results** During the study period, 39 676 scans were recorded on 21 089 patients. The number of scans and patients scanned differed in relation to quintiles of deprivation, with increasing numbers of scans and patients associated with increasing area-level deprivation. Significant associations were also seen between deprivation and age at scan, age at first scan, type of CT scan, and the number of scans per patient.

**Conclusion** Social inequalities exist in the numbers of young people undergoing CT scans with those from deprived areas more likely to do so. This is likely to reflect the rates of injuries in these individuals and implies that certain groups within the population may receive higher radiation doses than others due to medical procedures.

**P1-492 PREDICTORS OF CHILDHOOD PHYSICAL ACTIVITY: THE GATESHEAD MILLENNIUM STUDY**

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**Introduction** Conflicting evidence exists for associations between birth weight and childhood physical activity (PA) levels. It is important to know what other, potentially modifiable, factors influence PA in children given its' association with adiposity. Our aim was to identify predictors of childhood PA levels in the Gateshead Millennium Study (GMS), a population based cohort of 1029 infants born in 1999–2000 in Gateshead, Northern England.

**Methods** Throughout infancy and early childhood, detailed information was collected. Assessments at age 9 yrs included body composition, objective measures of habitual PA (using accelerometers during waking hours). Mean total volumes of PA (accelerometer count per minute, cpm) and moderate-vigorous intensity PA (MVPA), and the percentage of time spent in sedentary behaviour (% SB) were quantified and direct and mediating associations analysed within path models.

**Results** Significant differences were seen in all three outcomes between males and females ( $p < 0.001$ ). No direct significant associations were seen with birth weight. Increased paternal age was associated with significant increases in % SB and decreases in cpm and MVPA ( $p < 0.033$ ). Associations with BMI at 9 yrs were in the expected directions. Increased time spent in sports clubs was significantly associated with decreased % SB ( $p = 0.02$ ) and increased MVPA ( $p = 0.01$ ), but not cpm ( $p = 0.13$ ).

**Conclusions** Although we found no evidence for an effect of birth weight on PA, path models suggest indirect effects mediated through BMI. Having an older father appeared to have a negative impact on the child's PA levels, while participation in sports clubs increases time spent in MVPA, but not cpm.

**P1-493 PROBABILISTIC RECORD LINKAGE: APPLICATION IN THE POPULATION-BASED CANCER REGISTRY OF SÃO PAULO (PBCR-SP), BRAZIL**

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**Introduction** Probabilistic record linkage is an alternative to different study designs because it generates, at lower operating cost, better database completeness. The aim of this study was to assess the performance of the probabilistic record linkage between PBCR-SP for cases of stomach and intestine cancer and São Paulo death database.

**Methods** From 1997 through 2005, 18 511 cases were recorded by PBCR-SP. From the 1997 through 2007, 767 752 deaths were recorded by Mortality Information System of São Paulo city. The fetal deaths were excluded. Exceeding spaces between characters were excluded. Type and size of field, and different spellings with same phoneme were standardised. Prepositions were removed. Scores for ranking true match pairs and probabilistic record linkage was performed using Reclink 3.2 software. The descriptive statistics and Kaplan-Meier test were conducted before and after linkage.

**Results** Of 18 511 cancer cases, of both sexes, aged between 0 and 100 years and older, 7328 were true matched pairs. There was an 85.8% gain in residential address and a 11.0% gain in death date. In 4086 cases, mother's name was aggregated and for all paired registries, cause of death. In the survival analysis, it was verified a 14.4% underestimation in the one-year survival probability and a 31.6% underestimation for the three-year.

**Conclusion** Probabilistic record linkage has shown to be effective in the identification of deaths. An expressive gain in information quality of PBCR-SP database was observed.

**P1-494 QUALITY OF PAP SMEAR IN THE PRIMARY CARE UNITS OF SÃO PAULO CITY, BRAZIL**

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**Introduction** The impact of cervical cancer on morbidity and mortality depends not only on the availability and coverage of screening, but also on the quality of the sample. The aim of this study was to evaluate the quality of Pap smear of the Primary Care Units (PCU), of São Paulo city, Brazil.

**Methods** This was a cross-sectional study. A sample of 478 Pap smears was selected from 12 PCU-São Paulo-Brazil, between April and September 2010. Collection date, name of the responsible physician, record number, age, pregnancy presence, and previous patients' collections, date of result, presence and epithelial classification of the sample and cytological result were collected from the "registration book". The samples were classified as satisfactory with squamous columnar junction (SCJ), satisfactory without SCJ, and unsatisfactory. Samples without epithelial classification in the "registration book" were reported as "missing". Descriptive analyses were calculated.

**Results** The mean age was 39 years (SD=14.2), median 37 years (range 14–82). 38.1% of samples were satisfactory with SCJ, 22.6% satisfactory without SCJ, 0.4% unsatisfactory and 38.9% missing.

**Conclusion** It is concluded that there was a low percentage of unsatisfactory samples; however, the results are unreliable, because a high percentage of samples without the epithelial classification was identified. It is necessary to improve the recording of the epithelia by professionals from PCU, because a low quality examination can lead to inadequate prevention of cervical cancer.

**P1-495 MEASURING THE PLACEBO EFFECT IN UNBLINDED RANDOMISED COMMUNITY TRIALS**

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**Introduction** The double blinded randomised control trial has been developed to provide gold standard estimation of causal effects. However, in many circumstances it is impossible to design studies

that meet this standard of blinding and placebo effects potentially affect the estimates. One example of a study where it was impossible to blind the participants is the Heating Housing and Health Study (HHHS). Here the intervention was the installation of a modern efficient heater in the participants' homes.

**Methods** Using data from the HHHS, we explored three different approaches to estimate the placebo effect: (1) Dummy outcome variables (where we examined variables similar to the real outcomes, on which the intervention is known to have no effect); (2) identifying variables that may indicate a high susceptibility to placebo effects; and (3) modelling the effects of measured intermediate variables (in the heating example the direct effect of the intervention should be associated with a rise in temperatures).

**Results** Combining these approaches in a Bayesian framework we calculated estimates of the placebo effect and intervention effects across a range of outcome measures in the HHHS. The changes in the estimates of these intervention effects showed which results were likely to be affected by placebo effects. These findings agree well with our expectations.

**Conclusion** With carefully chosen assumptions, it is possible to use data already collected and a Bayesian modelling approach to obtain informative estimates of likely placebo effects and hence provide better estimates of the true effects of an intervention in unblinded RCT's.

**P1-496 AN EXAMINATION OF THE PSYCHOMETRIC PROPERTIES OF THE GHQ-28 SUBSCALES IN A BI-ETHNIC ANTENATAL SAMPLE IN THE UK: PRELIMINARY RESULTS FROM THE BORN IN BRADFORD COHORT**

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**Introduction** Born in Bradford is a large multi-ethnic birth cohort drawn from the North of England. As background to comparing mental health across our sample we conducted a confirmatory factor analysis (CFA) and invariance testing for each of the four-factor seven-item subscales of the GHQ-28 for a bi-ethnic subpopulation.

**Methods** We examined data from White (N=2011) and Pakistani-origin (N=1516) women who responded to the GHQ-28 in English. We fitted a single factor model to data from each subscale to the White subpopulation and tested for invariance against the Pakistani women's data. Where configural invariance was indicated for a proposed factor we followed a model generation strategy for each subpopulation and tested for invariance on this reduced item set.

**Results** In general, the models gave poor fit. Fit was acceptable when we reduced the number of items from seven to four for the Somatic, Anxiety/Insomnia and Severe Depression subscales. The unmodified Social Dysfunction subscale fitted both groups adequately. After correcting for differential item functioning (Item 4, Felt ill) we found Pakistani women were more likely to have worse scores on the reduced Somatic subscale ( $d=0.10$ ,  $p<0.001$ ). They also had worse scores on the unmodified Social Dysfunction ( $d=0.03$ ,  $p<0.001$ ) and reduced Severe Depression subscales ( $d=0.14$ ,  $p<0.001$ ). Severe fit difficulties were observed for the Anxiety/Insomnia subscale.

**Conclusion** The unmodified GHQ -28 subscales did not fit a CFA model well and modifications were needed to ensure measurement equivalence. Pakistani women in this preliminary dataset fared significantly worse on all measureable subscales than White women.

**P1-497 SUPPORT AND ADMINISTRATION OF THE MULTI-SITE GLOBAL HEALTH INITIATIVE PROGRAM OF COMBATING NON-COMMUNICABLE CHRONIC CARDIOVASCULAR AND PULMONARY DISEASES IN DEVELOPING COUNTRIES**

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The National Heart, Lung and Blood Institute (NHLBI) teamed with United Health Group's Chronic Disease Initiative (CDI) to reduce the burden of noncommunicable cardiovascular and pulmonary diseases (CVPD) by building research and training capacities at 11 emerging Centers of Excellence (COEs) in Argentina, Bangladesh, China, Guatemala, India (Bangalore), India (New Delhi), Kenya, Peru, South Africa, Tunisia and the USA Mexico Border. To support diverse program needs and provide logistical expertise, Westat Company serves as the administrative coordinating center (ACC) for NHLBI's Global Health Initiative (GHI). Maintaining a global network poses challenges at the country and international levels, but is an opportunity for COEs to share their experiences and consider future collaborations to minimise redundancies in effort. The ACC manages these global discussions by identifying communication options suited to each country's technological capabilities. The ACC also organises semi-annual network meetings; reviews site establishment, protocol registration, human subjects protection (HSP) and good clinical practice (GCP) training documents; collects data to track program achievements; and maintains a web site to post documents, announcements and discussion forums. COEs are currently conducting research activities to classify, quantify, reduce and/or prevent risk factors associated with noncommunicable, chronic CVPD. While the research activities are designed to address local needs, the findings should also influence global health policy. We will present the experiences of providing administrative, operational, or technical assistance to the research and training activities of these COEs, and describe the high impact projects-in-progress at the COEs and the ACC.

**P1-498 MEASURES AND MODELS FOR CAUSAL INFERENCE IN CROSS-SECTIONAL STUDIES: ARGUMENTS FOR THE APPROPRIATENESS OF THE PREVALENCE OR AND RELATED LOGISTIC REGRESSION**

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**Introduction** Several papers have discussed which effect measures are appropriate to capture the contrast between exposure groups in cross-sectional studies, and which related multivariate models are suitable. Although some have favoured the Prevalence Ratio over the Prevalence OR—thus suggesting the use of log-binomial or robust Poisson instead of the logistic regression models—this debate is still far from settled and requires close scrutiny.

**Method** In order to evaluate how accurately true causal parameters such as Incidence Density Ratio (IDR) or the Cumulative Incidence Ratio (CIR) are effectively estimated, we present a series of scenarios in which a researcher happens to find a preset ratio of prevalences (eg, 2.0) in a given cross-sectional study.

**Results** Provided essential and non-waivable structuring conditions for causal inference are all met, results show that the CIR is most often inestimable whether through the prevalence ratio or the



## P1-495 Measuring the placebo effect in unblinded randomised community trials

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