

cookstoves on heart rate variability (HRV) and cardiac repolarization, risk factors for adverse cardiovascular events.

Methods: Forty-eight healthy adults underwent six, 2-hour exposures, including emissions from five cookstoves and a filtered-air control. The target PM_{2.5} exposure concentrations for each were: control, 0 µg/m³; liquefied petroleum gas (LPG), 10 µg/m³; gasifier, 35 µg/m³; fan rocket, 100 µg/m³; rocket elbow, 250 µg/m³; three stone fire, 500 µg/m³. Five-minute means of HRV and cardiac repolarization outcomes were measured immediately and three hours following exposure. Linear mixed effects models compared the outcomes after cookstove exposure to after control.

Results: Compared to control, overall HRV (SDNN: standard deviation of duration of all NN intervals) was lower immediately after exposures to gasifier (difference compared to control = -0.12 milliseconds {ms}; 95% confidence interval = -0.22, -0.03 ms) and three stone fire (-0.12 ms; -0.21, -0.02 ms); there were no differences for other cookstoves. SDNN was higher at three hours after LPG (0.13 ms; 0.04, 0.23 ms) and rocket elbow (0.15 ms; 0.06, 0.25 ms) exposures compared to control; there were no differences for other cookstoves. There were no differences in changes of cardiac repolarization (QTc: interval of time between Q and T interval) following cookstove exposures compared to control.

Conclusions: Results immediately following exposure suggest small adverse impacts on HRV for some cookstoves compared to control; however results overall were inconsistent. Immediate adverse impacts (during the 2-hour controlled exposure) for these parameters may not have been captured in this design.

Pyrethroid exposure, attention and executive function in 6-year old children from the Infants' Environmental Health Study (ISA)

Peñalosa Castañeda J¹, Mora Benamburg J¹, Padilla Mora M¹, Fajardo Soto A¹, Córdoba L¹, M. Mora A^{1,2}, Eskenazi B², Lindh C³, van Wendel de Joode B¹

¹Universidad Nacional De Costa Rica, ²University of California, ³University of Lund

OPS 55: Pesticides and neurological outcomes, Room 412, Floor 4, August 26, 2019, 1:30 PM - 3:00 PM

Background: Pyrethroid insecticides may impair children's neurodevelopment but little evidence from prospective studies is available. In Costa Rica, pyrethroids are widely used for vector control. We examined whether prenatal and current pyrethroid exposure was associated with impaired attention and executive function in children from the Infants Environmental Health Study (ISA). **Methods:** To evaluate attention and executive function, we applied the Conners Continuous Performance Test (CPT-II) and Dimensional Change Card Sort (DCCS) in 6-year old children (mean 6.4 ± 0.4 years) (n=268). We obtained repeated urine samples during pregnancy and 5-6 years of age, determined 3-(2,2-dichlorovinyl)-2,2-dimethyl-cyclopropanecarboxylic acid (DCCA) and 3-phenoxybenzoic acid (3-PBA), and summed concentrations of both. We subsequently ran separate linear regression models for log₁₀ transformed mean prenatal, and mean child metabolite concentrations and CPT-II, and ran separate logistic regression model for DCCS. We adjusted a priori for child age, child sex, HOME score, and maternal education. We also ran analysis stratified by sex.

Results: Median (p₂₅-p₇₅) prenatal and current specific gravity-adjusted summed DCCA and 3PBA were 2.4 (1.3-3.9) µg/L and 6.4 (3.8-10.5) µg/L, respectively. Prenatal summed DCCA and 3PBA concentrations were associated with increased CPT-II T-scores of error commissions for boys (β= 4.5, 95%CI -0.1, 9.1, per ten-fold increase in exposure), but not for girls (β= -5.1, 95%CI -11.9, 1.8), or all children (1.6, 95%CI -2.3, 5.6). Prenatal summed DCCA and 3PBA were associated with lower scores of DCCS for all children (OR=0.25; 95%

0.1-0.9). Current DCCA and 3PBA concentrations were not associated with measures of attention or executive function. **Conclusion:** Children aged six years with higher prenatal exposure to pyrethroids had poorer executive function as compared to children with lower prenatal exposure. Boys with higher prenatal exposure also had poorer attention, whereas girls did not. Prenatal exposure to pyrethroid may affect children's neurodevelopment, some effects may be stronger in boys.

Study of KAP Investigation and Interventions on the Impact of Migrant Workers under Heatwaves

Peng C¹

¹Shenzhen Center for Disease Control And Prevention

TPS 662: Climate change effects on labour, migration and infections, Exhibition Hall, Ground floor, August 28, 2019, 3:00 PM - 4:30 PM

Background

As one of the weather-related extreme events due to climate change, heatwaves are often linked with heat stress, cardiovascular disease and urinary system disease among the general population. Migrant workers who generally have lower social and economic status are more susceptible to heatwaves, particularly for those working outdoors. However, studies in relation to intervention in response to heatwave among migrant workers are limited because of their high mobility. This study aims to investigate knowledge, attitude and practice (KAP) associated with heatwave among migrant worker, analyse the effectiveness of interventions; therefore, develop prevention programs for migrant workers.

Methods

Migrant workers (n=121) in a metro construction site were investigated in Shenzhen. Baseline survey, urine collection, heatwave interventions, second survey and urine collection were conducted during the heatwaves (between June and October). Interventions include heatstroke education, drugs provision, supplements to heatstroke prevention, and early warning for heatwaves. Questionnaires were input by Epidata 3.1 software, all statistical analyses were performed by Excel2013 and SPSS20.0 software.

Result

121 workers were included in the baseline survey with a follow up rate of 95.0%, and 105 migrant workers (91.3%) were considered eligible and included in the analyses, with 83.3% males, 51.9% aged of 40-60 and 37.4% with high school education or above. The KAP investigation showed that there were statistically significant improvement for the knowledge of heatstroke treatment (p<0.01) and the habits of daily life (p<0.05) among workers. Positive results of nitrite, protein, specific gravity and glucose were found in the urine samples, with statistically significant increased (P<0.01) between two surveys. The results of urinary biliary and pH values also increased in the urine samples with statistical significant (p<0.05).

Conclusions

Interventions were found to have positive effects on the prevention of heatwaves for the outdoor migrant workers.

The Effects of Meteorological factors on the Incidence of Hand, Foot and Mouth Disease in Shanghai, China

Peng L¹, Ye X¹, Kan H², Chen R², Zhou Y³, Hao L³

¹Shanghai Meteorological Service, ²School of Public Health, Fudan University, ³Shanghai Pudong New Area Center for Disease Control and Prevention

TPS 662: Climate change effects on labour, migration and infections, Exhibition Hall, Ground floor, August 28, 2019, 3:00 PM - 4:30 PM

Hand, foot and mouth disease (HFMD) is a kind of class c infectious diseases with the highest incidence in China, this study aimed to explore the association between hand, foot and mouth disease (HFMD) and meteorological factors among different groups.