this was only statistically significant for coarse particulate matter (per iqr, OR 1.27; 1.07, 1.51).

Conclusion

Characteristics of the built environment and air pollution were associated with poor mental health. Further factor and mediation analysis will be carried out to shed light on interrelations between these factors and pathways to poor mental health.

Road traffic noise, air pollution and diabetes prevalence in three European cohorts

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Background/Aim

Environmental factors such as road traffic noise and air pollution can negatively affect human health but are often studied separately. This project aims to study the associations between road traffic noise, air pollution and diabetes in three European cohorts.

Methods

Cross-sectional data were available from LifeLines (n=61,032 collected during 2007-2013 in the Netherlands), UKBiobank (n=405,817 collected during 2006-2010 in the UK), and HUNT3 (n=25,459 collected during 2006-2008 in Norway). Residential road traffic noise exposure (Lden) for 2009 was assessed using a European noise model based on the Common Noise Assessment Methods in Europe framework (CNOSSOS-EU) and residential ambient air pollution exposure (PM10 and NO2) for 2007 was estimated using land use regression models. Prevalence of type 2 diabetes was obtained with questionnaires. Regression analyses were adjusted for self-reported demographic and lifestyle factors.

Results

Across the three participating cohorts, mean age ranged between 43-56 years, mean Lden between 49-56 dB(A), and type 2 diabetes prevalence ranged between 1.5-3.5%. Adjusted regressions showed that a 10 dB(A) increase in Lden was associated with higher odds of diabetes type 2 prevalence in the UKBiobank (odds ratio 1.086, 95% CI 1.051-1.121). Adjustments for PM10, NO2 attenuated associations between noise and type 2 diabetes, but remained statistically significant. Associations were stronger in men. Air pollutants (while adjusted for noise) were also associated with type 2 diabetes prevalence (OR 1.468, 95%CI: 1.397-1.543 per 10µg/m3 of PM10). No associations were found between noise, air pollution and diabetes in the LifeLines and HUNT3 cohorts.

Conclusions

We observed that higher exposure to road traffic noise and air pollution was significantly associated with higher prevalence of type 2 diabetes in the UKBiobank. No evidence of such associations was observed in the Dutch LifeLines and Norwegian HUNT3 cohorts. Longitudinal analyses are currently conducted to further evaluate these findings.

Birth outcomes of pregnant women exposed to mercury and non-chemical stressors in Suriname

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Background/Aim: The use of mercury for gold extraction in artisanal and small-scale gold-mining operations in Suriname’s interior is of growing concern. Mercury exposure during pregnancy may negatively influence birth outcomes and paediatric neurodevelopment. The Caribbean Consortium for Research in Environmental and Occupational Health is assessing exposure to metals and non-chemical stressors in over 1000 mother/child dyads. We evaluated the association between mercury exposure and non-chemical stressors in Surinamese pregnant women and their birth outcomes.

Methods: data from 763 pregnant women were analyzed for total hair mercury using cold-vapor atomic absorption spectrometry (cut-off USEPA action level ≥1.1µg/g), standardized questionnaires of the Cohen Perceived Stress Scale (cut off ≥ 20 for high stress) and the Edinburg Postnatal Depression Scale (EPDS cut off ≥12 for probable depression) that were completed during early pregnancy and associated with birth outcomes collected from clinical records and parturition books using Pearson chi-squared test. Adverse birth outcomes included preterm birth (PTB, <37 weeks), low birth weight (LBW, <2500g) and low APGAR score (AS<7 at 5 minutes).

Results: 27.3% of the women had elevated total Hg hair levels that exceeded the USEPA action level, 23.8% had adverse birth outcomes, 18.4% PTB, 14.7% LBW and 5.1% had low AS. Women with no or primary education had more adverse birth outcomes compared to women with secondary education and up (39.0 vs. 22.5%; p=0.018). A borderline association was found between perceived stress and adverse birth outcomes (p=0.058; 30.1 vs. 21.3%), there was no association with mercury level or depression.

Conclusions: more than a quarter of pregnant women in Suriname had elevated hair mercury levels. Nearly one out of four women had adverse birth outcomes of which preterm birth and low birth weight were the most common; lower educated women were more vulnerable. Neurodevelopmental assessment of these children is currently being done.

DEHP and BPA by therapeutic exposure: a risk evaluation on population of Catania

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Background/Aim

Phthalates and Bisphenol A (BPA) compounds are widely used as plasticizers and they are endocrine disruptors (ED) rapidly metabolized. These are used for production of packaging for food and drugs. Although many studies have been carried out by dietary exposure, conversely only few studies of risk evaluation by exposure during drug therapies are available. Aim of our study was to carry out a first risk evaluation on population of Catania exposed to DEHP and BPA by the drugs consume.

Methods

A transversal-observational study was carried out according to the standards of Good Clinical Practice.

Urine of 54 volunteers was collected at LIAA. The volunteers joined the study by signing the informed consent and by filling out a semi structured questionnaire (anthropometric information, demographic, lifetime residential history, history of active, passive and cessation smoking,
occupational exposure, presence of pathology and relative drug therapy). DEHP, MEHP, free BPA and BPA-glucuronide were detected by UPLC-ESI-TQD Xevo (Waters) using a ACQUITY® UPLC HSS C18 SB (1.8µm - 2.1 x 50 mm) column. Statistical analysis was carried out by SPSS software.

Results
The correlation of BPA and DEHP concentrations in the subgroups, “therapy” (T) or “not in therapy”(NT), was not significant. The correlations of BPA vs BPA glucuronide in all subjects and in the subgroups T and NT were significant, at the same the correlations of DEHP vs MEHP and of total BPA vs total DEHP. No distinction was made between the various diseases nor the type of drug taken.

Conclusions
Our results underline the possibility to use metabolites for the exposition evaluation with great environmental, reagents and costs saving. We need a larger sample for a powerful statistical analysis.

Environmental contaminant body burdens and the relationship with blood pressure measures among Indigenous Canadians: Results from the Nituuchischaayhtaau Aschii: Multi-Community Environment-and-Health Longitudinal Study in Eeyou Istchee, a cross-sectional study

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OPS 18: Cardiometabolic effects of chemical exposures, Room 110, Floor 1, August 26, 2019, 1:30 PM - 3:00 PM

Blood pressure (BP) increments increase cardiovascular disease (CVD) risk. Recently, clinical practice guidelines lowered hypertension definitions. Indigenous Canadians experience slightly higher CVD compared to non-Indigenous Canadians. Environmental contaminant body burden from persistent organochlorine pollutants, organic compound concentrations (OCs), and metals have been linked with hypertension risk. This study examined the role of OCs, and metals on hypertension among Indigenous Canadians.

Methods: Using data from the Environment-and-Health Study in Eeyou Istchee territory of northern Quebec, Canada, the sample restricted to adults over 20-years of age, with valid BP measures and detectable body burden mixtures. In total, n=774 participants were eligible, of which, n=452, 58% females. Principal Component Analysis (PCA) was used to reduce the complexity of the contaminant data. Orthogonal principal component (PC) variables were used as independent predictors in both multivariable linear regression, and modified Poisson regression models with robust variance estimation, deriving relative risk for hypertension defined using systolic BP (SBP) ≥140 mm Hg or diastolic BP (DBP) ≥90 mm Hg.

Results: Three PCs were extracted from the PCA analysis. PC-1, PC-2, and PC-3, explained 72%, 5.5% and 4.8% of the variation, respectively. Polychlorinated biphenyls and OCs positively highly loaded on the first axes (PC-1), followed by moderate loadings for metal mercury. Lead loaded positively, whereas DDT negatively loaded on PC-2, and cadmium strongly loaded on the third PC axis. Systolic BP measures were significantly associated with PC-1 across all models. In the final model, PC-1 increased SBP β=1.72 (95% CI 0.42, 3.02). PC-3, represented by cadmium was associated with SBP but after adjusting for body mass, PC-3 was no longer associated with SBP. Hypertension was consistently and significantly associated with PC-1 across models, RR=1.14 (95% CI 1.02, 1.28) in the final adjusted model.

Conclusion: Using a reduction technique, this cross-sectional analysis found OCs to be associated with increased SBP.