Background Low-dose mercury exposure has been shown to be associated with adverse childhood health outcomes. Fish is the major source of mercury exposure in children. Our aim was to investigate the associations between estimated fish intake with total mercury (tHg), inorganic mercury (iHg), and methylmercury (MeHg).

Methods Based on fish food frequency questionnaire (FFQ) data, subjects above the top and below the bottom quartiles of monthly fish intake frequency were contacted for recruitment. Subject hair tHg, iHg, MeHg levels were determined, and fish intake assessed by fish FFQ and 14-day food diary (FD). Associations between fish intake and hair mercury were analysed.

Results 96 children were recruited and 38 of them completed the FD. Among these 96 children and those who have FD data, 55% and 50% were high fish consumers, respectively. The mean ratio of iHg: MeHg was 1:1.4. Comparisons between hair mercury levels and fish intake levels of high and low fish consumers are shown in Figure 1. Fish intakes calculated from both FFQs and FD were positively correlated with tHg, iHg and MeHg (all $p < 0.05$). However, in general, better correlations were found between FD data and hair mercury (Spearman's rho for tHg = 0.416; iHg = 0.352; MeHg = 0.448) than between FFQ and hair mercury (Spearman's rho for tHg = 0.308; iHg = 0.360; MeHg = 0.262).

Conclusions Fish intake data obtained from both FFQs and FDs were positively associated with hair mercury levels. FDs performed better than FFQs. The high proportion of iHg: MeHg is unexpected and warrants further study.

PS-002 EFFECTS OF E-WASTE EXPOSURE ON THE SYNTHESIS OF HAEMOGLOBIN IN PRESCHOOL CHILDREN

¹L Ma, ²TY Wang, ³YB Chen. ¹Pediatrics, The Second Affiliated Hospital of Shantou University Medical College, Shantou, China; ²Pediatrics, Capital Institute of Pediatrics, Beijing, China; ³Pediatrics, Guangdong Maternity and Child Health Care Hospital, Guangzhou, China

10.1136/archdischild-2014-307384.297

Objective Guiyu is the major electronic-waste (e-waste) recycling town in China. This study was to measure the effect of e-waste exposure on the synthesis of haemoglobin (Hb) in preschool children.

Methods 222 children lived at Guiyu town and 204 children lived in a no e-waste polluted town were chosen to test their blood lead, Hb, ferritin, folate, vitamin B₁₂ levels and hemoglobinopathy, then fill the self-questionnaires by their parents.

Results There were no significant differences in the levels of ferritin, folate, vitamin B₁₂ between exposure and control groups, and all children had been excluded thalassemia. The blood lead levels (BLLs) and rate of BLLs ≥ 10 ug/dL in exposure group were significantly higher than that in control group (all $p < 0.01$). Three groups were divided according to BLLs (Group A: < 5.0 ug/dL, Group B: 5.0 – 9.9 ug/dL, Group C: ≥ 10.0 ug/dL). It can be seen that the levels of Hb were decreased along with elevated BLLs significantly in exposure group ($F = 3.52$, $p = 0.03$), however, not shown in control group ($F = 1.98$, $p = 0.14$). Furthermore, the prevalence rate of anaemia along with BLLs ≥ 10 ug/dL in exposure group was significant higher than that in control group (4.0% vs. 0.5% , $p < 0.05$), and the prevalence rate of anaemia without BLLs ≥ 10 ug/dL and iron deficiency in exposure group was significant higher than that in control group (6.5% vs. 2.0% , $p < 0.05$).

Conclusion Different from the general environment, the lead exposure in e-waste area might aggravate the inhibition of synthesis of Hb, and other potential e-waste toxicants might also have a responsibility for it.

PS-003 ACCEPTABILITY AND INITIAL EFFICACY OF SIMPLE, WRITTEN, EDUCATIONAL MATERIALS FOR ADOLESCENT MOTHERS IN THE UNITED STATES

¹D Davis, ²MC Logsdon, ³R Stikes, ⁴R Ratterman, ¹L Ryan, ¹J Meyers. ¹Pediatrics, University of Louisville, Louisville, USA; ²School of Nursing, University of Louisville, Louisville, USA; ³Nursing, University of Louisville Hospital, Louisville, USA; ⁴Teenage Parent Program, Jefferson County Public Schools, Louisville, USA

10.1136/archdischild-2014-307384.298

Background Health literacy has been associated with a variety of health outcomes and behaviours in adults and children. Relatively little is known about health literacy of pregnant and parenting teens. The current study evaluated the acceptability and efficacy of simple, written, educational materials.

Methods A convenience sample ($n = 129$) of English-speaking adolescent mothers ($M = 16.98$ years; $SD = 1.04$) was recruited from a public school system. A simple pamphlet was developed for each of 4 common topics (breastfeeding, postpartum depression, infant care, and bonding). Participants completed a pretest on knowledge, read a simple educational pamphlet, and completed an immediate posttest. Participants also completed the Parental Health Literacy Activities Test (PHLAT) and a measure of acceptability. A two-week posttest followed. The Cochran-Armitage test of trends and repeated measures ANOVA were used.

Results The teens agreed ($n = 96$; 82.1%) or partially agreed ($n = 14$; 12%) that the pamphlets were easy to read. Knowledge improved on 6 of the 10 questions. Correct responses to the PHLAT items ranged from 27.6% – 97.6% ($M = 61.79\% \pm 16.7\%$). The intervention was associated with an increase in PPD (67.4% vs. 76.4% vs. 84.3% , $p = 0.031$), baby bonding (74.8% vs. 87.8% vs. 86.2% , $p = 0.013$) and breastfeeding (58.5% vs. 75.6% vs. 79.7% , $p = 0.005$) knowledge over time, but had no effect on infant care knowledge over time (94.3% vs. 97.6% vs. 95.9% , $p = 0.434$).

Conclusions/discussion Simple, written pamphlets, following US national health literacy guidelines, improved knowledge over time and were acceptable to adolescent mothers. Health literacy skills were limited and appear to be associated with initial knowledge.

PS-004 ASSOCIATION OF THE 45T > G ADIPONECTIN GENE POLYMORPHISM WITH METABOLIC SYNDROME IN EGYPTIAN FEMALE ADOLESCENTS

¹M Zaki, ²M Abd EL-Salam, ¹N Hassan, ³S Ismail, ¹S Kamal, ²M Zzاهر, ³A Elkhoully. ¹Biological Anthropology, National Research Centre, Cairo, Egypt; ²Pediatric and Department, Faculty of Medicine, Cairo, Egypt; ³Medical Molecular Genetics, National Research Centre, Cairo, Egypt

10.1136/archdischild-2014-307384.299

Background Adiponectin gene (ADIPOQ) single nucleotide polymorphisms (SNPs) have been shown to influence adiponectin levels and have been associated with risk for obesity and insulin resistance (IR). However, these associations have not been fully examined in Egyptian adolescents. The aim of this study was to

investigate the association of ADIPOQ gene 45T > G with risk of obesity and metabolic syndrome (MS) in Egyptian female adolescents.

Methods The cross-sectional study was performed on 285 Egyptian female adolescents (mean age: 15.5 ± 2.3 and mean body mass index: 20.34 ± 5.67). Genotyping of adiponectin 45T > G polymorphism was detected by PCR-RFLP analysis. Anthropometric and biochemical parameters were measured by standard procedures. Insulin resistance was determined by the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR). Body fat was measured by Tanita Body Composition Analyzer.

Results MS cases showed a higher distribution of TG and GG genotypes compared with cases without MS. Carriers of the mutated genotypes (TG+GG) exhibited higher levels of body mass index, body fat percentage, blood pressure, fasting insulin, fasting glucose, HOMA-IR, triglyceride, whereas lower levels of HDL-C and serum concentrations of adiponectin as compared with TT carriers. Association between MS and mutated genotypes of ADIPOQ gene 45T > G was observed (adjusted odds ratios (OR) = 3.65 for TG+GG carriers, OR = 2.25 for GG carriers and OR = 1.9 for G allele carriers).

Conclusions The study suggests that adiponectin 45T > G polymorphism has a significant role in the development of MS in Egyptian female adolescents, possibly through an interaction with increase body weight and hypoadiponectinemia.

PS-005 THE EFFECT OF BODY COMPOSITION CHANGES ON BONE METABOLISM IN ADOLESCENTS WITH ANOREXIA NERVOSA

¹N Paunovic, ²V Bembo, ¹V Culačić-Vojinovic. ¹Endocrinology Division Internal Medicine Department, Railway Health Care Institute, Belgrade, Serbia; ²Department of Pediatrics and Neonatology, Hospital in Fondi ASL Latina, Fondi Latina, Italy

10.1136/archdischild-2014-307384.300

Background The correlation between body composition changes, osteopenia and alterations of leptin, Insulin-like-Growth Factor-1(IGF-1) and cortisol levels has been previously found in patients with anorexia nervosa (AN).

Objective The aim of this study was to investigate the relationship between bone formation (osteocalcin-OC) and bone resorption markers (BetaCrossLaps-BCL) and changes in bone mineral density (BMD), body mass index (BMI), body fat percentage (BF %), leptin, IGF-1 and cortisol levels.

Methods BMI, spinal Z-score (DXA), BF% and leptin, IGF-1, OC, BCL, cortisol levels were measured in 2 groups of girls: AN (n = 20, age 17.2 ± 0.3 years, amenorrhea duration 21.2 ± 0.4 months) and normal weight (n = 20, age 17.5 ± 0.2 years).

Results BMI (14.2 ± 0.86 vs 20.4 ± 0.86 , $t = -22.77$, $p = 0.0009$), BF% (5.0 ± 1.5 vs 22.9 ± 2.7 , $t = -25.79$, $p = 0.0001$), Z score (10.5 vs 30.5 , $Z = -5.41$, $p = 0.0006$) and levels of IGF-1 (308.1 ± 42.6 vs 538 ± 21.6 ; $t = -9.75$, $p = 0.0007$), leptin (10.5 vs 30.5 , $Z = -5.41$, $p = 0.0006$) and OC (16.0 ± 3.49 vs 37.2 ± 5.34 , $t = -14.84$, $p = 0.0002$) were significantly lower in AN group while levels of cortisol (713 ± 69.1 vs 451 ± 15.9 ; $t = 11.82$, $p = 0.0003$) and BCL (28.1 vs 12.9 , $Z = -4.1$, $p = 0.0004$) were higher. In AN group we found: positive correlation between OC and BMI ($r = 0.984$, $p = 0.0008$), BF% ($r = 0.983$, $p = 0.0008$), Z score ($r = 0.967$, $p = 0.0004$), leptin ($r = 0.985$, $p = 0.0001$) and IGF-1 levels ($r = 0.937$, $p = 0.0006$); negative correlation between OC and cortisol ($r = -0.982$, $p = 0.0005$); negative correlation between

BCL and BMI ($r = -0.764$, $p = 0.0009$), BF% ($r = -0.724$, $p = 0.0001$), Z score ($r = -0.835$, $p = 0.0002$), leptin ($r = -0.777$, $p = 0.0004$) and IGF-1 ($r = -0.766$, $p = 0.0008$) and positive correlation between BCL and cortisol ($r = 0.815$, $p = 0.0001$).

Conclusion Adolescents with AN have significantly altered body composition, impairment of leptin, IGF-1 and cortisol secretion, alterations in bone turnover and severe osteopenia. There is a correlation between bone turnover markers and Z-score, BMI and BF% in patients with AN. We found a significant relationship between leptin, IGF-1 and cortisol levels and bone turnover markers in AN patients.

PS-006 IMPACT OF NUTRITIONAL STATUS ON THE PUBERTAL TRANSITION IN A SAMPLE OF EGYPTIAN SCHOOL GIRLS

¹NE Hassan, ¹SA El-Masry, ²MM Abu shady. ¹Biological Anthropology, National Research Centre, Giza, Egypt; ²Child Health, National Research Centre, Giza, Egypt

10.1136/archdischild-2014-307384.301

Pubertal growth is influenced by many factors including environmental and nutritional.

Objective To assess impact of nutritional status on pubertal staging, ovarian and uterine volumes among school girls.

Method Study was cross sectional carried out on 1000 healthy school girls, aged 8–18 years selected randomly. They were categorised: according to their ages into three groups : 8–12 years, 13–15 years and 16–18 years ± 6 months, then according to their body mass index percentile to normal weight : (≥ 15 – <85), overweight (≥ 85 – <95) and Obese: (≥ 95). All girls were subjected for physical, anthropometric [weight, height, body mass index], nutritional markers (WAZ (weight/age Z score), HAZ (height/age Z score) and BMI-Z (body mass index Z score), pubertal assessment (Tanner stage) and pelvic trans abdominal sonography (uterine and ovarian volumes).

Results Highly significant differences in ovarian and uterine volumes and nutritional markers (WAZ, HAZ and BMI-Z score) were detected among different grades of puberty in the two age groups (8–12 years, 13–15 years) coming in advance of obese girls (with increase of BMI); except HAZ in the second age group. Girls aged 16–18 years reached to final volume for the uterus and ovary with insignificant differences. Pubertal stage, ovarian and uterine sizes were highly significantly correlated with nutritional markers. Mean ages of onset: of puberty, menarche and complete puberty were, 11.65 ± 1.84 , 14.79 ± 1.75 and 15.02 ± 1.68 years respectively.

Conclusion Nutritional status has a crucial role in determining pubertal stage, ovarian and uterine volumes among Egyptian girls during the pubertal process.

PS-007 THE EFFECT OF VITAMIN D REPLACEMENT THERAPY ON INSULIN RESISTANCE AND HYPERANDROGENISM IN ADOLESCENTS WITH POLYCYSTIC OVARY SYNDROME

¹N Paunovic, ²V Bembo, ¹V Culačić-Vojinovic, ³A Stevanovic. ¹Endocrinology Division Internal Medicine Department, Railway Health Care Institute, Belgrade, Serbia; ²Department of Pediatrics and Neonatology, Hospital in Fondi ASL Latina, Fondi Latina, Italy; ³Cardiology Division Internal Medicine Department, Railway Health Care Institute, Belgrade, Serbia

10.1136/archdischild-2014-307384.302