Background Annual school-based mass treatment with praziquantel is the cornerstone for schistosomiasis control among school-age children in Uganda. However, uptake of treatment is low. We evaluated strategies for improved uptake of mass treatment and the effects on the prevalence and mean intensity of *S. mansoni* infection.

Methods Through serial cross-sectional surveys conducted in 2011 and 2012 in 12 primary schools in Jinja district and a cluster randomised trial conducted in 2013, the levels of uptake of praziquantel and the prevalence and mean intensity of *S. mansoni* infection among school children were determined. Additionally, in 2012, the effect of increased teacher motivation to distribute treatment was assessed. In 2013, the effectiveness of provision of a pre-treatment snack in improving uptake was evaluated.

Results A total of 1010, 1020 and 1284 randomly selected children were enrolled in 2011, 2012 and 2013, respectively. Uptake of praziquantel was 28.2% (95% CI: 22.9%–33.6%) in 2011. Prevalence and intensity of *S. mansoni* infection was 35.0% (95% CI: 25.4%–37.9%) and 116.1 eggs per gram of stool (epg) (95% CI 98.3–137.1), respectively. With increased teacher motivation in 2012, uptake increased to 48.9% (95% CI: 45.8%–52.0%). The prevalence and intensity of *S. mansoni* infection was 32.6% (95% CI: 29.6%–35.5%) and 133.1 epg (95% CI: 99.0%–167.2%), respectively. Provision of a pre-treatment snack in 2013 increased uptake to 85.5% (95% CI: 82.5%–91.7%) and reduced the prevalence and intensity of *S. mansoni* infection to 8.2% (5.6%–12.2%) and 15.9 epg (95% CI: 12.3%–19.2%), respectively.

Conclusions Although teacher motivation increased uptake of mass treatment, the realised uptake was too low to affect the prevalence and intensity of schistosomiasis among school children. Conversely, provision of a pre-treatment snack achieved a high uptake. The increased uptake significantly reduced the prevalence and intensity of *S. mansoni* infection in this age group.