A Time-Series Analysis of Malaria Control and its Effects on Pediatric Blood Transfusions in Rural Zambia

Background

Malaria related mortality remains a serious burden in sub-Saharan Africa, particularly among children. Blood transfusions can reduce mortality among children with severe malarial anemia. There has been little research conducted to date to measure the impact of malaria control on the use of blood transfusions in health facilities.

Methods

We carried out a time series analysis of facility and patient record data from Macha Mission Hospital, a rural referral hospital, over an eight-year period (2000-2008). We used multivariate analyses with an auto-regression-moving-average model to assess the relationship between the scale-up of malaria control and the use of pediatric blood transfusions. We also investigated the association between malaria control scale-up and the use of blood transfusions in other patient wards.

Results

This study showed show that, in years when malaria control was scaled up, there were an average of 21.9 fewer pediatric blood transfusions per month as compared to the years when malaria control was not scaled up (95% CI 8.1-35.8; p<0.01), representing a 56% reduction in the monthly use of pediatric blood transfusions. Pediatric admissions for severe malarial anemia declined over the same period. In the maternity ward, there were 1.1 additional blood transfusions per month during the years of malaria scale-up (95% CI 0.1-2.1; p<0.05) as compared to years when malaria control was not scaled up.

Conclusion

This study provides important evidence that malaria control contributes to lowering pediatric admissions for severe malarial anemia and thereby lower the use of pediatric blood transfusions.