

A Qualitative Study of Acute Poisoning Related Emergencies in the Paediatric Age Group

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Abstract

Background: This qualitative study presents an in-depth evaluation of the contributory psycho-socio-cultural and physical-economic factors related to paediatric poisoning in rural Sri Lanka.

Method: The study was conducted at paediatric wards of Anuradhapura teaching hospital (THA) over a period of two years (2012 – 2014). Main methods of data collection were participants' narrative and focus group discussions (FGDs). All parents of children with acute poisoning were recruited to FGDs. The structure of phenomena was developed based on descriptive phenomenological inquiries and key themes were identified at data analysis stage.

Results: 383 parents participated in focus group discussions. Data were categorized to four domains; (1) parental awareness of poisoning risks, (2) presence of child, parent and environment related risk factors, (3) issues related to first aid care and provision of care until child was brought to emergency care unit, and (4) possible measures to prevent further poisoning. Interaction of multiple risk factors was observed in children with both intentional and unintentional poisoning. Accidental poisonings were associated with certain cultural practices, unsafe environment and unsafe storage of poisons. Children with intentional poisoning frequently had disrupted family relationships. Harmful first aid measures and delayed presentation at the primary care unit had negative impact on poisoning related outcomes. Parents believed community education, safe storage of poisons, and safe environment would likely bring down poison related morbidity.

Conclusion: Person, poison and environment related risk factors can lead to acute poisoning emergencies in children in rural Sri Lanka. Often multiple risk factors interact to bring about the poisoning event. Avoidance of harmful first aid measures and early presentation at the primary care unit would bring down poisoning related morbidity. Effect of community education, safe storage of poisons and safe environment should be evaluated in the view of preventing poisoning.

Keywords: Children; Emergencies; Poisoning; Rural; Sri Lanka

How to cite this article: Dayasiri MB.K.C, Jayamanne S.F, Jayasinghe C.Y. A Qualitative Study of Acute Poisoning Related Emergencies in the Paediatric Age Group. *Asia Pac J Med Toxicol* 2018;7:68-74.

INTRODUCTION

The North-Central province of Sri Lanka consists of two districts which are predominantly agricultural and except for two small city areas the entire province is identified as rural. The majority of the geographic region of the two districts is covered by forests and the climate is dry over a major part of the year. Pertaining to these circumstances, poisoning emergencies due to agro-pesticides and poisonous plants are more common in these geographical areas compared to other parts of the country. Weerasuriya et al. reported that Anuradhapura and Polonnaruwa districts were among the five districts with highest incidence of pesticide poisoning. The majority of people use pesticides in high amounts for their agricultural activities. Accidental poisoning is also high due to incorrect handling of pesticides and lack of storage of chemicals (1). In addition to these reasons, many farming parents in rural territories of the province engage their

children in the field work since agriculture has been interwoven with their livelihood. Increased agrochemical use, improper use of personal protective equipment and increased engagement of children in agricultural activities contribute to the higher risk of agrochemical poisoning in the paediatric age group (2).

The economic impact of treating patients following self-poisoned patients in Anuradhapura district is substantial. Approximate total government treatment cost of treating all poisonings in Sri Lanka for the year 2004 was US\$ 866 304. The healthcare expenditure of treating a self-poisoned patient at Anuradhapura teaching hospital was US\$ 31.83 (3). The average cost per transfer was US\$ 14.03. A recent study reported that more than 50% of children were transferred following pesticide poisoning in the same district (4). It is, therefore, pivotal that effective preventive interventions are in place, given these potential risk factors, so that acute poisoning emergencies related morbidity and mortality can be

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Received 29 June 2018; Accepted 14 August 2018

brought down whilst minimizing its economic impact.

There are only a few studies published based on the patterns of acute poisoning related emergencies among children in Sri Lanka. Lucas et al. studied patterns of acute poisoning among children over a period of fifteen years (1985-2000) at the largest children's hospital in Colombo, Sri Lanka (5). The study reported that safe storage of poisons, clear labeling of medicines, and publicizing the detrimental effects of harmful first aid measures are likely successful interventions for prevention of acute poisoning in the paediatric age group. Recent evidence by quantitative studies and found poisoning patterns and outcomes among children in rural Sri Lanka, and the complications were potentially preventable by community education and awareness on timely attention to seek medical care, and avoidance of harmful first aid practices (6-10). However, the roots of causation of both accidental and non-accidental poisoning likely represent "tip of iceberg" phenomena, that by simply questioning caregivers might not reveal caregivers' perspective of the burden and nature of poisoning and viable solutions to prevent poisoning. Further, the qualitative studies generate better insights to explore complex interactions of multiple risk factors related to poisoning in the paediatric age group. This qualitative study presents an in depth evaluation of the contributory psycho-socio-cultural and physical-economic factors related to paediatric poisoning emergencies among children in rural Sri Lanka.

METHODS

Study setting and design

This qualitative-phenomenological study was hospital based and conducted at paediatric wards of Anuradhapura teaching hospital (THA) over a period of two years (February 2012 – January 2014). THA is the largest hospital of North-Central province of Sri Lanka which provides dwelling to a predominantly rural population. The hospital also functions as the referral center for the entire district.

Participants

All in-patient children who presented with either acute unintentional or intentional poisoning were included in the study. Children were recruited to the study following their poisoning events were confirmed by care givers in the initial evaluation at the hospital emergency department and subsequently at the general paediatric ward. Only children who were between 9 months to 12 years of age were recruited to the study. Children with food poisoning, snake envenomation, allergic reactions, adverse drug reactions and those with doubtful poisoning were excluded from the study.

Data collection

Data were collected from the caregivers of children who met inclusion criteria. Interviews with the caregivers were conducted mostly on the same day of admission to minimize possible recall bias. The main methods of data collection were focused group discussions and parents' narrative. Discussions were around 10-15 minutes in duration. Two to six parents participated in FGDs.

The FGDs were carried out with parents of children to identify the contributory psycho-socio-cultural and physical-economic factors associated with paediatric poisoning

emergencies. All FGDs were preceded by quantitative evaluation of patterns of acute poisoning in the individual child (9). Therefore, if a key issue was noted in the initial evaluation it was discussed in detail in the focused group discussions to qualify key issues. Focused group discussions involving children were carried out, in addition to interviewing parents of children who had intentional poisoning. All FGDs were carried out by the principal investigator to minimize information retrieval bias and to assimilate an in depth and rich knowledge regarding variable socio-cultural-economic factors and parental concerns leading to accidental and deliberate poisoning among children. FGDs with children were non-directive though the data collections were focused on identifying various psychological problems of the child, educational deprivation, socio-cultural factors, and parental stresses such as marital disharmony, economic problems, parental drug or alcohol abuse, poor parenting styles and inadequate supervision of the child which could potentially lead to intentional paediatric poisoning.

Data generated through FGDs and parents' and children's narrative were recorded as field notes with quotations where relevant. Discussions were carried out until a thematic saturation was achieved and the key points were summarized to parents to reconfirm and reflect on the findings.

Data analysis

Data collection and descriptive analysis were done simultaneously in most FGDs. Second order descriptive and interpretative analysis of the content data was done based on field notes to identify patterns. Investigators analyzed verbatim transcripts to develop four key domains: (1) parental awareness of poisoning risks, (2) presence of child, parent and environment related risk factors, (3) issues related to first aid care and provision of care until the child was brought to emergency care unit, and (4) possible measures to prevent further poisoning.

Data reliability and auditing

Data collections in the current study were subjected to close monitoring by South Asian Clinical Toxicology Research Collaboration (SACTRC) and the supervisors of the study.

Ethical approval

Ethical clearance for the study was issued by ethical review committees, faculty of medicine, University of Kelaniya and Rajarata University of Sri Lanka. Written informed consent was obtained from participant children's parents or guardians.

RESULTS

Three hundred and eighty-three children and their parents were enrolled to the study over a two-year study period. Table 1 describes the basic information of participant children. Parents subjectively perceived that they were facing stressful events in 103 (26.9%) poisoning emergencies. However, immediate stressful events in children were present only in 20 (5.2%) poisoning events, and they mostly preceded intentional poisoning. Parents perceived that 370 (96.6%) and 371 (96.9%) children had satisfactory relationships with father and mother, respectively. Among children with

Table 1. Basic information of participant children

Age group	<5 years	299 (78%)
	>5 years	84 (22%)
Gender	Male	223 (58%)
	Female	160 (42%)
Location of poisoning	Indoor	232 (63.2%)
	Outdoor	151 (36.8%)
Categorization of the poison	Household poisons	120 (31.3%)
	Medicinal poisons	112 (29.3%)
	Plant poisons	65 (17%)
	Pesticide poisons	37 (9.7%)
	Miscellaneous poisons	49 (12.8%)
Nature of poisoning	Accidental	364 (95%)
	Intentional	19 (5%)
Complications	Aspiration/chemical pneumonitis	20 cases
	Acute hepatic injury	10 cases
	Cardiac arrhythmias	5 cases
Mortality	0.5% (2 cases)	

intentional poisoning, only 8 (42%) and 9 (47%) children had satisfactory relationships with their parents. All children had age appropriate development in gross motor skills; however, 6.7%, 7.3% and 2% of children had delayed development (delay of more than six months when assessed based on Child Health Development Record) in fine motor and vision, speech and language, and social skills development respectively. Noteworthy behaviors as perceived by parents included attention seeking behavior (31%), impulsivity (12%) and hyperactivity (2.7%).

Major domains identified included parental awareness regarding poisoning risks, presence of child, parent and environment related risk factors, practices related to first aid care and care provision until child was brought to emergency care unit and possible measures became available to prevent further poisoning (Table 2).

1. Parental awareness and concern with regard to poisoning risks

Focused group discussions with regard to parental awareness presented a range of parental opinions.

Culture is interwoven with people's attitudes and practices. People from North Central province inherit a rich culture nourished by experiences of many generations. The investigators had several experiences where cultural practices had an influence on the causation of poisoning accidents. A parent was quoted; "*We never knew that Rosary Pea (Olinda/Country Licorice/Abrus precatorius) was such a poisonous seed to cause damage to our child. Those climbers were present for years in our home garden. We used to play with the seeds of the plant during New Year season when we were children. But soon after this incident, we*

destroyed all those plants in our home garden" (Case 230). The whole Castor oil plant (*Ricinus communis*) was of medicinal value in traditional Sri Lankan medicine and had a frequent presence in rural North Central province. A three-year-old child had ingested seeds of Castor oil plant at home and at the time of ingestion, it had been mashed to form a pulp to apply over a wound. The mother was quoted; "*We use these plant seeds to make traditional medicines to apply over wounds (Case 222). We never knew it was poisonous*". Similar incident happened to a two-year-old child who ingested camphor oil which familiar members used as a pain-relieving agent (Case 240).

Often the accidental poisonings were unexpected. If the poisoning risk was not anticipated and due concern was not given to make environment safe, the child became a victim of acute poisoning. A parent was quoted; "*This was the first time my child ingested those tablets. We usually keep medicines in a bottle and it was only there on the table for this morning. I never thought he would ingest them. It was a mistake*" (Case 77). The investigators observed that the majority of children, who presented with accidental poisoning of medicines, had the medicines kept in non-lockable containers in their houses. Lack of knowledge also can lead to continuous exposure to poisonous substances that will increase the risk of poisoning. A parent was quoted; "*I sent my child to collect the milk from "Endaru" plants (physic nut/Barbados nut/purging nut/Jatropha circus) to make ink. The school has asked for a drawing and people in this area use the milk extracted from these plants to make ink for writing and drawings. We did not think it was poisonous*" (Case 6).

Parents often perceived their children as miniature adults as they grew up, especially if they were the eldest amongst the siblings. Poisoning accidents can potentially happen if children lack the knowledge about the risk for serious effects if instructions are not followed and are poorly supervised. A child unintentionally ingested a higher dose of salbutamol leading to tremors and the parent was quoted; "*Both of us are working as clerks and we are out of home during daytime. I asked my eleven-year-old daughter to take medicines alone*" (Case 227). The same attitudes and practices were observed in cultivation areas where children helped farming activities after returning from school. The pesticides were unsafely stored in most poisoning events where children had unintentional ingestion of these agents whilst being engaged in field activities.

A few parents ignored the poison ingestion in their child and waited till symptoms occurred following the ingestion. It was mostly true for medicines which were already used by another family member without having side effects. It was only when the symptoms occurred; they brought the child to hospital. A parent was quoted; "*My child had ingested a sleeping tablet of her grandmother yesterday. As she did not have symptoms, we were not troubled enough to bring her to the hospital. However, she did not wake up this morning as usual and was quite sleepy. Then, we rushed to the hospital*" (Case 245).

Children are more emotional than parents. Expectations and needs also differ in different age groups. Even a negligible

psychological trauma to an adult might be disastrous to a young child. Poor parental sensitivity to children's needs and expectations can have severe consequences and the child might take up intentional poisoning to express his cry of distress and need for help. A mother of a child who intentionally ingested a pesticide was quoted; "His father shouted for watching television and not going to the market to bring vegetables. He loved our child very much and never thought he would ingest the pesticide" (Case 316). A similar event was revealed in an eleven-year-old girl who intentionally ingested Oleander. The father voiced; "I refused to give money for her annual picnic at school. I scolded her for asking money as I did not have much at that time. I never thought she would take the poison" (Case 126).

2. Presence of child, parent and environment related risk factors

It was revealed during the FGDs that multiple risk factors can interact to bring about the poisoning event. A 4-year-old child who had trisomy 21 with global developmental delay presented following ingestion of Organophosphate insecticide at home (Case 143). Father was a farmer and the sole bread winner of the family. Mother was on treatment for depression and father was having a stressful life looking after two of them. Father's act of storing pesticides at an unsafe place led to the poisoning event. But as the issues are multiple mere provision of advice on safe storage did not seem to solve the issue and they needed to be looked at holistically. Similarly, parental stresses due to chronic illnesses in the sibling negatively affected the care given to the other child. Several parents admitted that they were stressed and exhausted in giving care to children having congenital heart disease, epilepsy, and severe developmental delay after another child presented with accidental poisoning.

It was reported that four poisoning events were secondary to erroneous prescription of medicine by a general practitioner and two events were due to erroneous issuing of medicines by the pharmacy. The parents living in remote areas with limited transport difficulties and limited access to physicians trusted health care workers almost 100%. The parents often did not bother to be vigilant on prescription errors whilst getting the medications itself was a challenge.

Parents' own malpractices of taking medicines can be detrimental to the child safety. A seven-year-old child ingested eight paracetamol tablets following headache (Case 39). On inquiry, he replied; "*My mother took paracetamol tablets frequently whenever she had pain. I thought taking eight would bring quick relief*". Not only the medicines should be safely stored, but also the public should be well aware of the toxicity risks of them. In a different scenario, an eight-year-old child had seen his sick grandmother with schizophrenia attempting suicide a couple of times, and frequent quarreling between parents before the child deliberately attempted poisoning (Case 89).

Majority of children had good relationships with parents, siblings and peers, and there was a wide variation. Some young children were more attached to one parent compared to others. In the absence of that parent, they became more irritable and impulsive, not obeying the other parent and did mischievous acts. In the current study, fifty-nine fathers

(15.4%) were in defense service and most of them found it difficult to be with their children frequently due to occupation. Several children who were more bonded to one parent presented with poison ingestion soon after that parent left out for job for a period of time (middle-east housemaids/defense and security workers; Case 74, 121, 252, 311, 363 and 376).

Lack of family support in qualitative terms was also a risk factor. The investigators interviewed several parents, both of whom were agricultural workers. A parent was quoted; "It was difficult for us to pay for another person to help with work in the field. So we both came to field during daytime and brought our children with us as no one was at home" (Case 91). Most of them kept agrochemicals in the field during work. There were several incidents where children ingested poisonous plants and agrochemicals at cultivation fields (Case 11, 44, 71, 9, 138, 156, 212, 255, 287, 304 and 323). Ten mothers in our study at THA were employed as housemaids in Middle East, and they were not available at the time of poisoning. Children were looked after by grandparents who also had chronic illnesses in some cases.

Though harmful alcohol use by father was not a direct risk factor for unintentional poisoning, it seemed to confound the poisoning risk when other risk factors were present. Harmful alcohol use had not only undermined parent-child relationships and good parenting, but also it had been counter-productive to the care given to children by the mother. Also, it was found to have a noteworthy predisposition to intentional poisoning among children.

Inappropriate storage leads to a number of accidental poisoning events. A six-year-old girl ingested a shampoo which displayed a sliced orange in the original packing (Case 161). Many families from remote NCP used kerosene oil for lighting lamps, as cooking fuel and to chase away venomous snakes. The investigators had several experiences with children who accidentally ingested kerosene oil, diesel and petrol which were stored in beverage and juice bottles. Improper disposal of medicines after they were used up resulted in poisoning. Several parents admitted that pills were ingested from the floor after having been thrown out unsafely. Some children also had craving for syrup and a 3-year-old boy ingested 'Clorex' detergent thinking that it was syrup (Case 100).

'Parental stress' was considered in qualitative terms. The researchers understood that stress was present when at least one of the following caused parental concern; serious illness or bereavement within family or among close relations, pregnant mother, economic strains, lack of support from extended family, harmful alcohol use related problems, marital conflicts, single parent or one parent away from home, recently moved house, anxiety or depression in a parent, a working mother, and having a sibling less than one year. Stress was present in 26.9% of the parents who participated in the study with presence of at least one factor mentioned above. The following explanation of a mother whose child ingested kerosene oil revealed stresses she faced at home with taking care of the child; "I did palm reading as a living. I have two children. My husband used to beat me when he was at home and he was a problem drinker. He does

not give money to our children's expenses. I don't have support from my parents since I married him. Our small house has only one room and a kitchen area. My elder child who was three years ingested kerosene while I was cooking for them" (Case 193).

Environment in rural Sri Lanka contained a number of poisonous plants. It was a frequent observation that *Jatropha* (physic nut/Barbados nut/purging nut/*Jatropha curcas*) was grown in many home gardens and public places such as schools where they were found in fences to demarcate the boundary. Undoubtedly, it had been the most common plant poison in the study. The investigators also observed that fourteen children were admitted to a local hospital from a rural school after they had ingested *Jatropha* seeds accidentally during the play time (Case 197 – 210). Accidental poisoning of *Adenia* (*Adenia palmata*) was infrequently reported in the current study and close resemblance of the nut to passion fruit had been a predisposing factor for its unintentional ingestion by most children (Case 219, and 301).

(3) Practices related to first aid care and care provision before child was brought to emergency care unit

Harmful first aid measures were practiced in 113 children (29.5%) over the two-year study period. Most of the practices included forceful administration of water, coconut water, soapy water and milk to induce vomiting. These practices had been routed over generations in those communities. A mother described the child's grandmother's advice; "It was my mother who advised me to give coconut milk following the child developed symptoms after taking kerosene oil. She believed that it would reduce the toxicity of poison" (Case 27). One child from a remote area was given nutmeg (*Miristica fragrans*) seeds with the intention of diluting the poisonous effects of *Jatropha* seeds (*Jatropha curcas*). The mother justified saying, "We lived in a remote area where transport was not available after 6 pm due to threats from elephants. It was my mother who gave nutmeg (*Miristica*) seeds from her experience after mashing it on a stone to dilute the poisonous effects of *Jatropha* seeds.

We did not know that it can also be poisonous" (Case 178). Social support, in terms of transport, was really affecting the villagers of remote areas due to threats by elephants, infrequent public transport service and poor quality of roads. The houses themselves as well as health facilities were far apart that some parents had difficulties accessing emergency care following the poisoning event.

(4) Possible measures to prevent further poisoning

It was common parental opinion that majority of children who ingested poisonous plant seeds did so in their own home gardens. Therefore, parents identified that identification and subsequent exclusion of those plants from home gardens would dramatically bring down most of the plant poisoning emergencies and it would be a much cost effective, feasible and practically sound intervention. Most parents believed that safe storage of poisons would likely bring down unintentional poisonings in children. However, the challenge they faced was the lack of safe storage devices. Most parents who practiced harmful first aid measures agreed that community education regarding drawbacks of these

detrimental measures should be improved. Publicizing the toxicity related effects of over-the-counter medications and other long-term medications was also identified as being important in preventing poisoning with medicines.

DISCUSSION

Acute poisoning emergencies are preventable causes of significant mortality and morbidity in the paediatric age group. Poisoning results in an annual loss of 7.4 million years of healthy life (disability adjusted life years) worldwide as per the World Health Organization (WHO) estimates. However, this burden disproportionately impacts low and middle-income countries, where most unintentional poisoning related morbidities occur (11). Identification of risk factors is therefore vital in planning preventing interventions and informing the public of preventive strategies.

Though it was reported that lack of supervision led to majority of the poisoning events, what was consistently seen was that parents cared enough for their children at their levels of ability (12). However, when the environment was unsafe with easy access to poisons such as poorly stored medicines, pesticides, household poisons and poisonous plants in their own home gardens, the supervision they needed to provide demanded more than what they could. It was the common parental opinion that removal of such poisons from the readily accessible sites sounded more practicable than increasing supervision.

Both awareness and knowledge need to be raised among less resourceful parents with regard to identifying common household, plant, and other types of poisons, as well as the need for keeping them safely stored. Medicines should always be stored in safety containers and parents need to be aware of the risk of accidental poisonings when children are allowed to take over-the-counter medicines without adult supervision. Attractive packaging of household poisons can predispose children for accidental ingestion and the local communities must be well aware of safety precautions while consuming them. Unsafe pesticide storage can similarly lead to unintentional ingestions among children. Limitation of agrochemical use, safe storage, and avoiding children in agricultural activities were preventive strategies against agrochemical poisoning in the paediatric age group in this community.

The investigators understood several cultural practices which were detrimental to health of the child in the purview of toxicology. Certain poisonous plants were used by rural communities as herbal remedies in traditional medicine. *Jatropha* trees were frequently grown in boundary walls. *Abrus* seeds were widely used by local communities for traditional games during the local New Year season. Elimination of these poisons from rural communities is difficult within a narrow time frame. The public should be made well aware of these factors and the poisoning risks through grass root level community education interventions. Also, the parents need education on possible detrimental effects of potentially harmful first aid measures practiced by them, and they should be encouraged to bring their children to the nearest healthcare facility without waiting till the symptoms develop.

Table 2. Summary of the domains and individual factors

Domain	Individual Factors
1. Parental awareness and concern with regard to poisoning risks	Cultural factors
	Lack of awareness
	Lack of anticipation and recognition of danger
	Inadequate supervision
2. Presence of child, parent and environment related risk factors	Lack of knowledge regarding health risks of poisons
	Parental stress and exhaustion affecting effective supervision
	Unsafe storage of poisons
	Regular use of poisons (pesticides/household chemicals/medicines) by caregivers
	Presence of poisonous plants
	Poor parental role modelling
	Lack of family support
3. Practices related to first aid care and care provision before child was brought to emergency care unit	Consistent unavailability of mother during daytime
	Lack of knowledge regarding risks of unsafe 'first aid' practices
	Cultural beliefs
4. Possible measures to prevent further poisoning	Lack of immediate access to emergency health care
	Community education regarding health risks of poisoning and unsafe 'first aid' practices
	Safe storage of poisons
	Exclusion of poisonous plants from home garden
	Publicizing the toxicity related effects of over-the-counter medications

The investigators observed that child's relationship with parents and peers was mostly well secured among those with unintentional poisoning. However, among children with intentional poisoning these relationships were often fragile, poor and inconsistent. Okasha et al. noted that disturbed family atmosphere can be associated with high risk of intentional poisoning. Scherz et al. also suggested that disruptive relationships are "not infrequent" among children with acute poisoning (12). Unfortunately, little work has been done since then to evaluate whether this association was significant. It is also crucial that all children with intentional are offered psychological support and followed up by a paediatrician/child and adolescent mental health service over a long period to ensure their physical and psycho-social environments are safe.

In the current study, 26.9% of parents were of the view that they were regularly facing stressful life events. Parental stress has been proven to be associated with significantly high risk of unintentional poisoning in quantitative studies (13, 14). Scherz et al. wrote more than half a century ago that children are particularly vulnerable for accidental poisoning when their family dynamics are disrupted, during such episodes as moving, pregnancy, illness, death, marital problems or moving the house (15). Many studies have also discussed the importance of childhood behavioural and personality characteristics in causation of unintentional

poisoning (16-18).

The authors identified hyperactivity, impulsivity and attention seeking behavior as three noteworthy behavioral characteristics reported by parents among 2.7%, 12% and 31% of children with acute poisoning. Other limited literature also supports this finding (11, 19).

Qualitative studies on paediatric poisoning prevention are limited to compare the majority of revelations of the present study. However, the findings of current study show similarities to other qualitative studies which have assessed parental perceptions of childhood unintentional injuries. Lack of supervision has been also described as a strong risk factor for childhood unintentional injuries (20). Environmental barriers and housing quality have also been suggested by parents as risk factors (21). Similarly, parental knowledge, attitudes and beliefs are shown to be associated with certain types of childhood unintentional injuries (22, 23).

Parents of the current study suggested community education regarding health risks of poisoning and unsafe 'first aid' practices, safe storage of poisons, exclusion of poisonous plants from home garden and publicizing the toxicity related effects of over-the-counter medications as potential measures to prevent unintentional poisoning. Recent qualitative studies suggest that parents can better identify and effectively prevent the risk factors for child injuries, but they need external input in terms of safeguarding children (20, 24, 25). Therefore,

it is crucial that a sustainable mechanism of community education and empowerment is implemented in this regard to bring down poisoning related preventable morbidity and mortality. Training community residents on home visits, education, and risk reduction had been found to be helpful in low-resource settings (26, 27).

LIMITATION

The study has several limitations given the qualitative nature of the study design. Most of the findings were subjective and were based on parents' views, experiences and opinions related to the topic. The strength of generalizability and replicability of findings are limited by this fact. However, the same investigator conducted all FGDs over the two-year study period so the observer related bias could be minimized.

CONCLUSION

The current study has brought the multitude of contributory psycho-socio-cultural and physical-economic factors related with paediatric poisoning in rural Sri Lanka into light under four main domains: [1] parental awareness of poisoning risks, [2] child, parent and environment related risk factors, [3] issues related to preliminary care, and [4] possible measures to prevent further poisoning. The study also provides information regarding variability in factors that are contributory to intentional poisoning as compared to unintentional poisoning. Since these factors would be different in different cultural and geographical settings, the authors suggest further studies to evaluate these factors in different cultural and geographic regions.

Conflict of interests: None to be declared.

Funding and support: None.

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