

Lead (Pb) and cadmium (Cd) blood levels and potential hematological health risk among inhabitants of the claimed hazardous region around Qaroun Lake in Egypt

Abstract:

Background: Lead (Pb) and cadmium (Cd) heavy metals are considered potentially hazardous toxins which cause serious health problems. Many studies reported that the water of Qaroun Lake in Fayoum, Egypt with its fish farms was contaminated with Pb and Cd above permissible levels. However, there is a lack of studies addressing levels of these toxic metals among inhabitants. **Objectives:** We aimed to evaluate blood levels of Pb and Cd and their potential health risk among inhabitants around Qaroun Lake. **Materials and methods:** This case-control study estimated Pb and Cd blood levels among 190 individuals from two destinations (near and far away) of Qaroun Lake using an atomic absorption spectrometer after full history taking and routine checkup investigations; Full blood count, serum ferritin, liver enzyme (ALT), and creatinine levels. **Results:** There was a significant difference between blood levels of Pb and Cd heavy metals of inhabitants from near and far away Qaroun Lake destinations (p-value < 0.001). The majority of inhabitants around Qaroun Lake had Pb and Cd blood levels above permissible levels (100% and 60% respectively). Critical levels out of them were 12.1% and 30.3% respectively. In comparison to inhabitants faraway Qaroun Lake, three individuals (2.4%) had Cd above the permissible level, while all of them (100%) had Pb level within the permissible level. There were no statistically significant differences between the two sampled populations as regards hemoglobin level, ALT, creatinine, and ferritin serum levels (p-value > 0.05). The difference between studied populations regarding types of anemia was not statistically significant. Subclinical leucopenia was higher in the population near Qaroun Lake when compare to inhabitants far from the lake (13.6% vs. 4.8%, p-value 0.032). **Conclusion:** Bio-monitoring of populations exposed to Pb and Cd hazardous substances could help in generating an early warning system to reduce the disease burden associated with their toxicity.