ORIGINAL ARTICLE

Understanding parental motivators and barriers to uptake of child poison safety strategies: a qualitative study

L Gibbs, E Waters, J Sherrard, J Ozanne-Smith, J Robinson, S Young, A Hutchinson

Objectives: To develop an understanding of factors acting as barriers and motivators to parental uptake of child poison safety strategies.

Design: A qualitative study involving semistructured interviews and focus groups. A grounded theory approach was used for the collection and analysis of data.

Participants: Sixty-five parents of children under 5 years of age, some of whom had experienced an unintentional child poisoning incident.

Results: A range of knowledge based, environmental, and behavioral barriers to comprehensive parental uptake of poison safety practices were identified. As a result there tended to be only partial implementation of safety initiatives in the home. Selection of safety practices was often guided by the interests and behaviors of the child. This made the child vulnerable to changes in the home environment, inadequate supervision, and/or shifts in their own behavior and developmental ability. Personal or vicarious exposure of a parent to a child poisoning incident was a significant motivator for parental review of safety practices.

Conclusion: Environmental measures targeting child resistant containers, warning labels, and lockable poisons cupboards will support parents' efforts to maintain poison safety. Additional education campaigns using stories of actual poisoning incidents may help to increase awareness of risk and encourage increased uptake.

Child unintentional poisoning is a significant public health issue in Victoria, Australia where it is the second most common cause of injury hospitalizations for children under the age of five, and both national and state governments have identified childhood poisoning as a priority issue for intervention. For the period 1987–95, there were 5324 Victorian public hospital admissions for unintentional poisoning in this age group. Child unintentional poisoning most commonly affects children between the ages of 1 and 3 years in the home environment involving a medicinal substance that has been in use rather than in storage. Children who have been involved in a poisoning episode are at increased risk of a repeat episode and are twice as likely to open a child resistant container.

Issues that need to be considered in any review of the incidence of child unintentional poisoning include consideration of medical management policies regarding admission criteria, the environmental context, and behavioral issues with particular regard for parental uptake of poison safety strategies. This paper will focus on the parental aspects of child unintentional poisoning prevention.

Research studies have highlighted a range of promising initiatives targeting parental preventative behavior through Poison Information Centre based interventions, counseling, tailored computer messages, education programs, and home visits. In order to engage parents effectively in any poison safety interventions, an understanding of the motivators and barriers to parental uptake of poison safety strategies is required. This paper describes the qualitative phase of a study investigating the prevention of child unintentional poisoning by exploring influences on parental uptake of poison safety strategies.

METHODOLOGY

This study was undertaken as a qualitative study. It used a grounded theory approach which allows the themes to emerge from the data as they are collected and analyzed, rather than being predetermined. Collection and analysis are carried out concurrently to allow each to influence the other, enabling further exploration of emerging themes.

Recruitment

A total of 65 parents participated in this study through a series of 23 interviews and seven focus group discussions. Participants were recruited from the three different sources until saturation point was reached—that is, the data became repetitive with no new issues arising. Recruitment of a data rich sample was guided by the research focus (see table 1).

For those parents who had experienced a child unintentional poisoning incident, recruitment was selective (purposive sampling) to ensure that agents commonly involved in child unintentional poisoning were represented in the participant sample. All of the agents commonly involved in presentations to the RCHED and the VPIC were included in the sample (see table 2), except for cardiovascular drugs which were not evident in the cases that arose during the recruitment period.

Recruitment of community groups was also selective (purposive sampling) in order to include parents from across Victoria including inner city, suburban, outer suburban, rural town, rural remote, and rural property to enable identification of commonalities across housing types. Information provided informally by participants in the course of interviews and discussions revealed that this selection process resulted in the recruitment of a diverse range of participants (see table 3). As demographic information was not collected systematically in the playgroup settings, specific numbers in each category cannot be provided. This is a limitation in the current study preventing detailed exploration of sociodemographic differences, which is further limited by the lack of...
Research focus | Participant sample | Source | Recruitment method | n | Data collection mode |
--- | --- | --- | --- | --- | --- |
Circumstances of poisoning incidents. Poison safety strategies being used | Parents of children under 5; recent unintentional poisoning incident | RCHED | Weekly keyword searches of ED patient files by ED nurses. Presenting parent contacted to invite them to participate in the research study | 10 | Conducted by ED nurses: 9 interviews in the participants’ home; 1 phone interview to overcome difficulties arranging a home visit |
Circumstances of poisoning incidents. Poison safety strategies being used | Parents of children under 5; recent unintentional poisoning incident | VPIC | Relevant callers asked by VPIC staff if they would accept a follow up call re research study | 13 | Conducted by project manager: phone interviews |
Poison safety strategies being used | Parents of children under 5 | Community playgroups | Project manager arranged with playgroup coordinator to visit the group. Parents invited on arrival to participate | 42 | Conducted by project manager: 7 focus group discussions in playgroup setting; 1 phone interview for a farmer on a remote property |

RCHED, Royal Children’s Hospital Emergency Department; VPIC, Victorian Poisons Information Centre.

### Data analysis

The interview records and transcriptions were entered into N-Vivo qualitative software and analysed using a grounded theory approach.16 Names were changed to protect the anonymity of the family; however, the ages of the children were included where known because of the link between parental safety measures and the perceived developmental level of the child. Independent coding was not possible due to resource and time constraints. However, the results of this study replicated the findings of a recent unpublished qualitative study of factors contributing to child unintentional poisoning, supporting the confirmability of the results.21

Ethics approval was provided by the Royal Children’s Hospital Research in Humans Ethics Committee.

### Table 3 Sociodemographic spread of participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>17–42 years</td>
</tr>
<tr>
<td>Housing</td>
<td>Privately owned, rental, public, high rise, grandparent home</td>
</tr>
<tr>
<td>Geographic location</td>
<td>Inner city, suburban, outer suburban, rural town, rural town/rural property</td>
</tr>
<tr>
<td>Culturally and linguistically diverse communities</td>
<td>Chinese, Middle Eastern, Somali, East Timorese, Turkish, Singaporean, English, South American</td>
</tr>
</tbody>
</table>
Uptake of child poison safety strategies

375

Overhead storage options. However, it's only possible in homes with adequate storage options in both child resistant containers (CRCs) and non-CRCs. The concept of CRCs was widely supported by parents as an important mechanism for protecting children from toxic products. However, the support for CRCs was often based on the notion that they were childproof rather than child resistant. As a result, some parents were more likely to store products unsafely if they were in CRCs: "If I've got any products down low I make sure they've got a safety cap and if they haven't I put them up high, so I still don't take the risk." (mother of 3 1/2 year old and 2 year old boys).

This misunderstanding of appropriate storage of CRCs was supported in an unpublished Masters thesis. However, it contradicts a study by Wiseman et al (1987) who found no difference in storage patterns for products in CRCs and those in non-child resistant packages. As the introduction of CRCs has been found to have a significant effect on child unintentional poisoning, any indication of a false sense of security in parents should be addressed through education programs and not through reduction in the use of CRCs.

There was also a perception among parents that we live in a protective society; subsequently parental awareness of toxicity was strongly linked to the packaging of the product. Many parents were surprised to discover that products without warning labels or CRCs could be dangerous for children.

Environmental barriers

The most common safety procedure being used by parents was storage of products, especially medicines, in an overhead cupboard that was out of reach of children. There was little evidence of overhead cupboards being locked despite the fact that the main message for poison safety in Victoria is to store toxic products in a locked cupboard or cabinet. Storage in overhead cupboards is only possible in homes with adequate overhead storage options.

"But in my bath no cupboard. All I put in the bucket, plastic bucket ... But it's safe ... I close the door but not lock it ... No key. But now he bring that chair." (mother of 2 and 4 year old boys). This mother was reporting on the lack of storage options in her government owned, high rise flat.

RESULTS AND DISCUSSION

Parents were aware of the need for poison safety strategies and were implementing strategies to various degrees but not comprehensively in the home. There was a range of knowledge based, environmental, and behavioral factors acting as barriers to comprehensive uptake of poison safety strategies.

Knowledge based barriers

Limited legislation for child resistant containers (CRCs) exists in Australia, applying to a small number of medications only. Various toxic household products are also provided by manufacturers in both CRCs and non-CRCs, allowing for consumer choice, although CRCs are generally more expensive to purchase (fig 1).

Living in public housing, rental properties, or in the home of the grandparents affected parents' abilities to implement safety practices. A regulatory intervention that aimed to ensure that all homes have a lockable poisons cupboard in the kitchen and the laundry/bathroom would help parents to maintain safety standards in the home.

Parents commonly use safety products such as cupboard and drawer locks, gates, and fridges to prevent access to storage areas. However, these products were often abandoned when children were able to break them or bypass them. Establishing testing standards that assess the efficacy of safety products would support parents' safety efforts.

Behavioral barriers

Poison safety practices tended to be only partially implemented in the home. They were more likely to be applied in the kitchen than the laundry or bathroom, and more commonly inside the house than in external laundries, gardens, or sheds. Determination of where and when safety practices should be implemented was often based on the products or areas the child had tried to access previously:

"There are more dangerous things in the laundry but they've never really taken an interest in the laundry stuff." (mother of 3 year old boy and 5 year old daughter).

"Ben's 8 months so he's not into any of that stuff. I don't think to move anything until he's been in it." (mother of 3 year old girl and 8 month old boy).

This "customised" approach to safety measures is tailored to the perceived skill and mobility of the child but often does not account for rapid changes in ability. It clearly places the child at risk as soon as they explore a new area or product (fig 2), and also places visiting children at risk because safety standards have not been comprehensively addressed.

Some parents were committed to educating their child about toxic products to encourage them to be self-regulating. The difficulty with the self-regulatory approach was that parents often seemed to overestimate the ability of very young children to remember instructions, apply them consistently, and relate them to changed circumstances.

"I think once they're four or three they pretty much know they're not allowed to touch. I think it's two and under, where you're still teaching them, it's like 'don't touch' but they're still trying." (mother of two children).

Convenience is also a factor in the storage of products, particularly relating to contraceptives, medications in use, dishwashing powder, and products used for home based businesses. Some parents felt that if they were too diligent about safe storage of products, to the point that it was inconvenient to access them, then they would be more likely to leave them on the bench on the basis that they would "get to that later".

"Well yeah for something that you want to keep handy and use all the time, you're not going to go and lock it in a bloody ordinary cupboard, they'd have to use their keys." (mother of 3 1/2 year old and 2 year old boys).

Parents were aware of the need for poison safety strategies and were implementing strategies to various degrees but not comprehensively in the home. There was a range of knowledge based, environmental, and behavioral factors acting as barriers to comprehensive uptake of poison safety strategies.
cupboard are you? You’re going to use it and you’re gonna go, ‘yeah I’ll put that away later.’” (mother of five children).

The issue of convenience is a clear barrier to safe storage and is reflected in the high incidence of children accessing products while they are “in use”. Combined home and work environments such as home businesses or a farming environment meant that additional toxic products were potentially accessible to children at a time when parents were focussed on work activities.7

**Motivators for increased uptake of poison prevention strategies**

The dominant factor likely to shift parents’ recognition of personal risk was exposure to a child poisoning event. This usually occurred when their child accessed a dangerous product or area they had previously shown no interest in or had not been able to access. This alerted the parent to the reality of personal risk and motivated them to increase safety measures within the home. Vicarious exposure to a child unintentional poisoning incident was also effective in increasing parents’ awareness of the personal reality of risk and the need to increase safety measures in the home. The source of vicarious experiences that was evident in the study was stories shared through family, friends, and parent peers, or profiles of individual incidents reported in the media:

“Yeah, I didn’t think until I saw that show [about a baby that died after swallowing baby oil]. As soon as I saw that show I went and got the baby oil because I just used to put it there. I didn’t even think.” (mother of two children).

Two disconfirming cases to this response were found where parents appeared to be encouraged if their child was unhurt in a poisoning event and perceived it as meaning that poisoning is low risk:

“Metho’s [metholated spirits] not poisonous, trust me, my kids have drunk it!” (mother of three children). This may partially explain the pattern of increased risk following a poisoning incident,8 suggesting that although parents will process exposure to a poisoning incident to inform future safety practices, the result is not always supportive of increased safety procedures. This indicates that parents’ interpretation of poisoning incidents could be a contributory factor in repeat poisonings, which could be addressed through interventions immediately following a poisoning incident.7

**CONCLUSION**

This study provides an increased understanding of parental use of poison safety practices in the home and in particular the barriers and motivators to increased uptake of safety strategies.

It was found that although poison safety practices were commonly adopted by parents in this study, they were not applied comprehensively in the home due to a tendency to tailor safety measures to the perceived interests and abilities of the resident children and a tendency to alter safe storage behaviors while products are in use. This made children vulnerable to changed circumstances in the home environment and to changes in their own behavior and developmental ability.

The study findings supported the development of legislation requiring the inclusion of a lockable, overhead cupboard in homes and the introduction of testing standards that assess the efficacy of safety products. The results also indicated that parent education programs about warning labels, child resistant containers, safe management of products while “in use”, and poison risks following a poisoning incident may contribute to parent awareness of poison safety.

**Key points**

- Child unintentional poisoning is a significant public health issue in Victoria where it is the second most common cause of injury hospitalizations for children under five.
- Parental uptake of poison safety strategies is a critical factor in the prevention of child unintentional poisoning.
- Parental selection of safety practices was often guided by the interests and behaviors of the child, resulting in incomplete application of safety measures.
- Personal or vicarious exposure of a parent to a child poisoning incident was a significant motivator for increased uptake of safety practices.

Vicarious or personal exposure to a child poisoning incident was identified as a dominant motivator for a review of safety behaviors among the parents in this study. This suggests that interventions based on the circulation of stories of actual child poisoning incidents may be effective in increasing parents’ awareness of the reality of risk. Examples of severe cases may be needed to target parents who have a false sense of security following a poisoning incident with a positive outcome.

Further quantitative research would help in evaluating the effectiveness of interventions targeting parental motivators/barriers and subsequent uptake of safety practices, and the impact of increased safety practices on incidence of child unintentional poisoning. In depth research with culturally and linguistically diverse communities would also provide greater understanding of sociocultural differences in risk/protective factors operating in relation to child unintentional poisoning.

**ACKNOWLEDGEMENTS**

This paper is based on a project commissioned by the Department of Human Services Victoria. It was undertaken by the Centre for Community Child Health in partnership with the Monash University Accident Research Centre and with the support of the Child and Youth Injury Prevention Alliance. The authors gratefully acknowledge the generosity of parents who shared their time and life experiences, and the support of the VPIC staff, and RCH ED nurses Milli McLeish and Naomi Oborne.

**Authors’ affiliations**

L Gibbs, E Waters, School of Health and Social Development, Deakin University, Victoria, Australia
J Sherrard, J Ozanne-Smith, Monash University Accident Research Centre, Victoria, Australia
J Robinson, Victorian Poisons Information Centre, Victoria, Australia
S Young, A Hutchinson, Emergency Medicine, Royal Children’s Hospital, Victoria, Australia

**REFERENCES**

Uptake of child poison safety strategies

21 Jolly K-A. Investigation of the factors influencing unintentional medication poisoning in children under 5 years. La Trobe University, 2003 [Masters].