

3. Results and discussion

Research resulted the blood lead geometric mean of children was 13.0778 ± 12.3001 ppb, such value indicated that blood lead had elevated the standard concentration recommended by CDC i.e. 10 ppb. *There were significance differences amongst Gebang Sari, Sekaran and Moro Demak children blood lead levels ($p < 0.05$). Gebang Sari ambient lead air was the highest compared to those of other two locations. Compared to Sekaran and Moro Demak, Gebang Sari was dominated by higher children's primary caregivers earning and education levels. OR prevalence of > 10 ppb lead cut-off for earning level was 2,332 (1,49 , 3,65). OR prevalence of > 10 ppb lead cut-off for education level was 2,092 (1,295 , 3,382).*

Effect of ambient lead on blood lead level in this research could be affected by the factors of housing condition, education and family earning. The better the education, family earning and housing condition, the more the decreasing of blood lead level. This indicated by lower blood lead level mean of Gebang Sari children samples, even though the air lead concentration in the location was much higher compare to that of recommended standard, however, the housing condition, earning and education of the primary child's caregivers were categorized as good. On the other hands, the blood lead level mean of Moro Demak children samples was very much high, even though the air lead concentration in the location was much lower compare to that of recommended standard, in spite of this, the housing condition, earning and education of the primary child's caregivers were categorized as bad.

4. Conclusions

Children blood lead levels were not only influenced by ambient air lead but also influenced by housing condition, earning and education of children' primary caregivers.

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The Relationship Among Environmental Lead Exposure, Blood Lead Level in Children, and the Socio-economic Factors of the Children's Primary Caregivers

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1. Introduction

Lead (Pb) is one of the xenobiotic agent that is foreign to the body, and can cause many adverse health effects, including toxicity of the nervous, hematopoietic, renal, endocrine, and skeletal systems, with the CNS as the primary target organ. Presently, impairment of cognitive and behavioral development in infant and young children is the toxic effect of greatest concern. Toxicity of lead occurs from low level exposures from various environmental sources including air, food and water. Lead containing paint, used in older homes built before 1970s or in urban, lower socio-economic status is a major source of lead exposure for young children. The health risk associated with low level exposures to lead, have important implications with respect to its regulation. Standard and health based guidelines limiting environmental exposures to lead have become more of the paramount important over the past decade and are now thought to protect against major adverse outcome. A failure in the establishment of regulatory standards may result in the unacknowledged imposition of substantial health risk on some members of society such as children

This study was aimed to examine the influence of housing condition, earning and education of children' primary caregivers on children blood lead levels in environmental lead exposure.

2. Materials and methods

The study involved 54 children with 5-10-year-old. Twenty three children were coming from Gebang Sari - Semarang City, 17 children were from Sekaran - Semarang Regency, and 14 children were from Moro Demak - Demak Regency, at Central Java, Indonesia. Cross-sectional and historical perspective designs were adopted in this research, that included blood lead, air and water lead levels, and the socio-economic status of the samples. *The collected data were analyzed using non parametric Wilcoxon signed rank test to determine the mean differences of lead among the locations. OR prevalence and frequencies as well as cross tabulation of blood lead level and housing condition, earning and education data were also analyzed.*