

# Comparison of accuracy of published weight estimation formulae with actual weights among children attending Kitwe Teaching Hospital

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## ABSTRACT

**Objectives:** The aim of this study was to compare the accuracy of weight estimations using published traditional and newly derived formulae among children attending Kitwe Teaching Hospital in Zambia.

**Design:** The study used a cross sectional design. Children's actual weight was taken followed by weight estimations using a traditional, "weight (Kg) = 2(age + 4)" and a newly derived, "weight = 3(age) + 7" formulae.

**Main outcome measures:** Actual and weight estimates using two published formulae.

**Results:** The traditional formula under-estimated the average actual weight and across all age groups. While the mean estimated weight from the newly derived formula was not significantly different from the actual mean weight. However, weight estimates

from disaggregated age groups revealed a mixed picture: under-estimated for the age group 2-5 years, over-estimated for age group 6 - 9 years and no significant difference for age group 10 – 12 years. Modification of the traditional formula in an attempt to optimize estimation accuracy produced mean weight that was not significantly different from the actual weight but a mixed picture was observed after further analysis by age groups was performed: over-estimated weight for age groups 2-5 and 6-9 years and underestimated for age group 10 -12 years.

**Conclusions:** This study has also confirmed under-estimation of actual weight by the traditional formula and revealed a mixed picture from the newly derived formula by age groups. The revealed mixed picture has clinical significance of potentially causing either therapeutic failure or drug toxicity when estimated weights are used in dose calculations.

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