P1-14 IDENTIFYING ADVERSE EVENTS OF VACCINES USING A BAYESIAN METHOD OF MEDICALLY GUIDED INFORMATION SHARING

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Introduction The detection of adverse events following immunisation (AEFI) fundamentally depends on how these events are classified. Standard methods impose a choice between either grouping similar events together to gain power or splitting them into more specific definitions. We demonstrate a method of medically guided Bayesian information sharing that avoids grouping or splitting the data, and we further combine this with the standard epidemiological tools of stratification and multivariate regression.
Methods All spontaneous reports of gastrointestinal AEFI in children under 18 years old in the WHO (Uppsala Monitoring Centre) Vigibase© were used to calculate reporting ORs for each AEFI and vaccine combination. After testing for effect modification these were then reestimated using multivariable logistic regression adjusting for age, gender, year and country of report. A medically guided hierarchy of AEFI terms was then derived to allow information sharing in a Bayesian model.
Results A crude analysis identified 132 signals from 655 reported combinations of gastrointestinal AEFI. Adjusting for confounding, where appropriate, reduced the number of signals identified to 88. The addition of a Bayesian hierarchical model identified four further signals and removed three. Effect modification by age and gender was identified for six vaccines.
Conclusion This study demonstrated a sequence of methods for routinely analysing spontaneous report databases that was easily understandable and reproducible. The combination of classical and Bayesian methods in this study help to focus the limited resources for hypothesis testing studies towards the adverse events with the strongest support from the data.

P1-15 OBESITY CLUSTERING IN CEBU, PHILIPPINES: AN APPLICATION OF SATSCAN AND THE SPATIAL SCAN STATISTIC

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Introduction Obesity is an important, global, public health problem. To promote prevention, more research is needed to understand exactly how shared environments impact obesogenic behaviours. Identifying spatial clusters of obesity is the first step towards a better understanding of its environmental drivers, and can immediately inform public health practice. To date, research has overlooked lower-income contexts, where obesity is emergent and environments are changing at an unprecedented pace.
Methods Using data from a cohort of young adult Filipinos (21.5 y; n=1808), we used the Kulldorff spatial scan statistic to detect areas in Metropolitan Cebu with a high sample prevalence of obesity. Cluster locations were then compared to the urbanicity of constituent neighbourhoods. We also tested whether clusters were explained by the spatial distribution of household-assets scores in the study participants.
Results Significantly unusual clusters (rejection of H0: complete spatial randomness, at $p<0.05$) of overweight and obesity were detected for males and females. Clusters were primarily located in urban areas, but typically extended into peri-urban and even rural neighbourhoods. The exact location of clusters varied as a function of both sex and measure of obesity used. Clusters in males, but not females, were explained by the spatial distribution of socioeconomic status.
Conclusions Where a young adult lives is a strong predictor of obesity risk in Cebu. Environmental drivers of obesity among young adults in Cebu may vary by gender. Using simple urban-rural classifications to contextualise obesity in lower income countries may be overly simple, and misdirect public health efforts.

P1-16 A LATENT CLASS ANALYSIS OF SOCIOECONOMIC STATUS AND OBESITY IN YOUNG ADULTS FROM CEBU, PHILIPPINES

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Introduction Socioeconomic status (SES) is a critical driver of human health, but in research practice it is rarely well-defined and inconsistently measured. Latent class analysis (LCA) is a potentially useful method of characterising SES, particularly when multiple SES indicators are available. We employed LCA to better understand how SES is related to obesity in a sample of young Filipino adults; and contrasted LCA with other approaches.
Methods Data are from a cohort of young adults enrolled in the Cebu Longitudinal Health and Nutrition Survey (987 males and 819 females). Latent classes were derived using Mplus mixture modelling. Class indicators included obesity status, marital status, education level, urbanicity, household assets and income. Models were estimated under the assumption of class-conditional independence, with no further parameter constraints.
Results For both sexes, a 3-class solution was the best balance of model fit (using log-likelihood, AIC, and BIC) and parsimony. Overall obesity prevalence was 9.4% in males and 7.8% in females. One class of males (n=194) had an obesity prevalence of 22%, vs 6% in the remaining two classes ($p=0.007$ for H0: no difference). They were more likely to be urban, educated, and unmarried than other males ($p<0.05$). However, a female class (n=257) with a similar socioeconomic profile instead had the lowest prevalence of obesity (5.5%).
Conclusions LCA can contribute to our understanding of socioeconomic drivers of health. Interpretation of LCA is discussed in the context of Rothman and Greenland's model of causation.

P1-17 THE TREELET TRANSFORM—A NOVEL METHOD FOR DETERMINING PATTERNS IN ADIPOSE TISSUE FATTY ACIDS

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Introduction Dietary fatty acid intake may be associated with risk of obesity and non-communicable disease. Adipose tissue fatty acids are correlated, reflecting shared dietary sources and metabolic processes. To date fatty acids have been investigated individually, or using principal component analysis (PCA), but interpretation of such studies is not trivial. The treelet transform (TT) is a novel method for generating sparse factors that describe the correlation structure of the data. In studies of dietary patterns TT is as efficient in extracting factors as PCA, and simpler to interpret. We therefore compared factors determined by PCA and by TT to evaluate interpretability of patterns in adipose tissue fatty acids.