

**EFFECT OF MORBIDITY ON CHANGE IN MID-UPPER-ARM
CIRCUMFERENCE IN CHILDREN UNDER FIVE YEARS OF AGE A
COHORT STUDY IN PURWOREJO, CENTRAL JAVA, INDONESIA**

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ABSTRACT

BACKGROUND : Growth and nutritional status of children under five years of age is a major health problem in Indonesia. Common childhood illnesses, e.g. diarrhoeal diseases (DD) and acute respiratory infection (ARI), may show a negative effect on child growth. Child growth, which usually is monitored through repeated weight and/or height assessments, may also be studied by repeated mid-upper-arm circumference (MUAC) measurements.

OBJECTIVES : To study the effect of morbidity (DD & ARI) on MUAC in children 0-5 years of age. To evaluate the impact of potential confounding and effect modifying factors on association between morbidity and MUAC development i.e. socio-economic status, living area and breast feeding.

MATERIAL AND METHODS : A cohort study was carried out to follow morbidity and MUAC development from February 1996 to January 1997, including home visits and examinations every 3 months, totally four times. A sample of 14,500 households was collected using probability proportional to estimated size. This study took advantage of the Community Health and Nutrition Research Laboratory (CHN-RL) surveillance system in Purworejo, Central Java, Indonesia. Data were collected through interviews and MUAC was measured using standard non-stretchable plastic tape.

RESULTS : This analysis was performed on the data set, where complete morbidity and MUAC information was available, 2078 individuals (45.3% of the total sample). MUAC was relatively constant after one year of age, and the average 0-5 years was 14.7 cm. DD and ARI prevalence was highest in the second half of infancy. The overall period prevalence of DD and ARI was 1.4 and 9.9%, respectively. Morbidity also varied with season. There was a small, but significant negative effect of diarrhoea on change in MUAC among infants below one year in the rural area, less so in the urban area. In older children there was no association between morbidity and MUAC velocity. There was a small positive association between maternal education and MUAC development in both age groups.

CONCLUSION : MUAC, which has been suggested as an alternative to other anthropometric assessments, increases rapidly in infancy, and is thereafter relatively constant. Diarrhoeal diseases, which occurred less frequently in this study than reported from the national level, showed a negative influence on MUAC development in infancy. However, in this study MUAC development from 12 months and onwards was not influenced by the load of illness. Thus, MUAC seems to be less sensitive in reflecting the morbidity history of the child, as compared to what is reported for other anthropometric measurements.

Key-word : Mid-upper-arm circumference, growth, diarrhoea, acute respiratory infection, children, Indonesia.