

Indoor Air Pollution Effects on Physical Growth of Children under 5 Years from Solid Fuel Combustion

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Abstract : Solid fuel combustion is an important source of indoor air pollution (IAP) in developing countries that has adverse health impacts particularly in children. This study was conducted to determine the effect of IAP due to solid fuel combustion on physical growth of children under five in a Sri Lankan setting. A prospective study was conducted in a mixed population comprising urban and semi urban residents. The study included 240 children under 5 who were permanent residents of the area. Physical growth was assessed by measuring anthropometric indices based on the World Health Organization (WHO) guidelines and standards. Exposure levels were defined according to the main type of fuel used for cooking at home: children residing in households using biomass fuel or kerosene as the main type of fuel for cooking were classified as the "high exposure" group and children resident in households using liquefied petroleum gas (LPG) or electricity for cooking were classified as the "low exposure" group. Sixty percent of the children were classified as from the "high" exposure group and 40% of the children were classified as from the "low" exposure group; 54% of the children were male. At baseline, the prevalence of wasting was 17.1% and the prevalence of stunting was 10.4%; the mean z-score for weight for height was - 0.85, weight for age was - 0.46 and height for age was -0.38. At baseline, children from the "high" exposure group had a significantly lower mean weight for height z-score ($p=0.02$) and a mean height for age z-score ($p=0.001$) as compared to children from the "low" exposure group after adjusting for confounding factors such as father's education, mother's education and family income. Poor maternal education was significantly associated with lower height for age z-scores ($p=0.04$) after adjusting for exposure status. IAP due to combustion of biomass fuel leads to chronic malnutrition.

Keywords : children, growth, indoor air pollution, solid fuel

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