ORAL PRESENTATIONS

[ID-O#038] Impact of pesticide regulations on mortality from suicide in Nepal

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Background: Intentional pesticide self-poisoning 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 aluminum phosphide was reformulated. Pesticide regulations have reduced pesticide ingestion suicide rates in Nepal, with deaths reported to police decreasing from 1136 in 2019–2020 to 932 in 2022–2023. The objective of the study is to monitor the impact of the ban on the pesticides causing death.

Method: We analyzed autopsy data from Aug 2021 to Jun 2024 from the National Forensic Science Laboratory and Nepal Police Central Forensic Science Laboratory in comparison to data from before (Apr 2017–Feb 2020) and during a two-year phase- out period. The pesticide responsible for suicide was identified from laboratory analysis. Simple descriptive analysis was undertaken.

Results: There were 1926 pesticide suicides were reported by toxicology laboratories between September 2021–June 2024, compared to 2541 before the ban and 527 during the phase-out period. The most common pesticides post-ban were organophosphorus insecticides (40.4%), phosphine gas (35.4%) and combination organophosphorus/ cypermethrin products (8.9%). In 2021-24, compared to 2017–21, a smaller proportion of cases were the banned pesticides dichlorvos (n=74/1393 ;5.3% and n=314/621;50.5%, respectively), aluminum phosphide (n=410/1393; 29.4% and n= 403/1418; 28.4%, respectively) and cypermethrin/ chlorpyrifos (n=85/769;11% and n=291/1393; 20.8%, respectively). The proportion of cases where the pesticide was not identified was missing in 16.1 % of cases, compared to 44% in 2017–21.

Conclusion: OP insecticides and aluminum phosphide caused most pesticide suicides in Nepal. Deaths from cypermethrin/chlorpyrifos combination have increased. Deaths from the OP insecticide dichlorvos significantly declined, and phosphine gas deaths have decreased, but aluminum phosphide deaths remain unchanged. Improved identification of active ingredients may explain these trends. Further investigation into aluminum phosphide use is needed.