

DOSE EFFECTIVENESS OF CALCIUM SUPPLEMENTATION ON REDUCING CHILDREN'S BLOOD LEAD LEVELS IN INDONESIA

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Background and Aims: Population exposures to lead are mainly related to: vehicle exhaust, in areas where leaded-gasoline is still being used; paint and lead solder in canned food; drinking water pipes; and from certain culturally-based exposures, such as use of lead-glazed ceramics or traditional medication. It is well documented that excess exposure to lead causes health problems in children including neurobehavioral deficits. The objective of this study was to examine the effectiveness of daily calcium supplementation doses on reducing blood lead levels (BLLs) among elementary school children in Bandung, Indonesia.

Methods: A community trial study design was used for this study. Forty elementary schools were randomly selected, 400 children enrolled, and a total of 298 children completed follow-up of 3 months period. Schools were divided randomly into two groups of calcium-supplement intervention groups (250 mg and 500 mg). Capillary blood samples were analyzed for lead levels before and after three months of calcium supplementation. Paired-t test, and multivariate risk factors models using Generalized Estimating Equations (GEE) were performed.

Results: The percent reduction in BLLs was 49.8% for group of 250 mg Ca and 74.5% for group of 500 mg Ca. This study found no different association between groups. The reduction in BLLs was associated with calcium supplement, nutritional status, and time of trip to school.

Conclusion: Calcium supplement dose of 250 mg per day was effective to reduce children blood lead levels up to 50%.

Recommendation: These findings suggest that calcium supplementation dose of 250 mg provides a protective effect against lead exposure among school-aged children.

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