

## Clinical Pediatrics and Pediatric Surgery 2017: Blood lead level in children of Kolkata - Kakali Roy - All India Institute of Medical Sciences

**Kakali Roy**

All India Institute of Medical Sciences, India

**Background:** Lead toxicity explanations for about 0.6% of the global load of disease (WHO 2009). A published draft report on Site Assessment of Lead Pollution at an area of Kolkata (having lead smelters) on July 2006, stated high lead level in water, soil, solid waste and air particle. We conducted a health check-up camp for children of that area in 2015 and collected blood samples. In our hospital, we also got 2 sporadic belongings of lead toxicity with frank features of poisoning including lead lines in x-ray.

**Aims & Objectives:** To behaviour a field study to evaluate blood lead level in children residing in dirty area of Kolkata and to look for effect of BLL on hepatological parameters.

**Materials & Methods:** This was a cross sectional observational study on 50 children of age group 1-12 years, who attended the camp. BLL was estimated by Atomic Absorption Spectroscopy (AAS) using graphite furnace atomic absorption spectrometer.

**Results:** The median age of the population was 8 years with higher proportion of males (58%). Median BLL was 4.55 µg/dl and 24% (n=12) of these teenagers had BLL above the CDC recommended cut off value of 5 µg/dl. However, none of the children had BLL >10 µg/dl or anemia (mean hemoglobin of 12.3 g% with normal RBC indices). This is expected as previous studies have clearly shown the association of lead and anemia is only at BLL >10µg/dl though hemoglobin level showed a negative linear dose-response relation with lead level using scatter plot. **Conclusion:** In our study even at known contaminated area, none had BLL exceeding the CDC intervention level. The impartial of this study was to test for reduction in pediatric blood lead levels (BLLs) in Bombay, India, by comparing BLLs collected in 2002 (after use of leaded gasoline was phased out in Bombay) to those collected in a study showed by the George Foundation in 1997 (when leaded gasoline was still used in Bombay). We examined BLL in a total of 754 children less than 12 years of age in two separate sampling campaigns (276 from December 2002 to January 2003 [non-monsoon season]; 478 in June to August 2003 [monsoon season]). BLL was slow using an ESA Lead Care Portable Analyser. We also slow lead in PM10 samples collected in the study region. These data were likened with a study done by the George Foundation in 1997 before the stage out of leaded gasoline. The George Foundation study stated that 61.8% of the 291 broods tested in Bombay had elevated blood lead levels (BLL>or=10 microg/dL). In the present study, 33.2% of the 754 tested children had elevated blood lead levels. The average BLL for the current study population (Geometric Mean=8.36 microg/dL, SD=5.23 microg/dL) was lower than the CDC level of concern (10 microg/dL), with one child diagnosed with lead poisoning (BLL>65 microg/dL). A cyclical

tendency of BLLs was suggested, with BLL in monsoon season (Geometric Mean=9.1 microg/dL, SD=5.7 microg/dL) higher than that in the non-monsoon season (Geometric Mean=7.3 microg/dL, SD=4.0 microg/dL). A seasonal periodicity of lead in PM10 was found, with lead in monsoon season (Geometric Mean=0.04 microg/m<sup>3</sup>, SEM=0.000667 microg/m<sup>3</sup>) lower than that in the non-monsoon season (Geometric Mean=0.38 microg/m<sup>3</sup>, SEM=0.10 microg/m<sup>3</sup>). The overall level of airborne dust (PM10) in monsoon season (56.2 microg/m<sup>3</sup>) was lower than in the non-monsoon season (273.0 microg/m<sup>3</sup>), presumably due to precipitation. The comparatively higher BLLs in the downpour season, in the attendance of inferior air lead heights, propose ingestion of water or food, with greater lead contamination in the monsoon season, as a possible pathway contributing to elevated BLLs in these children in the monsoon season. These consequences prove a important achievement of the public health system in Bombay, India-achieved by the removal of lead from gasoline. The emphasis should shift in the study region towards sources of lead exposure other than leaded gasoline (lead in paints, lead in Herbal medicines and lead in Kohl).This may be due to principal allowed gasoline, a code basis of lead exposure, is not in use for more than 15 years. This indicates a positive impact of measures taken regarding lead poisoning. But both the sporadic cases were from households engaged in hazardous occupation at home settings, where children had direct daily exposure and these children are more vulnerable to poisoning. These 'HOT SPOTS' or 'POCKETS' are needed to be identified and further research is justified.