Effect of Health Education anf hygiene on blood lead levels, among lead battery workers in Nairobi and Athi River, Kenya

Author: Ngara, Jared Ochieng'

Abstract:

Lead is a highly toxic, non-degradable metal that can result in damage to the brain, kidneys, blood, central nervous and reproductive systems. This study sought to identify the effect of health education and improvement on hygiene standard interventions on blood lead levels among factory workers at Associated Battery Manufacturers (Nairobi) and Chloride Metals Kenya (Athi-river). The study design was quasi experimental time series, where data on blood lead levels collected from April 2003 to December 2005, before the interventions were compared to the samples collected from April 2006 to December 2009, when the intervention measures were put in place. Purposive sampling technique was applied where a total of 97 respondents participated in the study. Data for this study was collected using four instruments: questionnaires, laboratory results on blood lead levels, interview to key informants and direct observation. The statistical package for the social sciences (SPSS) was used for data processing and analysis. The data was mainly analyzed using descriptive statistics in form of frequency distribution, cross tabulation and percentages. A 2 tail t-test at 95% confidence interval was performed on the mean of various variables. From the study results, a comparison was made on the mean blood lead levels in ug/dl before and after the intervention measures were put in place and the calculated t- value was 2.03 against the table value of 1.96 with a p-value of 0.045. It was concluded in general that, the intervention measures put in place brought significant change towards lowering the mean blood lead level value among factory workers. Specifically, the study revealed that there was statistical significant difference in the blood lead level mean values on the following tested variables; use of personal protective equipment with a calculated t- value of 6.66 against table value of 2.26. Average level of knowledge on lead and its effects on health with a calculated t-value of 2.05 against the table value of 1.96. Daily intake of water of up to one litre per day with a calculated t-value of 2.02 against the table value of 1.96, thus; just enough water is adequate in blood lead level reduction but not too much of it. Among the hygiene measures tested; daily bathing after work was significant with a calculated t-value of 2.36 against the table value of 1.96. For respondents who took alcohol, the calculated t-value was 2.04 against the table value of 1.96 with a p-value of 0.045, hence statistical evidence that alcohol consumers could have benefited more from the interventions especially with regard to hygiene interventions. Emanating from the findings and conclusions drawn from this study, the study recommends that the stake holders in the lead industry provide correct and adequate personal protective equipment (PPE) for its entire workforce, enhance health education to improve knowledge on lead and its ill health effects, provide bathroom facilities for the ladies working in the lead industry and to scrap off the use of rewards and warning letters as a form of intervention. Further research has been suggested to establish the role of vitamin C, fruits and alcohol on blood lead levels. It is important to carry out the same study on other battery manufacturing companies and lead industries for a bigger sample size and to compare results.