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Impact of national ban of highly hazardous pesticides in suicide numbers in Nepal

Dr Rakesh Ghimire[1], Dilli Ram Sharma[2], Leah Utyasheva[3], Sudan Bista[3], Kopila Gautam[4], Lisa Schölin[2], Michael Eddleston[2]

[1]Tribhuvan University Teaching Hospital, Institute of Medicine, Tribhuvan University, India
[2]Centre for Pesticide Suicide Prevention, University of Edinburgh, UK
[3]Central Police Forensic Science Laboratory, Kathmandu, Nepal
[4]National Forensic Science Laboratory, Lalitpur, Nepal

Aim and objectives:

Intentional pesticide self-poisoning ('pesticide suicide' when lethal) is a public health problem in agricultural communities in LMICs like Nepal. Banning highly hazardous pesticides (HHPs) is a cost-effective intervention to reduce mortality from pesticide suicide. Eight mostly HHPs were banned in Nepal in 2019 while aluminium was reformulated. The objective of the study is to monitor the impact of the ban on pesticide suicide numbers and the agriculture yields.

Methodology:

We analyzed autopsy data from August 2021 to May 2023 from the National Forensic Science Laboratory and Central Police Forensic Science Laboratory following a two-year phase-out period. The pesticide responsible for suicide was identified from laboratory analysis. The findings were compared to data from an earlier study (HOPE GRID 2017-2019) to compare the proportion of compounds involved in pesticide suicide cases. Data on agriculture yields were collected from publications of Ministry of Agriculture and Livestock Development (July 2005 -July 2022). Descriptive analysis was undertaken.

Results:
There were 1,422 pesticide suicides reported by toxicology laboratories, of which 51.4 % were males. The most common pesticides were phosphine gas (49.6 %), organophosphorus insecticides (29.4%) and the combination of organophosphorus and cypermethrin (16.7%). In 2021-23, compared to 2017-19, a smaller proportion of cases were the banned pesticides dichlorvos (n=34/747;4.5% and n=273/450;60%, respectively) and aluminium phosphide (n=121/747;16% and n= 299/891;33%,

respectively). The proportion of cases where the pesticide was not identified was missing in 19% of cases, compared to 46% in 2017-19. Analysis of agricultural data indicated that the bans had no impact on agricultural yield.

Conclusions:

OP insecticides and aluminum phosphide were responsible for most pesticide suicides in Nepal, but the number and proportion of deaths from these pesticides has declined. There has been an increase in identifying the individual pesticide compounds and further encouraging toxicology laboratories can provide improved data that can be used to guide further pesticide regulation.