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A prospective cohort study on the effect of pesticide restrictions on suicide mortality in Sri Lanka hospitals

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Background: Deaths from deliberate pesticide poisoning are a major contributor to suicide deaths in the developing world. In Sri Lanka dimethoate, fenthion (organophosphates) and paraquat (herbicide) had been identified as having high relative toxicity in self-poisoning. In 2008 regulatory authorities in Sri Lanka made a policy decision to remove these compounds from the market place over 3 years. It was estimated that these bans could result in a 30% reduction in deaths.1 This study examines the effectiveness of these bans on deaths and epidemiology of poisoning.

Methods: Exposure and clinical outcome data were prospectively collected on all self poisonings presenting to 6 Sri Lankan hospitals for the years 2005-2015. Data were analyzed by aggregated types of poisoning for the proportion of total presentations and the case fatality rate for each group. Within the pesticide group data the restricted pesticides were identified to allow the effects of the ban to be estimated.

Results: There were 57,889 admissions with self-poisoning from all causes during the study period. Within this group 20,398 were due to pesticides including 2,100 presentations of the banned pesticides. The restrictions were associated with a rapid decline of presentations of poisonings with banned pesticides. Mortality in the entire cohort dropped from 5.71 to 2.1% (Risk ratio 0.37, 95% CI:0.29- 0.47). Reduction in mortality was seen in all study centres. Two major contributors to this change was identified; a reduction in pesticide mortality from 8.9 to 4.8% and an overall decrease in proportion of patients presenting following pesticide poisoning and increase in poisonings with pharmaceuticals. No product could be clearly identified as replacing the banned organophosphates.

Conclusions: The translation of research to policy to practice to removal toxic pesticides was associated with a reduction in hospital deaths from deliberate self poisoning that was consistent with the pre-restriction estimates.