Children's blood lead: ethnic differences in home cleaning practice in Seri Serdang, Selangor

Abstract

This was a cross-sectional study aimed at determining the association between blood lead concentrations in the children below 4 years old with the ethnic differences in home cleaning practices in Seri Serdang housing area. Sixty children from the study area were chosen using purposive sampling technique. About 55% of the total respondents were Malay while 45% of the respondents were Indian children. Blood samples were collected from the children using heel-prick method and were analyzed by using Graphite Furnace Atomic Absorption Spectrometer Model GBC 908AA (GFAAS). Home cleaning practices included frequency of sweeping, mopping, cleaning and vacuuming. Indoor dust samples were collected with NIOSH surface wipe sampling methods (1996) using the moistened tissue sized 10cm × 10cm. Indoor dust concentration was calculated using gravimetric technique. The dust lead was analyzed using GFAAS according to NIOSH Analytical Methods (1996). The mean value and standard deviations for the blood lead were 4.52 ± 0.64 ug/dl, indoor dust level 320.8 ± 143.2 g/m^2 and indoor dust lead ranges from 6.53 × 10^{-4} $ng/g/m^2$ to $3.94x10^{-1}$ $ng/g/m^2$. Blood lead concentration of these children was not significantly correlated with ethnic ($r=-0.013$, $p=0.403$) and home cleaning practices, frequency of sweeping ($r=-0.130$, $p=0.320$), mopping ($r=-0.033$, $p=0.800$), cleaning ($r=-0.065$, $p=0.619$) and vacuuming ($r=-0.185$, $p=0.158$). But the indoor dust was significantly correlated with dust lead level ($r=-0.432$, $p=0.001$). There was also significance correlation between dust lead level with blood lead concentration ($r=0.361$, $p=0.005$) and home cleaning practices such as frequency of sweeping ($r=-0.329$, $p=0.010$) and mopping ($r=-0.257$, $p=0.047$). In conclusion, ethnicity and home cleaning practices did not influence the blood lead concentration in children but the indoor dust contamination contributed to high dust lead concentration.