Letter to Editor

E-waste and Lead toxicity in children a public health perspective

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Received: 22 Aug 2022 **Accepted:** 03 Sep 2022 **Published:** 30 Sep 2022

Cite this article as: Gowthamkarthic R., Agadi S. E-waste and Lead Toxicity in children a public health perspective. *Soc Determinants Health*. 2022;8(1):1-2 DOI: http://dx.doi.org/10.22037/sdh.v8i1.39211

Dear editor,

Lead is a naturally occurring toxic substance which affects multiple systems in humans, source vary geographically in some countries, the continued use of leaded paint and leaded aviation fuel. Manufacture of lead batteries for motor vehicles contributes to more than three quarters in global consumption of lead. Source of contamination are mainly through inhalation of lead particles during burning melting, recycling, and using leaded fuel and ingestion of lead contaminated water, dust, and E-waste. (1) Globally lead exposure causes 62.5% of idiopathic developmental intellectual disability, 8.2% of hypertensive heart disease, 4.7% of stroke, 4.6% of ischemic heart disease, and 2.9% of chronic kidney disease. Lead exposure accounted for 21.7 million years of healthy life lost (DALYs or Disability Adjusted Life Years) worldwide which was estimated by the Institute of Health Metrics and Evaluation in 2019. (1,2)

Children are more vulnerable to lead poisoning as they absorb 4 to 5 time more lead when ingested compared to adults. At high levels of exposure, it causes CNS symptoms like coma, convulsions, and death. Lead exposure can also cause anemia, hypertension, immunotoxicity, renal impairment and abdominal pain. (2)

Electronic waste is the largest form of waste, which includes anything with a plug, electric cord, or battery. In 2021 about 50 million tons of e-waste is generated globally its predicted by 2050 it could increase to about 120 million tons. Approximately 80% of e-waste is shipped to low- and middle-income countries often illegally, informal workers often children are used to dismantle and/or burn the e-waste. Residents living near these sites are exposed to lead and other toxins. (3) A study done in China in the year 2020 among children aged 3 to 6 years revealed that the risk of blood lead levels more than 10 µg/dl was significantly higher in the exposed group when compared with control group and Hemoglobin levels decreased with elevated Blood lead levels in the experimental group. (4) Another study done in south America among e-waste recycling children and adolescents revealed that younger children had significantly higher blood lead levels when compared with older adolescents. (5)

Prevention strategies include keeping children away from waste sites (especially e-waste sites), safe disposal of e- waste, prevent contamination of water and air in

the processes of recycling e-waste. Prevent children's exposure to lead containing products like paint, fuel, ceramics and pottery vessels used for drinking, cooking and eating. Promotion of good nutrition is vital as it not only reduces lead absorption, but also helps in treating children who already have elevated blood lead levels. Vitamin c iron and calcium help in reducing absorption of lead.

Lead poisoning through e-waste is a raising health concern all around the world, as the use of electronic devices increases day by day. Strengthening of monitoring and reporting system is necessary to know the current magnitude worldwide. Blood lead levels of at risk population are an cost effective way for finding the magnitude. IEC activities should be done to increase awareness.

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