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Investigating Geogenic Lead Contamination and its Effects on Health in Kilifi area, Kenya



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Lead (Pb) toxicity accounts for 0.6% of global disease burden [7]. Humans are exposed through food, water and air. Prolonged exposure affects the nervous, immune among other body systems [2]. Children are more susceptible to its poisoning with a potential damage to the normal brain development [2, 8]. Anthropogenic activities and geogenic sources release it to the environment. In Kilifi area, sedimentary rocks of Triassic to Recent age host a base metal deposit of galena [3]. This area was heavily mined in the 1970s and the un-rehabilitated mines remain exposing rock tailings to weathering agents [4]. Chronic diseases such as rheumatism, anaemia and neuro-developmental disorders for instance intellectual disability and epilepsy that have been associated to heavy metal contamination in other parts of the world have been reported in this area [1, 5, 8]. A study conducted in 2013 show that 7.8/1000 people have Active Convulsive Epilepsy with children being highly affected [6]. Since lead toxicity is also known to cause brain disorders, cardiovascular effects and nephrotoxicity in kidneys, it is important to investigate the relationship between geology and disease prevalence in Kilifi area. This is crucial simply because, over 70% of the locals living below 2 USD per day relying on the natural resources and are mainly subsistence farmers. This study aims at investigating the vulnerability of the Kilifi residents to geogenic lead contamination through analysing soil, water and food crops samples for lead, correlating the analysis results with health data on chronic diseases associated with lead/heavy metal contamination and producing spatial correlation maps.

Keywords:

Geogenic lead, contamination, health, Kilifi

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