

**Risk Factors for Acute Lower Respiratory Tract Infections in Children  
Under Five Years of Age in Juba, Southern Sudan**

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**A Thesis Submitted in Partial Fulfilment for the Degree of Master of  
Science in Applied Epidemiology in the Jomo Kenyatta University of  
Agriculture and Technology**

**2009**

## ABSTRACT

Acute lower respiratory tract infection is a leading cause of morbidity and mortality in children under five years of age in developing countries. Although several investigations have been carried out in Africa and countries bordering Southern Sudan on risk factors for acute lower respiratory tract infections, no such studies have been carried out in Southern Sudan. This study sought to identify modifiable risk factors for ALRTI among children less than five years in Sabbah Children's Hospital in Juba, Southern Sudan.

A case-control study was conducted between June 2008 and January 2009. Fifty four (54) cases of ALRTI fulfilling WHO criteria for bronchiolitis and pneumonia aged one month to five years and admitted in paediatrics wards in Sabbah Children's Hospital in Juba were identified. Another fifty four (54) children in the same age group admitted in the same wards with different conditions other than respiratory conditions were also identified as controls. A structured questionnaire was administered to the parent or caregiver. Data was collected on sociodemographic, nutritional and household environmental risk factors and was entered in the computer using Epi Info version 3.3.2.

The mean age for cases was 19.8 months and 20.5 months for the controls. The sex distribution of the children was 57.4% (31/54) males and 42.6% (23/54) females among the cases and 53.7% (29/54) males and 46.3% (25/54) females among the controls. The mean age for mothers and caregivers was 25.5 years for the cases and 24.8 years for the controls. Majority of caregivers of cases and controls were 88.9% (48/54) and 94.4% (51/54) females and the remainder were 11.1% (6/54) and 5.6% (3/54) males respectively.

Both parents and caregivers for cases and controls had similar levels of illiteracy (51.9% vs 46.3. %); p-value > 0.05. Overcrowding was associated with incidence of ALRTI but the

association was marginal (79.6% vs 90.7%);  $p\text{-value} > 0.05$ . Income of the parents was not significantly associated with ALRTI. Most parents in both cases and controls had income lower than 200 Sudanese Pounds (100 USD) (88.9% vs 85.2%);  $p\text{-value} > 0.05$ . Among the nutritional variables compared between cases and controls, early weaning before six months of age was not significantly associated with ALRTI (11.1% vs 22.2%);  $p\text{-value} > 0.05$ . Malnutrition was present in 40.7% of cases as compared to 46.3% of controls and was not significantly associated with ALRTI,  $p\text{-value} > 0.05$ . Anaemia was present in 90.7% of cases as compared to 72.2% of controls and was significantly associated with ALRTI,  $p\text{-value} < 0.05$ .

Among the environmental variables, 94.4 % of cases had either mud or cow dung floored house as compared to 88.9% for controls. This was not statistically significant associated with ALRTI,  $p\text{-value} > 0.05$ . Only 5.6% households for cases did not have windows as compared to 9.3% for controls. House ventilation and ALRTI were not statistically significant,  $p\text{-value} > 0.05$ . In lighting the houses, 85.2% of cases used wood or kerosene lamps as the source of lighting compared to 79.6% controls which was not significantly associated with ALRTI,  $p\text{-value} > 0.05$ . Majority of houses, 82.4% (89/108) for both cases and controls used firewood or kerosene lamps for lighting and cooking. Cooking fuel other than liquid petroleum gas was not associated with ALRTI, 85.2% (46/54) of cases used wood compared to 72.2% (39/54) for the controls,  $p\text{-value} > 0.05$ .

Family history of smoking was noted in 68.5% of cases as compared to 66.7% for controls, however, this was not statistically significant,  $p\text{-value} > 0.05$ .

The results of data on socio-demographic, other nutritional and household environmental factors were not statistically significant association with ALRTI for children under five years of age. Only severe anaemia had a significant association with ALRTI. Further studies are

necessary to confirm the relationships of these variables with acute lower respiratory infections. However, efforts to improve living conditions, decrease poverty and promote community health may still have important health benefits for the children of Southern Sudan.