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Tattoos: a new ancient carcinogen?

ABSTRACT

Tattoo prevalence has been rising steeply during the last decades, a development seen worldwide mostly in the younger age groups. However, only few are aware that tattoo inks may contain harmful environmental and chemical contaminants classified as (probably) carcinogenic to humans. Amongst them are polycyclic aromatic hydrocarbons, primary aromatic amines and metals. However, as studies underlying this classification did not consider subcutaneous exposure, it remains to decipher whether tattoos might cause cancer in humans.

As it is known that the largest part of the nano- and microparticle sized injected tattoo pigments travels to the local lymph node and, from there, potentially to other organs, the systemic exposure is not restricted to the skin. Especially in young individuals exposure to tattoo ink is worrisome as they will have a long-term exposure to these substances. To understand the potential relationship of tattoos and certain kinds of cancer, epidemiological studies are needed, which are scarce worldwide. A sound study design needs to assure a long-term follow-up of (young) tattooed cohort participants, prospective and objective recruitment of medically confirmed cancer outcomes and the inclusion of major sociodemographic, medical and lifestyle confounders.

This in mind, the first longitudinal population based cohort study on tattoos and cancer is currently being set-up in the framework of the French national cohort "Constances". The CRABAT (Cancer Risk Associated with the Body Art of Tattooing) study is led by the International Agency for Research on Cancer (IARC) and leverages the infrastructure of the French national cohort "Constances". Here we present its conceptual framework, study design and exposure assessment.

KEYWORDS: -

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Zare Sakhvidi MJ, Lafontaine A, Lequy E, Berr C, Dadvand P, de Hoogh K, Vienneau D, Goldberg M, Zins M, Lemogne C, Jacquemin B

Greenspace exposure and dimensions of depressive symptoms: findings from the French CONSTANCES cohort

ABSTRACT

BACKGROUND AND AIM - The association between greenspace exposure and different dimensions of depression is yet to be established. We aimed to explore this association in a large population-based cohort. METHODS - Data from the enrollment phase of the French CONSTANCES cohort (2012-2020) were analyzed cross-sectionally. Depressive symptoms were measured by the Centre of Epidemiologic Studies Depression (CES-D) questionnaire allowing to compute a total CES-D score (≥19 used as a cutoff score to identify individuals at risk for clinical depression), and including four dimensions (depressed affect, disturbed interpersonal relations, low positive affect, somatic complaints). Residential surrounding greenspace exposure was quantified using the satellite-based Normalized Difference Vegetation Index (NDVI) at 300m buffer during the enrollment year. Adjusted multiple logistic and linear regression models were developed, reported as odds ratio [OR] for dichotomized total depressive symptoms, and ß for dimension-scores, with a 95% confidence interval [CI] for an interquartile range [IQR] increase in exposure. Analyses stratified by personal and socioeconomic variables were performed. RESULTS - In total 185,781 participants were included (age: 46.80±13.61 years, 53.5% women). Residential surrounding greenness (average NDVI: 0.53; IQR=0.28) was significantly associated with lower odds of having depressive symptoms (OR [95%CI]: 0.94 [0.90-0.99]). This exposure was also associated with a lower scores for all dimensions (ß [95% CI]: -0.043 [-0.053: -0.033]; -0.016 [-0.026:-0.006]; -0.020 [-0.030:-0.010]; and -0.019 [-0.029:-0.009] for depressed affect, disturbed interpersonal relations, low positive affect, and somatic complaints, respectively). We found suggestions for potentially stronger protective associations in men and participants with lower income. CONCLUSION - Residential surrounding greenspace was associated with lower depressive symptoms in general, and all four dimensions especially depressed affect and somatic complaints. Considering depression prevalence, its burden, and the increasing trend of urbanization, our finding is of importance for policymakers.

KEYWORDS: Nature; Greenspace; Mental health; CONSTANCES Cohort

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Association between greenspace exposure and different domains of cognitive function in the French CONSTANCES cohort

ABSTRACT

BACKGROUND AND AIM - Greenspace has been suggested to be associated with better cognitive function in adults. We assessed the association between residential surrounding greenspace and different domains of cognition in the French CONSTANCES cohort. METHODS - We included 76,482 participants aged 45 and older, who performed tests at enrollment (2012-2019) on three cognitive domains: episodic memory (fast free and cued recall), language skills (semantic and lexical fluency), and executive functions (digit-symbol substitution, trail making test part A and B [TMT-A and TMT-B]), and a global cognitive score (a composite of these six tests). Residential surrounding greenspace was quantified using satellite-based Normalized Difference Vegetation Index (NDVI) at 300m buffer around the participant's home in the enrollment year. We modeled the cross-sectional associations for urban, suburban, isolated cities, rural, and Paris separately, using multiple linear regressions on standardized outcomes (TMT-A and TMT-B were log-transformed) adjusted for age, sex, education, recruitment center, neighborhood deprivation, and air pollution. RESULTS - The participants were 57.6±7.2 years old, 54.9% women, and 49.7% with university education. Average NDVI at 300m buffer (IQR: 0.26) was 0.58±0.14, 0.67±0.12, 0.71±0.11, 0.81±0.08, and 0.35±0.09 for urban, suburban, isolated cities, rural, and Paris respectively. We found significant beneficial association between residential surrounding greenspace and semantic fluency at urban, suburban, isolated cities, and rural areas (ß=0.048 [95% CI: 0.018, 0.079], 0.068 [0.037, 0.098], 0.105 [0.033, 0.177], 0.096 [0.033, 0.158] respectively). We also observed similar beneficial associations for executive functions in urban and suburban areas. No associations with greenspace were found for episodic memory, lexical fluency, and global cognitive score in most communes of residence. CONCLUSION - Exposure to greenspace could be beneficial for cognition, especially semantic and executive functions, in adults. Urban and suburban residents probably gain more cognitive benefits from greenspace.

KEYWORDS: Natural environment; Cognitive function; Alzheimer's disease; Environmental epidemiology

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Dwelling mouldy area size and current asthma in adults from the French CONSTANCES cohort

ABSTRACT

BACKGROUND AND AIM - Mould presence is a key determinant of poor indoor air quality. Data on mouldy contamination and its effects on respiratory health from nationwide population-based studies are scarce. We studied the associations between visible mould, including for the first time their area size, and current asthma in adults from the population-based cohort Constances. METHODS - Participants responded to 2019 self-questionnaire on mould exposure. Reports of visible mould (yes/no), and of mouldy area, i.e., maximum area size in bathroom, kitchen, or main living quarter (living room, bedroom), expressed as: $0m^2$, spots, $<0.2m^2$, $[0.2m^2-1m^2[$, $[1m^2-3m^2]$ or $>3m^2$) were studied. Between 2019-2021, participants had one medical exam including a self-questionnaire on respiratory health. Current asthma was defined among ever-asthmatics by self-report of asthma attacks, symptoms or treatments in the last 12 months. Logistic models adjusted for age, sex, smoking and occupant-surface ratio were performed. RESULTS - Visible moulds were reported by 21.2% of the 21,390 adults included in the analyses (mean age: 48 years, 51.4% women, 31.8% living in flats, 7.7% current asthma). Mouldy area of spots, $<0.2m^2$, $[0.2m^2-1m^2[$, $[1m^2-3m^2]$ or $>3m^2$ were reported by 12.9%, 6.0%, 1.4% 0.6%, and 0.3% of the participants, respectively. Report of visible moulds was associated with current asthma (adjusted(a)OR[95%CI]=1.25[1.11-1.41], this association being more marked 1) when restricting to the main living quarter: aOR=1.43[1.20-1.69], or 2) for those living in flats as compared to those living in houses: aOR=1.44[1.19-1.75]. The likelihood of current asthma increased with increasing mouldy area (from spots to $>3m^2$, $0m^2$ as reference): aOR=1.21[1.05-1.39], 1.36[1.12-1.65], 1.09[0.73-1.63], 1.60[0.93-2.74], 1.42[0.62-3.25] (pTrend=0.0004). CONCLUSIONS - More than 20% of participants reported visible mould in a population-based cohort in France in 2019. Visible mould and mouldy area size were associated with an increased risk of current asthma in adults, highlighting the need for prevention measures.

KEYWORDS: Asthma; Mould exposure; Indoor air

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