RISK FACTORS FOR LEAD EXPOSURE IN ADULT POPULATION IN SOUTHERN BRAZIL

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Abstract: Lead exposure is associated with different health outcomes as cardiovascular disease, cancer, kidney disease, and others. In Brazil, there is no continuing national program for measuring blood lead levels (BLL) in the general population and few studies with adults have been published. Identifying the BLL and the possible sources of lead exposure is important to evaluate the impact of lead in human health. The objective of this study was to examine the socioeconomic, environmental and lifestyle determinants of the blood lead levels in adult Brazilian population. A total of 959 adults, aged 40 years or more, were randomly selected in a city in Southern Brazil. Information on socioeconomic, dietary, lifestyle and occupational background was obtained by orally administered household interviews. Blood lead concentration was measured by inductively coupled plasma mass spectrometry technique (ICP-MS). Multivariable analysis was used to examine associations between blood lead levels with socioeconomic, lifestyle and environmental variables. We adjusted for sex, age, race, education, income class, smoking status, alcohol consumption, occupation, red meat or cow milk consumption (Model 1), and for occupation and sex (Model 2). The geometric mean of BLL in the study population was 1.97 µg/dL (95% CI: 1.90-2.04 µg/dL). In Model 1, BLL were positively associated with male gender, older age, drinking and smoking habits, and with less frequent milk consumption. In Model 2, the same trend of association was observed, with higher BLL in nonwhite than in white participants, in former smokers and in persons with current or former employment in lead industries. Income class and education were not associated with BLL. After exclusion of the 95 men current or former employed in lead industries, the geometric mean BLL was 1.88 µg/dL (95% CI: 1.81-1.95 µg/dL) and the associations between BLL with all variables were similar to the previous analyses. There were a total of 10 lead industries located in the studied area. The participants living in the area with more lead industries had higher BLL (3.30 µg/dL) compared with those living in other areas with no or less lead industries (1.95 µg/dL). Despite the low BLL found in this adult population, and since there is no safe limit for lead levels in blood, we reinforce the importance of the evaluation of lead and its impact on human health. Also, lead industries must be monitored and regulatory laws should be implemented to prevent lead contamination in urban settings.

Key words: Lead, blood, adult, environmental.

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