

Editorial

Acute childhood poisoning in Sri Lanka

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Childhood poisoning results from a multifaceted interaction between the child, a hazardous substance and the environment¹. In many instances only small quantities of the poison are actually ingested and there is uncertainty as to whether it will prove harmless or whether active measures should be promptly instituted². Time of day, relationship to meals, accessibility of product, recent experience with the substance and family stress are some of the environmental factors involved¹.

In Sri Lanka, there were 2 large studies on acute childhood poisoning. One was done prospectively on 2,100 children admitted to the Lady Ridgeway Hospital (LRH) with suspected acute poisoning over a 15 year period (1985-2000)³. This study was urban based but also included transfers from all over Sri Lanka. The second was a multi-centred hospital based study on 1621 children in the predominantly rural North Central Province (NCP) over a period of 7 years (2007-2014)⁴. The NCP study consisted of a prospective observational study on 383 children from February 2012 to January 2014 at the Anuradhapura Teaching hospital, a prospective observational study on 371 children from February 2012 to January 2014 at the Polonnaruwa District General hospital, a prospective observational study on 242 children from January 2013 to January 2014 at 34 regional hospitals within the NCP, and a retrospective observational study on 625 children from February 2007 to January 2012 at the Anuradhapura Teaching hospital.

In both the LRH and NCP studies, 60% were males. Male predominance is common to most series of childhood poisoning¹. In the LRH study, 78% were less than 4 years old whilst in the NCP study, 80% were less than 5 years old. It is perhaps only around 4 years of age that children understand simple safety rules and have enough good sense not to eat everything they come across¹. In both the LRH and NCP studies, around 4% of poisoning events were intentional. In most cases, intentional ingestion of poison by children is more an act of defiance than a true suicidal attempt. In the LRH and NCP studies there were respectively 0.7% and 0.4% deaths.

In the LRH study, household chemicals were involved in 50% cases, drugs in 30%, poisonous plants in 10%, pesticides in 6%, and miscellaneous substances in 4%. In the NCP study⁴, household chemicals were involved in 30% cases, drugs in

25%, poisonous plants in 20%, pesticides in 6.6%, and miscellaneous substances in 15%. These differences could be due to the predominantly rural nature of the NCP. The surprisingly low percentage of pesticides in a predominantly agricultural area could be due to the fact that parents were more cautious in storage of pesticides being aware of the danger they posed to their children. In the LRH study, route of poisoning was ingestion in 99.7% cases, inhalation in 0.2% and dermal absorption in 0.1%. In the NCP study, route of poisoning was ingestion in 97.6% cases, inhalation in 2.3% and dermal absorption in 0.1%.

Kerosene oil was the commonest household chemical ingested accounting for 36% of total poisoning in the LRH study and 18.9% of total poisoning in the NCP study. The frequency of kerosene oil poisoning can be attributed to several factors. Firstly, kerosene oil is still used for lighting and cooking and is thus stored in almost every home. Secondly, kerosene oil containers are often kept in easily accessible places such as the kitchen floor, a low table or a low shelf and are hardly ever stoppered. In the LRH study, 67% of the children who ingested kerosene oil were given coconut milk to induce emesis as a first-aid measure and 57% of the children ingesting kerosene oil developed pneumonitis. In the NCP study, 26.6% of the children who ingested kerosene oil were given coconut milk to induce emesis as a first-aid measure and 20.2% of the children ingesting kerosene oil developed pneumonitis. This marked improvement over a period of 15-20 years is probably due to better education and greater awareness among people regarding the risks of giving coconut milk as a first-aid measure in kerosene oil poisoning.

In the LRH study, common drugs ingested were drugs for local application (surgical spirits, camphor oil, calamine lotion etc.), anticonvulsants and psychiatric drugs. Drugs for local application were often kept in unlabelled containers alongside the baby's medicine. It is thus not surprising that most of these substances were mistakenly administered to the child by an adult. Anticonvulsants and psychiatric drugs are usually prescribed on a fortnightly or monthly basis so that they are available in bulk in the house. Furthermore, children see adults taking these drugs on a regular basis and tend to imitate them⁵. Thus, it is not surprising that these drugs were so frequently ingested by children.

In the NCP study, the commonest drug ingested was paracetamol. This difference is probably due to the rural setting of the NCP study. In the LRH study, poisonous plants ingested included *Jatropha curcas*, *Ricinus communis*, *Dieffenbachia*, *Adenia palmata*, *Amanita phalloides*, *Manihot utilissima*, *Nicotiana tabacum*, *Thevetia peruviana*, *Gloriosa superba*, *Abrus precatorius* and *Datura stramonium*. The cases of *Adenia palmata* poisoning were transferred from Galle and Matara hospitals. In the NCP study, the commonest poisonous plant ingested was *Jatropha curcas*, other common poisonous plants ingested being *Thevetia peruviana* and *Abrus precatorius*. In both the LRH and NCP studies, the most common pesticide causing acute poisoning was organophosphate. Ingestion of pieces of mosquito coils accounted for 6% of poisoning in the LRH study³ and 3.9% of poisoning in the NCP study⁴. Fortunately, these contain low concentrations of pyrethrins or synthetic pyrethroids and their toxicity is low because of poor absorption via the gastrointestinal tract⁶. The most common miscellaneous substance responsible for acute poisoning was petrol in both LRH and NCP studies.

In both LRH and NCP studies more than 80% of acute poisoning events occurred in the house and adjoining garden. This was similar to studies from South Asia (85.7%)⁷ and Central Asia (89%)⁸. Whilst the bedroom was the commonest location for poisoning in studies from developed countries where medicines were the commonest type of poison⁹, in Asian studies, where kerosene oil was the commonest childhood poison, most of the poisoning events occurred in kitchen area^{7,8}. In both LRH and NCP studies most children did not need any active intervention and this finding is comparable with other studies in literature¹⁰.

These details are particularly relevant as the theme of the Sri Lanka College of Paediatricians (SLCP) for 2018/2019 is 'Child Safety'. Measures are being taken to improve knowledge and attitudes towards improving child safety in Sri Lanka by the SLCP through many avenues, including the incorporation of it in all Regional Clinical Meetings of SLCP, designed to cover the entirety of the country.

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The author declares that there are no conflicts of interest.

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