576 THE RELATIONSHIP BETWEEN METALS EXPOSURE AND METABOLIC SYNDROME AMONG ELECTROPLATING WORKERS IN TAIWAN

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Introduction Electroplating is required in printed circuit board (PCB) manufacturing factories. Electroplating workers may expose to metals in electroplating processes, and metals exposure will increase cellular oxidative stress and induce insulin resistance. Since insulin resistance is known to be associated with metabolic syndrome, we assessed the relationships between metals exposure and metabolic syndrome among electroplating workers.

Methods We recruited 172 electroplating workers and 84 office workers from 4 factories. Volunteers were required for overnight fasting, and we collected questionnaire, urine and blood samples in the morning. We used homeostasis model assessment of insulin resistance (HOMA-IR) to assess insulin resistance, and the criteria of metabolic syndrome was according to Taiwan Health Promotion Administration.

Result The study showed urinary concentration of vanadium (0.11 vs 0.07 µg/g creatinine, p<0.001), iron (8.81 vs 6.88 µg/g creatinine, p=0.03), nickel (1.66 vs 1.4 µg/g creatinine, p=0.02), zinc (351 vs 298.2 µg/g creatinine, p=0.002) in the exposed group are statistically significant higher than those of the reference group. By using the multivariate-linear regression, urinary nickel, arsenic, cadmium, lead showed significant positive correlation with HOMA-IR, and urinary zinc, arsenic, cadmium, lead showed significant positive correlation with fasting glucose. Besides, some urinary metal levels showed significant positive correlation with triglycerides, waist circumference, or blood pressure. Some of the urinary levels had negative correlation with high-density lipoprotein.

Conclusion Urinary nickel, copper, chromium, cadmium, lead are associated with metabolic syndrome. Elevating urinary concentrations of these five metals may induce metabolic syndrome.

465 THE FACTORS WHICH INFLUENCES TO THE SERUM ADIPONECTIN LEVEL AMONG JAPANESE WORKERS WITH DECLINING RENAL FUNCTION

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Introduction This study aimed to investigate factors which influences to the serum adiponectin level among Japanese workers with declining renal function.

Methods This study involved all participants who had undergone measurement of the serum adiponectin level at least one time at annual health examination during the period from 2008 to 2016 among Japanese workers in a railway company. We conducted analyses of participants with declining renal function. For those with serum adiponectin levels measured multiple times during this period, health examination data obtained during the year when the most recent level was measured were used for analysis.

The participants were classified into 4 categories according to eGFR. Categories G3a, G3b, G4, and G5 were 45–59, 30–44, 15–29 and <15 mL/min/1.73 m^2; and the serum adiponectin level was obtained for each group.

Next, factors' affecting the serum adiponectin level was investigated among indices of lifestyle-related diseases and different lifestyles measured at health examination. The serum adiponectin level was used as a dependent variable, while eGFR, indices of lifestyle-related diseases, and different lifestyles were used as independent variables. Multiple regression analysis was performed to identify items significantly influences to the serum adiponectin level.

Results This study included 646 participants, and was 98.3% male. The mean serum adiponectin level was 8.6 µg/mL (1.8–32.5). The levels of the categories divided by eGFRs were 8.1 (G3a), 10.3 (G3b), 13.5 (G4), and 15.6 (G5). Multiple regression analysis identified four items as being significantly associated with the serum adiponectin level (standardised regression coefficient): eGFR (0.334), body mass index (0.241), the presence/absence of regular sleeping habits (0.114), and low-density lipoprotein (0.077).

Conclusions In the participants with declining renal function, the serum adiponectin level was significantly associated with some items. Estimated GFR showed the greatest standardised regression coefficient, indicating that eGFR strongly affects the serum adiponectin level.

915 MATERNAL OCCUPATION IS ASSOCIATED WITH MATERNAL GLOBAL DNA (HYDROXY) METHYLATION IN THE SECOND TRIMESTER OF PREGNANCY

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Introduction Environmental factors, such as nutrition and occupational exposure can influence epigenetic marks like DNA methylation, which play a role in the development of chronic diseases.

Methods Data of the MAternal Nutrition and Offspring's Epigenome (MANOE) study was used to assess the effect of maternal occupation on maternal and infant DNA (hydroxy) methylation levels. Mothers were categorised in job categories according to the International Standard Classification of Occupations (ISCO). Maternal global DNA (hydroxy)methylation levels during each trimester of pregnancy and at delivery

(n=122) was measured in whole blood via LC-MS/MS. Data were analysed with a one-Way ANOVA.

Results We found statistically significant differences in maternal global DNA methylation (p=0.008) and global DNA hydroxymethylation (p=0.004) at 20 weeks of pregnancy. Post hoc tests revealed that global DNA methylation and global DNA hydroxymethylation level was significantly lower when the mother had an intellectual/scientific/artistic profession (6.36% and 0.13%) as opposed to being a manager (7.77%, p=0.007% and 0.22%, p=0.002) or administrative staff (7.71%, p=0.003% and 0.2%, p=0.005). No significant differences between different working groups were found for global DNA (hydroxy)methylation in the first and third trimester of pregnancy and at delivery.

Conclusion The mother's occupation was associated with maternal global DNA (hydroxy)methylation levels only in the second trimester of pregnancy. The change in maternal global DNA (hydroxy)methylation in the second trimester of pregnancy could be due to hormonal changes during pregnancy, a shift in the one-carbon metabolism in the middle of pregnancy, but based on these results we also have to take into account maternal occupational exposure.

| 1290 | THE ASSOCIATION BETWEEN METAL CONCENTRATION IN HUMAN BODY AND SERUM ADVANCED GLYCATION END-PRODUCTS (AGES) AMONG METAL WORKERS |

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Introduction Advanced glycation end-products (AGEs) are the products formed by physical adhesion of serum glucose to some serum macromolecules such as proteins or nucleotides after a series of chemical reactions. Based on past studies, AGEs are associated with many diseases, especially cardiovascular diseases such as T2DM and atherosclerosis. Therefore, we conducted a study to explore the association between metal concentration in human body and serum AGEs.

Methods This study is a cross-sectional design, and its study population is composed of 283 workers exposed to metal in northern Taiwan. We used questionnaires to obtain the basic demographic data of the workers. Also, we collected the blood and urine samples from the workers, and we used appropriate methods to analyse the serum and urine samples including the concentration of metal, markers about metabolic diseases and serum advanced glycation end-products. We performed statistical methods containing mainly multivariable regression to analyse the data.

Result According to the study results, we found the serum nickel (Ni), serum lead (Pb), and serum thallium (Tl) are statistically crucial to the dependent variable serum AGEs concentration even after adjusting the possible covariates comprising age, gender, HbA1C, total cholesterol, BMI, diet habits, the smoking habit, medical history of hypertension, medical history of coronary artery disease and medical history of chronic obstructive pulmonary disease. The regression coefficients B for Ni, Pb, and Tl are 0.15 (95% CI: 0.06~0.24; p<0.001), 0.17 (95% CI: 0.10~0.24; p<0.001), and 0.20 (95% CI: 0.02~0.38; p<0.05) respectively. Besides, we acquired significant positive associations between serum AGEs concentration and any of the Framingham risk score.

Discussion According to our research findings, we suggested the positive association between serum Ni, Pb and Tl levels with serum AGEs concentration. Furthermore, the workers with higher serum Ni, Pb and Tl levels might increase 10 year risk of cardiovascular disease via the pathogenic processes of AGEs.

| 961 | COPENHAGEN PSYCHOSOCIAL QUESTIONNAIRE-3 (COPSOQ-3): TURKISH VALIDATION STUDY |

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Introduction The Copenhagen Psychosocial Questionnaire-3 (COPSOQ-3), has been developed to assess psychosocial risks in the workplace. questionnaire consisted 25 dimensions as follows: work pace, quantitative demands, emotional demands, demands for hiding emotions (DHE), influence at work, possibilities for development, degree of freedom at work (DFW), meaning of work, commitment to the workplace, predictability, recognition, role-clarity, role-conflicts, quality of leadership, social support from colleagues, social support from supervisors, sense of community, insecurity over employment, insecurity over working conditions, work-life conflict, trust, organisational justice and job satisfaction. In total, COPSOQ-3-TR version included 78 items and 23 dimensions. The aim of the study was validation of the form of the COPSOQ-3 to Turkish language.

Methods This is a methodologic study. The field study has been carried out in three workplaces (Call centre, plastic and metal industry) Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to assess the suitability of the sample for factor analysis. Validity of the dimensions were investigated with exploratory factor analysis. The principal component analysis and varimax rotation methods used to identify the factor structure. The internal consistency was assessed by the Cronbach's alpha coefficient.

Results 807 respondents' questionnaires were evaluated. Fifty-seven percent of them were men. Mean age of men and women were 32.1 ± 7.4, 27.1 ± 6.6, respectively. Sampling adequacy was considered adequate (KMO=0.884). The factor analysis of COPSOQ-TR identified seventeen factors with eigenvalue higher than one and explained%63.6 of the total variance. The Cronbach's alpha values of 20 dimensions were found between 0.705 and 0.884. The Cronbach's alpha values of two dimensions (DHE and DFW) were found 0.638 and 0.643. The model is found that excellent fit (Chi-Square=5860.80, df=2672, P-value=0.00000, RMSEA=0.038, SRMR=0.05, CFI=0.97).

Discussion Findings have shown that Turkish version of the Copenhagen Psychosocial Questionnaire-3 is a reliable and valid instrument that can be considered useful tool to measure the psychosocial risks in Turkish population.