

# EFFECTS OF UNDERNUTRITION ON MORTALITY AND MORBIDITY AMONG ADULTS LIVING WITH HIV IN SUB-SAHARAN AFRICA: A SYSTEMATIC REVIEW AND META-ANALYSIS

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## **Background:**

Undernutrition is one of the most common problems among people living with human immunodeficiency virus (HIV), contributing to premature death and the development of comorbidities within this population. In Sub-Saharan Africa (SSA), the impacts of these often inter-related conditions appear in a series of fragmented and inconclusive studies. Thus, this review examines the pooled effects of undernutrition on mortality and morbidities among adults living with HIV in SSA.

**Methods:** A systematic literature search was conducted from PubMed, EMBASE, CINAHL, and Scopus databases. All observational studies reporting the effects of undernutrition on mortality and morbidity among adults living with HIV in SSA were included. Heterogeneity between the included studies was assessed using the Cochrane Q-test and  $I^2$  statistics. Publication bias was assessed using Egger's and Begg's tests at a 5% significance level. Finally, a random-effects meta-analysis model was employed to estimate the overall adjusted hazard ratio.

**Results:** Of 4,309 identified studies, 53 articles met the inclusion criteria and were included in this review. Of these, 40 studies were available for the meta-analysis. A meta-analysis of 23 cohort studies indicated that undernutrition significantly (AHR: 2.1, 95% CI: 1.8, 2.4) increased the risk of mortality among adults living with HIV, while severely undernourished adults living with HIV were at higher risk of death (AHR: 2.3, 95% CI: 1.9, 2.8) as compared to mildly undernourished adults living with HIV. Furthermore, the pooled estimates of ten cohort studies revealed that undernutrition significantly increased the risk of developing tuberculosis (AHR: 2.1, 95% CI: 1.6, 2.7) among adults living with HIV.

**Conclusion:** This review found that undernutrition has significant effects on mortality and morbidity among adults living with HIV. The findings from this review may be used to update the nutritional guidelines used for the management of HIV, especially in limited-resource settings.