Bucaramanga, Santander, Colombia; [3]Corporación Autonoma Regional para la Defensa de la Meseta de Bucaramanga, Bucaramanga, Santander, Colombia

A previous study in Bucaramanga, Colombia had shown that there were not association between outdoor air pollution and incidence of respiratory symptoms related to asthma in healthy paediatric population. We investigated whether exposure to different levels of outdoor air pollution are associated to incidence of respiratory symptoms in population with chronic diseases. Three pollution zones were selected according to historic measures of particulate matter <10 μg/m^3 (PM10): low (<40 μg/m^3), medium (40–60 μg/m^3) and high (>60 μg/m^3). A total of 756 patients with chronic cardiovascular and respiratory disease were selected around the air quality stations at each zone. This was a cohort study with the follow-up-phase lasting 6 months using daily calendar of symptoms and clinic visits. Symptoms with higher incidence rates were sneeze and hacking cough. Incidence rate of total symptoms per 100-participant-day was 46 with differences between zones. Incidence rate ratio of total symptoms between low and high zone was 1.14 (95% CI 1.11 to 1.16). Except for wheezing (IRR 0.84; 95% CI 0.78 to 0.91) and inhalers use (IRR 0.68; 95% CI 0.64 to 0.73), all symptoms were higher in middle pollution area, but multivariate analysis using Poisson multilevel approach shown after adjustment for confounding variables, high pollution area is associate with 64% and 77% more symptoms compared with middle and low pollution area, respectively. These results suggest that in populations with morbidity outdoor air pollution is a key determinant of respiratory symptoms and respiratory negative effects are seen over 60 μg/m^3.

P2-467 TWO-SIDED NUTRITIONAL PROBLEMS AMONG SCHOOL-AGED CHILDREN IN VIETNAM

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[1]N Sakamoto,* [1]L Yang, [2]P T T Hoa, [2]L T Hop. *[1]National Research Institute for Child Health & Development, Setagaya, Tokyo, Japan; [2]National Institute of Nutrition, Hanoi, Viet Nam*

Objective To estimate the prevalence of underweight, overweight and obesity in Vietnamese children and adolescents aged 6–18 years in both urban and rural areas.

Methods A cross-sectional study was conducted in 2006. Data on height and weight of 6354 children living in rural areas and 5280 children in urban areas were used for analysis. The prevalence of underweight/thinness, overweight and obesity was estimated according to the United States Centers for Disease Control (CDC) growth charts and WHO child growth standards (WHO Reference 2007).

Results In urban areas, the prevalence of underweight, overweight and obesity among children and adolescents aged 6–18 years was 9.5 %, 21.0% and 8.4% in boys and 10.0%, 9.7% and 1.8 in girls, respectively, based on the CDC cut-offs. In rural areas, the corresponding rates were 26.2%, 1.2% and 0.3% in boys and 20.4 %, 0.7% and 0.1% in girls, respectively. Urban children were more likely to be overweight than rural children. Conversely, rural children were more likely to be underweight than urban children.

Conclusions The co-occurrence of overweight and underweight among urban children and adolescents and persistent underweight epidemic among rural peers are the main health concerns in Vietnam. Policy planner should develop appropriate health strategies for urban populations to reduce the rising epidemic of over nutrition, while also focusing on the needs underweight children. In rural areas, it the government should provide more effective intervention to reduce poverty and improve the nutrition status of rural children.

P2-468 INEQUITIES IN THE EARLY CONDITIONS OF LIFE: EFFECTS ON THE MORTALITY OF ELDERS. RESULTS FROM THE SABE STUDY - SÃO PAULO - BRASIL: 2000–2006

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[1]J L F Santos,* [2]M L Lebrão, [3]Y A O Duarte. *[1]Faculdade de Medicina de Ribeirão Preto-USP, Ribeirão Preto, São Paulo, Brazil; [2]Faculdade de Saúde Pública-USP, São Paulo, São Paulo, Brazil; [3]Escola de Enfermagem-USP, São Paulo, São Paulo, Brazil*

Introduction Studies indicate connections between childhood conditions and health in old ages. Early conditions of life may be related to individual factors of development. Thus, rural areas can harbour states of child development different from those in the urban ambience.

Objective To evaluate the impact of rural origin on mortality of elders living in a urban region.

Methods Data are from SABE: a longitudinal survey in São Paulo—2000/2006. The explanatory variable "origin", was obtained from the question: "Have you lived in the countryside for more than 5 years before the age 15?" Control variables are sex, age, education, income; having had malaria, pneumonia or typhoid fever before the age of 15. Outcome was "death": people alive in 2000 (n=2143) and confirmed dead before or during the second round in 2006 (n=649).

Results Rao-Scott tests showed differences according to the origin of the elders for all variables except age and typhoid fever. A Poisson regression was applied to evaluate the associations between "origin" and "death" in the presence of all other variables, controlling for time of exposure. Incidence Rate Ratio (IRR) for rural origin was 1.54 (p=0.03). That is, having lived in the countryside before the age of 15 increased the death rate by 54%. Sex, age and income were also significant, with IRR of 1.79; 3.57 and 1.69.

Conclusions These results demonstrate that inequities such as rural-urban inequality, even occurring in the young ages, can perpetuate differences through a person's life, including an increased chance of dying when older.

P2-469 MATERNAL VITAMIN D STATUS AND DELIVERY BY CESAREAN

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T Scholl,* X Chen, M Schleuter, T P Stein. *University Medicine and Dentistry New Jersey, Stratford, New Jersey, USA*

Introduction Factors which increase risk of delivery by cesarean include older maternal age, obesity, nulliparity, minority status and a prior history of cesarean delivery. In all probability less well defined factors exist at least one of which may be nutritional—maternal vitamin D deficiency and insufficiency during pregnancy. We examined the association of circulating levels of vitamin D to risk of cesarean delivery using prospective data.

Method Circulating maternal 25-hydroxyvitamin D and intact parathyroid hormone at entry to care (13.8±0.17 weeks - mean, SEM) were assayed by HPLC (25 hydroxyvitamin D) and radioimmunoassay (parathyroid hormone) in a cohort of 1153 low income and minority gravidae from Camden, NJ.

Results The prevalence of vitamin D deficiency (19.8%) and insufficiency (50.5%) at entry was high and accompanied by increasing concentrations of parathyroid hormone, a functional indicator of vitamin D status. Risk for primary cesarean, for secondary cesarean, as well as for all deliveries by cesarean was increased approximately twofold for vitamin D deficient women (<37.5 nmol/l) except for primary cesarean delivery where risk also was increased 1.5-fold with levels suggestive of insufficiency (37.5–80 nmol/l). Vitamin D deficiency was linked to indications for cesarean including a twofold

increased risk of cesarean section for prolonged labour and cesarean section for fetal distress.

Conclusions Poor maternal vitamin D status was linked to approximately a twofold increased risk of as well as to specific indications for cesarean delivery.

P2-470 REFERENCE VALUES FOR CHILDHOOD BODY MASS INDEX IN THE ERA OF THE OVERWEIGHT EPIDEMIC

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[1]Y Schönbeck,* [1]P V Dommelen, [1,2]S Van Buuren. [1]*Netherlands Organization for Applied Scientific Research, Leiden, The Netherlands;* [2]*University Utrecht, Utrecht, The Netherlands*

Introduction Due to the overweight and obesity epidemic, growth references based on recent data may no longer be appropriate for monitoring childhood body mass index (BMI) as they may underestimate the problem. Our aim is to determine the difference in signalling overweight and obesity between the use of up to date references and cut-offs for BMI according to the International Obesity Task Force (IOTF).

Methods The growth references for BMI were constructed using cross-sectional growth data from the Fifth Dutch Growth Study in 2009 (n=10 129). We plotted the IOTF cut-offs against the Dutch growth references for ages 2–18 y. Moreover, we compared the prevalence of overweight and obesity according to IOTF with respectively the +1.6 and +2.7 SD score (SDS) on the Dutch growth references. These SDS cut-offs correspond to a BMI of 25 and 30 kg/m^2 at age 18 y in the Third Dutch Growth Study in 1980, which was part of the sample to construct the IOTF cut-offs.

Results The IOTF cut-offs for overweight and obesity were lower than +1.6 and +2.7 SDS at all ages. The difference between IOTF and the cut-offs for SDS ranged from −1.8 to −2.5 SDS for overweight and −1.2 to −2.3 SDS for obesity.

Conclusion Using up to date population based references for BMI with recommended SDS cut-offs for Dutch children results in an underestimation of the problem. In countries with substantial overweight and obesity, we recommend using pre-epidemic references or cut-offs, such as proposed by the International Obesity Task Force.

P2-471 LIVER FUNCTION RELATED VIRUSES AND DIABETES IN CHINA

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[1,2]C M Schooling,* [3]C Q Jiang, [3]W S Zhang, [2]T H Lam, [4]K K Cheng, [2]G M Leung. [1]*CUNY, New York, USA;* [2]*The University of Hong Kong, Hong Kong, China;* [3]*Guangzhou Number 12 Hospital, Guangzhou, China;* [4]*The University of Birmingham, Birmingham, UK*

Introduction Compared to western populations, diabetes mellitus is prevalent in China despite a relatively non-obese population. Exposures beyond lifestyle and genetics may be relevant. We hypothesised that liver infections, common in China, increase vulnerability to diabetes, via the physiological consequences of poor liver function.

Methods We used multivariable regression to examine the adjusted associations of alanine transaminase (ALT) and aspartate transaminase (AST) with diabetes in the Guangzhou Biobank Cohort Study phase 1 (2003–2004) for 10 121 older (≥50 years) Chinese and in NHANES III for 16 854 people. We similarly examined the associations of liver function related viruses (number of hepatitis A, B, C and E antibodies or of hepatitis A, hepatitis C and herpes simplex virus 1) with ALT, AST, diabetes and death from diabetes in NHANES III. As a control, we examined associations for viruses unrelated to liver function (cytomegalovirus, herpes simplex virus 2 and human herpes virus 8).

Results ALT was positively associated with diabetes in both settings, adjusted for age, sex, socio-economic position, smoking, alcohol and adiposity. Similarly adjusted, liver function related virus antibodies were associated with ALT (0.18 SDs, 95% CI 0.10 to 0.26 for 2+ compared with none) and diabetes (OR 1.43, 95% CI 1.02 to 2.02), but viruses unrelated to liver function were not.

Conclusion Prior exposure to endemic viruses damaging liver function could be an additional factor contributing to diabetes in China, which public health efforts infection control efforts may already be addressing. Prevention strategies may need to be contextually specific.

P2-472 FACTORS AFFECTING NEWBORN CARE PRACTICES IN BANGLADESH

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M Shahjahan,* K Fatema, S J Mumu, A Afroz. *Bangladesh Institute of Health Sciences, Dhaka, Bangladesh*

Introduction Newborn care has important implication in achieving MDG-4 because among infant deaths two-thirds die within 1 month of the birth in Bangladesh. The objective of this paper is to identify the associated factors which affect newborn-care practices in Bangladesh.

Methods This paper used the birth history data of BDHS 2007—which is a nationally representative sample survey. Two-stage stratified cluster- sampling design was adopted. A total number of 6150 mothers were interviewed through systematic random sampling.

Results The mean age of mothers was 18.0 (SD±3.2) years. Little over 12 % pregnant women received at least one antenatal check-up during the pregnancy. About 85% of deliveries were conducted at home and 71% of them were attended by untrained persons. During cord cutting 87% used clean instrument and 34% reported to have their first bath immediately after delivery. Twelve percent mother initiated breast feeding within half an hour of the delivery. Logistic regression analysis suggests that maternal education is an important determinant of early breast feeding and new born care. Secondary or higher levels of maternal education were associated with early breast feeding (OR=2.9, CI 1.5 to 5.5). For instance, mothers who had secondary and higher education were almost three times more likely to be aware of the newborn care practices as opposed to mothers who had no education.

Conclusion Since two-thirds of infants die before reaching 1 month, it is recommended that through creating awareness about newborn care practices of rural mothers, infant mortality can be significantly reduced.